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THE LANCET.

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

IN TWO VOLUMES ANNUALLY.

VOL. II. FOR 1918.

NINETY-SIXTH YEAR.

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EDITOR.

LONDON
PRINTED AND PUBLISHED BY THE PROPRIETORS, AT THE OFFICES OF "THE LANCET," No. 423, STRAND, AND Nos. 1 & 2, BEDFORD STREET, STRAND.
MCMXVIII.

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END OF THE SECOND VOLUME FOR 1918.

PRINTED and PUBLISHED by the PROPRIETORS, WAKLEY AND SON (1912), LTD., at No. 423, Strand, and Nos. 1 and 2, Bedford-street, Strand, in the Parish of St. Martin-in-the-Fields, Westminster, in the County of London.

An Address
ON
SOME ASPECTS OF
MATERNITY AND CHILD-WELFARE WORK.

Delivered before a Conference of County and Local Sanitary Authorities of the County of Durham on June 22nd, 1918,

BY ARTHUR NEWSHOLME, K.C.B., M.D.,
MEDICAL OFFICER TO THE LOCAL GOVERNMENT BOARD.

MR. CHAIRMAN AND GENTLEMEN,—Conferences of sanitary authorities like this which you have asked me to address give valuable opportunity to exchange experience and programmes for extended work; and, as representing the department of the Government which is chiefly concerned in stimulating maternity and child welfare work, and—to use a recent phrase of Mr. Hayes Fisher—in "fertilising it by grants," I welcome the opportunity of setting forth some general considerations on the subject and of learning from the local experience of members of the Conference.

INFANTILE MORTALITY IN DURHAM.

Although this may be tedious to those who fail to appreciate the value of a quantitative statement of experience, let me first indicate to you how Durham stands in regard to infant mortality, with which, I need hardly remind you, is associated on a much larger scale even more serious loss of local and national health and efficiency. And, in order that we may begin on a hopeful note, let me first state the improvement in the administrative county of Durham as compared with the average experience of England and Wales and of New Zealand, a happy country whose white population has been planted within the memory of living man, and which has no evil inheritance from the eighteenth and nineteenth centuries of crowded towns, of huddled industrial villages, and of slum areas.

TABLE I.—*Average Infant Mortality per 1000 Births.*

—	Administrative County of Durham.	England and Wales.	New Zealand.
1896–1900	169	156	80
1911–1915	134	110	53
Percentage improvement in 15 years ...	21%	30%	33%

Although the figures in Table I. give encouragement they show a less favourable record for England and Wales and still less so for the county of Durham than for New Zealand, as the possibilities of reducing a high death-rate are much greater than when, as in New Zealand, the death-rate has been relatively low throughout. It is evident that much work needs to be done before we can reach the favoured position occupied by New Zealand. The fact that in counties such as Oxfordshire the infant death-rate in 1915 was 70, and in Berkshire and Herts 71, while in an industrial town like Coventry it was as low as 89 per 1000 births, and that in areas such as these the death-rate continues to decline, shows that the task before us is not insuperable.

Unsatisfactory Position of Durham.

So much for the past. The picture of Durham's position when compared with the current average experience of England and Wales is less satisfactory. In this average experience is included that of counties occupying, like Lancashire, Glamorganshire, Staffordshire, and Northumberland, of which the best that can be said is that their position is not quite so unfavourable as that of Durham: and were these counties excluded from the comparison, the terrible position of Durham in regard to infant mortality would be more fully revealed.

Confining ourselves, however, to the comparison with England and Wales as a whole, and considering only the figures given in the last six annual reports of the Registrar-General, the excess of loss of infant life in the county of Durham is shown in Table II.

TABLE II.—*Geographical County of Durham: Aggregate Experience of Six Years, 1911–16.*

—	Total deaths under 1 year of age.	These deaths were in excess of the number that would have occurred had infants in Durham shared the average experience of England and Wales by—	Percentage excess.
Administrative county (excluding Darlington)	21,648	4,181	24
Darlington	981	2	—
Gateshead	2,813	553	25
South Shields	2,563	422	20
Sunderland	3 712	761	26
West Hartlepool	1,331	171	15
Entire geographical county...	33,048	6,090	—

That is, on an average 1000 deaths of infants have occurred every year in the geographical county of Durham which would have been avoided had Durham shared the only mediocre experience of England and Wales as a whole, or that of the town of Darlington within its own borders. I leave it to the medical officers of health of each constituent part of the county to explain to you in detail that this excessive mortality is much greater in some than in other parts of the county, and to remind you that no inhabitant of a district, either in Durham or elsewhere, which enjoys a relatively low infant mortality will be able to say that there are not within its borders "pockets"—streets or areas—which are unnecessary death-traps for infants living in them, and in which intensive child-welfare work is not able still further to reduce infant mortality, and the even more serious sickness of infancy and consequential adult inefficiency.

Causes of Excessive Infant Mortality in Durham.

I do not propose to pursue further my comparisons for each of the county boroughs, but for the administrative county let me state the following additional facts showing some of the more potent causes of excessive infant mortality (Table III.):—

TABLE III.—*Administrative County of Durham: Experience of Six Years 1911–16.*

—	Total deaths under 1 year of age.	These deaths were in excess of the number that would have occurred had infants in Durham shared the average experience of England and Wales by—	Percentage excess.
Congenital debility, &c.	7635	1661	28
Diarrhœa	5476	3452	172
Pneumonia	2028	265	15
Bronchitis	1812	477	36
Whooping-cough... ...	758	107	17
Measles	567	125	28

Evidently the causes of death included under the first heading above (including congenital malformation, premature birth, infantile debility, and marasmus, &c.), and which usually end fatally within a month of birth, are largely accountable for the excess. Bronchitis and pneumonia are also excessive; but diarrhœa is the most important disease, the combating of which will secure the largest saving of child life.

INSANITARY CONDITIONS CALLING FOR REFORM.

It is necessary that I should relate this excessive diarrhœal mortality with the excessive prevalence of enteric fever in Durham. Dr. Wheaton's report on enteric fever in Durham, published by the Local Government Board in 1911, still deserves perusal; and I have to state that recent experience of enteric fever, although greatly improved, shows that in Durham the risk of acquiring and of dying from enteric fever is still twice or three times as great as for England and Wales as a whole. Putting it on the lowest basis, past experience of this disease represents a serious financial loss to the county—in wages, in cost of medical attendances and nursing, in cost of funeral expenses, and in loss of accrued economic

value of individual lives, which for the whole county on a low estimate must have exceeded half a million sterling annually; and if to this be added the cost of excessive infant mortality and sickness this sum will easily be doubled. If this money were spent on essential sanitary reforms in every village and town in the county, and if with this was associated an active awakening to the parallel need for improved personal hygiene, there is no sufficient reason why the infant mortality in the county of Durham should not fall rapidly below the present average rate for England and Wales.

Before I pass from this part of my subject let me enumerate the worst features of insanitation still prevailing, though in less degree than in the past, in some of the densely populated mining villages and towns of Durham. These comprise unpaved and undrained streets and back yards, imperfection of scavenging and excrement removal, privies persisting where water-closets are practicable; all implying the blowing into the dwelling of dry excremental spillings and deposits, and their conveyance indoors by flies and on the feet and hands of children and adults. I ask the medical officers of health here present whether the statement in my preface to the report already quoted was not justifiable that the extremely filthy domestic arrangements by which excremental matters are retained in the immediate neighbourhood of dwellings are "deplorable insanitary conditions urgently calling for reform."

Housing Accommodation.

If I do not mention in detail the unsatisfactory housing in a large part of mining Durham, it must not be assumed that I underrate the importance of improvement in this respect. Durham and Northumberland have the worst housing in the country. In Durham, out of every 100 total dwellings at the last Census, 22 were found to comprise only two rooms as compared with 8·3 for England and Wales, and 27 of three rooms as compared with 14 for England and Wales; and the proportion per cent. of the total population living overcrowded, in the sense that there were more than two persons to a room, was 28·5 in the county as compared with 9·1 for England and Wales as a whole. It is legitimate cause for surprise that organised miners have not hitherto insisted on better housing conditions, and required, even though this implies higher rents, a minimum of sanitation and housing for their wives and children. Such a minimum standard would insist on domestic conditions now too seldom secured by miners earning high wages. Meanwhile the wives of miners and their families, who constitute by far the largest proportion of the total population of Durham, suffer in health from the inability or unwillingness of the miners to release themselves from the degraded housing conditions associated with the "free" houses of inferior quality commonly supplied by colliery owners, and from the defects of municipal sanitation the continuance of which it is well within their power to prevent. Could any of us secure a more favourable record of sickness and death for our children than holds good for the families of a large proportion of wage-earners in Durham and elsewhere if our houses had no larder for food, no sink, or a sink without hot water-supply over it, if the backyard and front and back street were unpaved, and if a malodorous ashpit and privy were in the near vicinity of the dwelling? Before we lay chief stress on ignorance and carelessness, it is our duty to ensure, so far as our individual power goes, that the local council and the landlord of the house are supplying the rudimentary needs of sanitary living.

It is the lack of these elementary requirements that is largely responsible for the excessive diarrhœal mortality and the excessive mortality from bronchitis and pneumonia in the county of Durham; and I have shown elsewhere that it bears no inconsiderable part also in causing excess in the death-toll during the first month or two after birth.[1]

RELATIONS OF SANITATION AND PERSONAL HYGIENE.

I have thought it necessary to set out at some length a statement of the insanitary conditions, on the remedying of which depends largely the success of efforts at personal hygiene. This does not mean that the efforts to promote personal hygiene—the struggle towards personal and domestic cleanliness (almost in the surgical sense) which this implies—will not, even under adverse circumstances, succeed in improving the prospect of healthy childhood. The possibilities of such success are, however, multiplied manifold when the minimum conditions of municipal and domestic sanitation are fulfilled; and it is in this connexion particularly that the medical officers of health and sanitary inspectors of each of the urban and rural authorities within the county of Durham can render possible a rapid improvement in child hygiene.

This is not the only channel in which combined district and county work should run. There is always risk, but avoidable risk, when two sets of authorities are concerned in a given task that one or other will lose interest in it. In the county boroughs this difficulty does not arise; and in the administrative county of Durham, with a county medical officer of health of supreme ability and possessed of great tact and judgment, its possibility is minimised; but there is often reason to regret that district and county activity in child-welfare work is not more equally developed and balanced throughout the country and that district and county authorities are not in more regular and systematic coöperation than at present. There is good reason for allowing the county council to arrange health visiting and to organise nursing facilities for districts with a population below 20,000; but the prevention and treatment of infectious diseases, including enteric fever, diarrhœa, and measles, the promotion of domestic cleanliness and sanitation, the improvement of housing conditions, rest chiefly on the district staff, and it is only when district and county medical officers of health, sanitary inspectors, and health visitors actively coöperate—and, may I add, when county and district councils abandon any latent or open antagonism—that rapid success in saving child life can be ensured.

WELFARE WORK.

The achievement of the sanitary minimum of healthy family life, then, depends in the first instance on municipal and district sanitation and reasonably good housing. This implies, as I have already suggested, convenient and labour-saving arrangements for personal and domestic cleanliness and for the storage of food.

"Home-helps."

The next great need is domestic assistance for the wife or mother, when without this her own or her children's health are likely to suffer. With this object in view the Board have decided to extend the scope of their 50 per cent. grants by including the provision of "home-helps" in suitable cases during the lying-in period. The avoidance of over-fatigue and anxiety at this period is essential, and the assistance of neighbours is not always available. The Board similarly are encouraging experiments in paying for the maintenance away from home of the older children during the same period. This is in addition to the already available grants of one-half of the cost of provision by the local authority of the cost of a midwife, or of a doctor called in to assist the midwife, or of a maternity nurse.

The Organisation of Nursing Facilities.

I have already referred to the excessive mortality from diarrhœa and from measles and whooping-cough in Durham. Even when measures to prevent attack have failed, measures to prevent death from an attack may succeed, and this branch of public health work until recently has been almost completely unexplored so far as domiciliary treatment is concerned.

I hope that very shortly public opinion everywhere will require sanitary authorities to provide nurses for every case of sickness needing it. For the above-named diseases, for ophthalmia neonatorum, and for illness connected with pregnancy and parturition, half the cost of nursing provided by or on behalf of the local authorities will be refunded by the Local Government Board. Sanitary authorities need not, however, stop at these diseases, but can, with the Board's sanction, provide home nursing for the poorer inhabitants of their districts in other cases under the powers given by Sec. 133 of the Public Health Act, 1875. Skilled nursing in illness is one of the most efficient means of relieving the over-burdened mother. In measles experience in many areas is already showing its high value in the saving of life, and I trust that through the county or district nursing associations or otherwise this will ere long be organised in Durham.

Until recently the county of Durham has had no county, and but few district, nursing associations, and thus in respect of the organisation of nursing facilities has been in a less favourable position than any county having a similar population. The proposals for the provision of such a service constitute a great step forward in local sanitary efficiency, and I hope that ere long a fully organised service of county and district nursing associations will be in a position to provide in Durham midwives and maternity nurses where required, working in close association with the councils of the county and county boroughs.

Health Visitors.

A service of health visitors is indispensable in securing a good standard of domestic hygiene, and it is unnecessary that I should enlarge on this branch of work, which is already developing in Durham, both in the administrative county and the five county boroughs, with one exception, on the advice of the active and progressive medical officers of health of these boroughs. I may, however, draw attention to the fact that although the Board—in view of the need for home visitation up to school age—has considered that there should be one health visitor to 400 births, the proportion in the

[1] Page 38, First Report on Infant and Child Mortality, Cd. 5263.

geographical county as a whole is only 1 to 1100 births. Gateshead still has not started on this essential work, and in West Hartlepool and South Shields there is only the equivalent of one health visitor to 1500 or 1600 births. The administrative county has the equivalent of one whole-time health visitor to about 1100 births.

Maternity Homes: Child Welfare.

One result of bad housing conditions in Durham is that confinement has to take place in a house which commonly has only one bedroom, or at most two. A partial remedy for this is better housing; but even when this is available, in many cases the mother does not secure at home as good a prospect of healthy recovery as in a maternity home. The Board's grants are available for such homes; and I look forward to the time when each area will have such a home, ensuring for the mother and the newly-born infant who need this assistance the best possible start in their next year's joint life.

In addition to child welfare centres with adequate antenatal and infant consultations the Board's grants are now available also for hospitals for children under 5, not including ordinary infectious diseases, but including epidemic diarrhœa; and for creches provided by local authorities, for convalescent homes after confinement, and for children after recovery from illness. Even more important, the Board are now able to promise grants for the maintenance of the infants of widowed, deserted, or unmarried mothers along with their infants in special homes or otherwise. The object of the last-named grant is the moral and hygienic gain both to the mother and infant which can only be secured by keeping them together.

I may add that one item of the new regulations of the Board promises grants for "experimental work for the health of expectant and nursing mothers and of children under 5 years of age carried out by local authorities or voluntary agencies with the approval of the Board." This sufficiently shows the desire of the Board to aid progress by local experimentation on promising lines, and I trust that both local authorities and voluntary agencies will share in such experimental as in the general work of child-welfare.

Voluntary Efforts.

It will be a misfortune if local authorities lose the assistance of non-official voluntary agencies. There is need to bring every influence to bear, and to interest all social workers in the cause in order that the best results may be obtained. There is no valid ground for contrasting official and voluntary work as regards efficiency and sympathy. Either or both of these may be perfunctory, irregular, incomplete, and lacking in insight; and both of them happily often display the opposite qualities. If the way for one is not open the other should be adopted; and voluntary beginnings have repeatedly shown the way to municipal effort on a larger scale.

AN APPEAL TO THE PUBLIC CONSCIENCE.

To act helpfully we must know thoroughly the conditions and causes which have hitherto been producing excessive sickness among mothers and children. No member of a local authority in Durham can now plead ignorance when called to render his account for evil conditions and avoidable sickness and deaths due to the default of his colleagues and himself. The reports of the local and the county medical officers of health, of Government officials, and now the statements in this address make clear the responsibility of district and county councillors and of owners of property. They make equally clear the duty of husbands and fathers to arrange that their wives and children receive more adequate and better medical, nursing, and domestic assistance than is now secured, and to insist on obtaining and being willing to pay the rental of better houses. All this will cost money. But sickness costs more money; the industrial and social inefficiency of adults resulting from illness in childhood costs still more money. Health, when we have paid for it, is always cheaper than disease; and within limits we can have as much health as we are prepared to pay for.

We should be prepared to do this, not merely or chiefly because it is economically sound, but because we are our brother's keeper; we are members one of another. "It is not the will of your Father that one of these little ones should perish." But at least 1000, in reality many more, infants perish unnecessarily every year in the county of Durham. How soon will the indifference of a majority of local councillors, of the general public, and of parents themselves be broken down, and the public conscience call for the easily attainable cessation of the present Herodian sacrifice of child life?

QUEEN'S UNIVERSITY OF BELFAST.—A correspondent writes: "Arrangements are being made for the appointment of a professor of anatomy in place of Dr. J. Symington, resigned. The salary will be £1000, with a retiring pension. The results of the summer matriculation, published last week, show that out of 310 candidates 75 passed. Such an extraordinarily large percentage of rejections indicates either (*a*) an unusually high university standard, or (*b*) poor school teaching, or (*c*) an inferior type of students. The matter is naturally being much discussed."

INFANT MORTALITY AND THE EDUCATION OF THE MOTHER:

A CRITICISM OF THE REPORT OF THE MEDICAL RESEARCH COMMITTEE.

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THE report of Dr. W. A. Brend and Dr. Leonard Findlay to the Medical Research Committee of the National Insurance Commission, issued in August, 1917,[1] is one that should have most careful consideration from all interesting themselves in saving infant life, and particularly from those engaged in one of the principal phases of that work, the education of the mother, whether by means of house-to-house visiting or through the agency of infant consultations, schools for mothers, baby welcomes, and the like.

Main Conclusions of Report.

Findlay, by means of a chart of infant mortality in England, Scotland, and Ireland dating back to 1864, attempts to show that the fall in mortality in the last 20 years is independent of the educational methods of about the same period, and as a matter of fact began before those methods could have had any influence at all.

Brend compares the infant mortality of typical agricultural districts with that of the large towns. He shows, first, that the mortality in the first month after birth (about one-third of the whole) is practically the same in two such districts, and is due to ante-natal causes, of which at present we have little knowledge, but which are equally operative in both town and country. He next points out that after the first month the mortality amongst infants is mainly a question of post-natal environment. By a process of exclusion of possible causes common to both town and country life he finally arrives at the conclusion that the one cause operating in the large towns and not existing in the country is pollution of atmosphere by dust and smoke, mainly, as one infers, from smoke.

By this route he arrives at the same conclusion as Findlay—viz., that educational methods are only touching the fringe of the question and are of quite small importance compared with the clearing of slum areas and the abatement of smoke pollution.

Some Authoritative Views.

That the acceptance of this theory means nothing short of a revolution in our conception of infant welfare work can be judged from three quotations, out of many possible, from the writings of eminent authorities. Sir George Newman says:—

> "The environment of the infant is its mother; its health and physical fitness are dependent primarily upon her health, her capacity in domesticity, and her knowledge of infant care and management."[2]

Concerning the excessive mortality amongst infants in slum areas the Report of the Interdepartmental Committee on Physical Deterioration states:—

> "We shall not perhaps be far from the mark if in judging of the evil effects of bad housing and of poor social conditions we give chief place to the laziness, want of thrift, ignorance of household management, and particularly of the choice and preparation of food, filth, indifference to parental obligations, and drunkenness which largely infect adults of both sexes and press with terrible severity upon their children."[3]

Lastly, the President of the Third International Congress on Infant Mortality in Berlin, 1911, Professor Dietrich, writes in the Handbook to the Congress:—

> "The most effective means of instruction, *according to the unanimous opinion of all experts*, are the stations for the care of infants, after the model of the Infants Consultations ..... 'Welfare' stations take the first place, *according to German experience, among the practical measures adopted for the protection of child life.*"[4]

The Campaign against Infant Mortality.

As a consequence of the general consensus of opinion typified in the above extracts an enormous and increasing amount of work has been undertaken in the last 20 years, all, whatever its outward shape, having for its guiding principle the education of the mother and the improvement of the home.

House-to-house visitation by experts and voluntary visitors has become the rule in almost every town and county in the kingdom; infant welfare centres, infant consultations, schools for mothers, baby welcomes, *et hoc genus omne*, have been established in practically

every district in England and Wales in which infant mortality can be said to be in excess. Many thousands of pounds annually are being spent on this work from Government, county, municipal, and philanthropic sources, and enormous voluntary and paid effort is being put forth.

At the time of writing I have before me a record of close on 300 public authorities which are carrying on infant consultations and the like, and a further list of nearly 600 philanthropic societies doing a similar work; and this in England and Wales only. As many of these authorities or societies have more than one centre it is probably a modest estimate to say that there are now at least 1200 centres with a clientèle of well over 150,000 children.

Is all this to be incontinently scrapped? If the suggestions of Brend and Findlay are founded on a firm basis, that is the question which we have to ask ourselves. If their chain of reasoning is strong in every link and their conclusions unassailable, a review of our position and a radical change in our theories and methods are inevitable.

But are they so unassailable? I venture to think that the facts on which their argument is based, and the processes by which they arrive at their conclusions are singularly weak in certain directions, and by no means so convincing as under the circumstances we have a right to expect.

Influence of Educational Measures.

Take, for instance, Findlay's Chart No. 1, showing the infant mortality for England, Scotland, and Ireland from 1864 to 1914. Having pointed out how the variations on this chart singularly correspond in each country in each year and that a general decline set in about the year 1900, Findlay deduces from this that the special educational measures adopted in England can have had but little influence, since similar methods have been hardly begun even yet in Ireland, which shares, however, in the general improvement.

I can hardly understand such a deduction being legitimately drawn from this chart. With the exception of 1880 and the period from 1891 to 1900 the infant mortality in Ireland has hardly varied from its original level of 95 per 1000 in 1864, and certainly since 1900 there has been no such rapid and consistent fall as that of the English rate. In 1914 the Irish rate was 19 per cent. below that of 1900, while in England and Wales it was 31 per cent. below 1900.

In a recent address to the Royal Academy of Medicine in Ireland Sir W. Thompson, Registrar-General, stated that, comparing the periods 1866–70 and 1911–15 infant mortality in Ireland had fallen 4 per cent., in Scotland 7 per cent., and in England and Wales 30 per cent.[5]

A striking feature of these curves is that right away to 1908 the Scottish rate was consistently and often considerably lower than the English rate; since 1908, with the exception of the year 1911 with a very hot summer, the English rate has been actually lower than the Scottish rate. I think it is safe to say that in the last 10 or 12 years much greater strides have been made in educational infant welfare work in England than in Scotland.

Incidentally Findlay's chart can hardly be considered as supporting Brend's theory as to the preponderating influence of smoke pollution. It can hardly be contended that there has been sufficient abatement of that evil in the last 20 years to account for the great improvement in the infant death-rate.

But Findlay further points out that the improvement manifested since 1900 began something like 10 years before educational methods were sufficiently universal to have made much impression. Here, I confess, he is on stronger ground. Apparently, however, he has overlooked the fact that an integral portion of the educational campaign is the training in housekeeping and baby management of the school-girl. Educational work of this type has been going on for 20 years, and has been pretty general in this country for at least 10 years. Is it unreasonable to ascribe some portion of the improvement, at any rate, to this phase of the campaign?

Comparative Poverty in Town and Country.

And now let us briefly review Dr. Brend's argument also. As I have indicated, he compares the infant mortality in certain county boroughs of the north and in the rural districts of the south. Having enumerated the causes of excessive infant mortality as given by Newsholme, he arrives, by a process of exclusion, at the conclusion that the one outstanding cause of mortality not common to town and country is the atmospheric pollution, mainly by smoke, existing in the urban areas.

But his process of exclusion is, I think, open to very grave criticism, and many people will disagree with the dogmatic statements he makes. Take, for instance, his assertions as to the comparative poverty of the urban and rural labourers. He says (p. 8) that the wages of the agricultural labourer are the lowest paid in the community, that the influence of poverty is felt most directly in *housing and food-supply*, and that it is impossible to say that in these respects rural districts are better off than towns.

On this question of the comparative poverty of the town and country labourer we have little exact information. What we have to compare is the wage of the rural labourer and that of the unskilled and casual worker of the town slums, for it is amongst the latter class that the real excess of infant deaths takes place, and not amongst the skilled and respectable artisans of the better type of working-class neighbourhoods. Now, from my own personal experience as a countryman born and bred, who has spent most of his working years in a great town, I have no hesitation in stating that the average country labourer *and his family* are infinitely better off than the slum dweller and his dependents.

Wages and Domestic Economy.

It is not the gross wage that matters; it is in the first place the net amount that reaches the housekeeper, and, in the second place, *the use made of it*. Within certain limits, a comparatively low but regular weekly wage is better for the children than a variable or casual wage averaging a higher amount.

Working at a large infant consultation in a slum district of Birmingham for many years, I have observed over and over again that the infant of the low-waged but regularly paid railway goods porter or shunter was a better nourished and healthier child than that of the equally but less regularly paid unskilled or casual labourer, market porter, or the like. It is the irregular wage, not the low wage, again within limits, that makes housekeeping difficult and ultimately demoralises the housewife. Not that I maintain that low wages is not bad for the child; the exact opposite is the case, as I have shown elsewhere.[6 7]

Dr. E. W. Hope, medical officer of health of Liverpool, has quite recently said:—

> "The household is the ultimate agency of distribution of economic wealth to individuals; what the wage-earner secures and the wife and children secure depends upon the efficiency of the use made of the income by the household. The home can be, in fact usually is, responsible for malnutrition and insanitary living, notwithstanding that liberal wages may be earned, from want of appreciation or knowledge of the relative values in or methods of the preparation of foods or wasteful expenditure in valueless things—for example, alcohol. Too few women of the working-class households have sufficient knowledge to enable them to meet ordinary domestic demands."[8]

It is in matters of these kinds that the family of the low-waged agricultural labourer is better off than the families of the slum-dwellers of the towns, or even than those of the comparatively high-waged, if less regularly waged, miner.

Absence of Real Poverty in Rural Areas.

But apart from the *use* of wages, is the family of the labourer dwelling in those parts of a town where excess mortality is rife really better off financially than the agricultural family? While in Birmingham I carefully inquired into the financial means of all the women attending my consultation*—nearly 2000 in all.

> I found that in the years before the war 68·5 per cent. of these women were in poverty, according to Rowntree's well-known standard, and 41 per cent. of the families had an average weekly income of 1s 7d. per person after rent was paid. Only 31·5 per cent. were not in poverty, and this although Rowntree's scale was by no means high and allowed for the "barest necessities for physical efficiency." And this without gardens, pigs, poultry, and all the little extra perquisites which help on the rural labourer so much.

Can any rural district be compared financially with such an area? In her summary of the report of the Royal Commission on the Poor-law Mrs. Bosanquet, dealing with pauperism and poverty in rural areas, writes of—

> "The almost unvarying evidence we have received to the effect that *in country districts there is little or no real poverty.*"[9]

That, for some reason or other, there is much malnutrition amongst the mothers of the working classes in large towns is certain. I have known repeated cases of nursing mothers denying themselves essential food in order that their elder children might not go lacking. Dr. Duncan, late one of the medical officers for infant welfare work in Birmingham, states in one of her reports:—

> "I have paid many unexpected visits to their homes and have found that many of the women were only having tea and bread and lard for breakfast and supper. In some cases the diet was even poorer."[10]

* The infant mortality in these families = 203; and in the ward generally for the five years ending 1910 = 205.

These were women who were being provided with dinners from philanthropic sources. Dr. Brend himself recognises this fact in his statements on p. 12 of his report when he writes:—

"As a class town mothers are less healthy and well nourished than country mothers"; ..... "general malnutrition and poor physical development are widespread among mothers in the poorer parts of the towns."

Influence of Income on Weight of Infant.

That poverty, in its restricted primary sense of low income, has a very direct influence on even the breast-fed child I am convinced. I have shown elsewhere [6 7] that from three months onwards the breast-fed child in poverty is smaller than the breast-fed child not in poverty, and I here reproduce some of the tables on which I based this conclusion.

TABLE I.—*Shows Average Weights of Infants at Various Periods. Infants Grouped According to Poverty and Irrespective of Mode of Feeding.*

Group A (1)—641 families with less than 2*s.* 6*d.* per person.
,, (2)—431 families with 2*s.* 6*d.* or over per person.
Group B—493 families over Rowntree's Poverty Line.

—	Average number in family.	Average income per person, less rent.	Average weight of infants. At 3 weeks.	13 weeks.	26 weeks.	39 weeks.	52 weeks.
			lb. oz.	lb. oz.	lb. oz	lb. oz.	lb. oz.
Group A (1)	6·13	1*s.* 7*d.*	8 1	10 9	12 1	15 11¼	17 1
,, (2)	5·1	2*s.* 11¼*d.*	8 3	10 10	13 14	15 12½	17 8
Group B ...	3·68	4*s.* 11½*d.*	7 15½	11 1½	14 5	16 11	18 11

TABLE II.—*Showing Average Weights at One Year of Infants Grouped According to Average Weekly Income of Individual Members of Family After Rent is Paid.*

	Income up to— 1*s.*	2*s.*	3*s.*	4*s.*	5*s.*	Over 5*s.*
	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
Entirely breast-fed to six months	17 13	18 0	18 13	18 7	18 12½	20 2½
Not entirely breast-fed to six months	15 11	16 6	15 14	16 6½	17 3	17 9
All cases irrespective of feeding	17 2	17 4	17 11	17 12	18 0	18 4½

TABLE III.—*Showing Percentages of Breast-fed Infants up to Standard Weight (Newman) in Groups Arranged as in Table II.*

—	Income up to— 1*s.*	2*s.*	3*s.*	4*s.*	5*s.*	Over 5*s.*
At six months	53·5	46·5	58·2	54·2	60·6	61·7
At one year	29·4	21·4	34·8	20·7	42·1	46·1

TABLE IV.—*Showing Average Weights of Breast-fed Infants, Grouped According to Financial Position of Parents.*

—	Average number in family.	Average income per person, less rent.	3 weeks	13 weeks	26 weeks	39 weeks	52 weeks
			lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
Group A— In poverty ...	5·7	2*s.* 1*d.*	8 2	11 0	13 15	16 7	18 0
Group B— Not in poverty	3·68	4*s.* 11½*d.*	8 0	11 11	15 6	17 9	19 1½

Breast-feeding and Infant Mortality.

But when, in an endeavour to find whether the mortality was affected in a like degree, I inquired into the history of the older children of the mothers attending my consultation, I came up against the apparent paradox that whereas the physique of the child in poverty was less, the mortality under 12 months was also less. This, *prima facie*, would lend support to Dr. Brend's contention that poverty is not an important factor in the problem, but, to my thinking, the explanation is something quite different. The real explanation is that breast-feeding is much more common throughout the first 12 months amongst the poorer mothers, as shown in Table V.[8]

TABLE V.—*Showing Method of Feeding Infants in Various Groups Based on Financial Position.*

—		At 3 weeks.	13 weeks.	26 weeks.	39 weeks.
		Per cent.	Per cent.	Per cent.	Per cent.
In poverty, lower grade	Breast-fed	89·74	80·2	74·4	67 0
	Breast and bottle	7 18	15·0	14 7	19·15
	Bottle	3·08	4 8	10·9	13·83
In poverty, higher grade	Breast-fed	98·2	79·8	63·8	52·77
	Breast and bottle	—	9·6	9·6	13·9
	Bottle	1·8	10·5	26·6	33·3
Not in poverty	Breast-fed	89·1	70·7	64·5	58·0
	Breast and bottle	5·4	12·0	9·7	15·0
	Bottle	5·4	17·2	25·8	27·0

The additional security from fatal disease given by breast-feeding is more than sufficient to counterbalance the lessened resistance which inevitably must accompany impaired physique. This is the true explanation of the well-known improvement in the infant death-rates during the Lancashire cotton famine and the siege of Paris; death-rates which are often erroneously put forward as proofs of the small effect which poverty has on the chances of infant survival. Unemployment and increased privations in these two cases simply meant the return of the mother to the home, a greater percentage of breast-feeding, and opportunities for more domestic care and cleanliness on the part of the otherwise unoccupied housewife; in other words, a higher standard of housewifery and mothercraft with its corresponding effect on the life of the child.

It is evident to me that Dr. Brend's attempt to eliminate poverty from the causes of excessive infant mortality by a comparison between town and rural conditions must fail, since he has signally failed to prove that there is a condition of poverty in rural areas at all comparable to that in the slum areas of the towns, which areas are mainly responsible for the high infant death-rate of those towns.

Influence of Sanitary Conditions.

And I believe that his contention that housing and sanitary conditions are as bad in the rural districts as in the towns and may therefore be eliminated is just as unsound. However badly constructed or defective a country cottage may be, however disgusting its immediate sanitary surroundings, the salient fact is that these cottages are generally widely separate or at least semi-detached, and that it is always possible during part of the 24 hours for the infants to be right away from their noxious influence. On the other hand, in the overcrowded areas of large towns and in many mining villages it is a sheer impossibility for the infant to get away from the defects of his own immediate environment or that of his neighbours.

For this reason bad housing and sanitary conditions in the town spell disaster to a far greater extent than possibly worse sanitary conditions in the rural districts. Housing conditions cannot be said to be so equalised in town and country as to be fairly eliminated, and Dr. Brend's argument under this heading is, therefore, quite untenable.

Industrial Employment of Women.

Next in order Brend considers the effects of the industrial employment of women, and here, again, his argument is singularly weak. He quotes Dr. A. Greenwood, late medical officer of health of Blackburn, as follows:—

"As a result of this investigation (into the effects of industrial employment of married women) I came to the conclusion that no case has been made out for the further restrictive legislation in the prohibition of employment of women in the cotton mills of Blackburn."

But Dr. Greenwood went on to say:—

"*Of course I do not allege that industrial employment of women is harmless. It is certain that such employment interferes with breast-feeding and with the care of infants generally.* At the same time, an expectant mother needs nourishing food, and great care should be exercised before any steps are taken to diminish this food-supply. Again, a mother who is feeding her infant naturally also requires nourishing food. *At the same time, it is very regrettable that any means of bringing sufficient food into a family should be associated with detriment to the infant.*" [11] (The italics are mine in this and following quotations.)

Dr. Brend then goes on to quote Dr. Jessie Duncan, late medical officer to infant-welfare centres in Birmingham, as follows:—

"There was scarcely any difference in the weights of children whose mothers were industrially employed and those whose mothers were not."

No one would be more surprised than Dr. Duncan to find that her valuable reports on infant welfare were being used to support a contention that the industrial employment of married women is a factor of small importance in the problem of child welfare. I was in close touch with her at the time of these investigations, and what she really did say was:—

"It will be seen that in the homes where acute poverty exists there is a marked falling off in the average weight of the baby whether the mother is industrially employed or not. ..... It seems pretty certain that industrial employment has a bad effect on the infant mortality, principally because it interferes with breast-feeding. For this reason employment in a factory is more harmful than employment at home.

But *the influence of industrial employment is quite small when compared with the influence of acute poverty.* It would seem therefore that in so far as the mothers' employment reduces the acuteness of the poverty, it may even tend to improve the infant mortality. At any rate, it is doubtful whether any further interference with the employment of married women would be at all beneficial *as long as the acute poverty remains.*"[12]

I venture to believe that if Dr. Brend had read the whole of Dr. Greenwood's and Dr. Duncan's reports he would hardly have ventured to quote from them in an attempt to eliminate both poverty and industrial employment from amongst the main causes of excessive infant mortality. And the same criticism applies to his quotation from Sir Arthur Newsholme's report:—

"The most that can be inferred from the figures is that industrial employment of married women and widowed women cannot be regarded as, in itself, the chief cause of excessive infantile mortality."

In close juxtaposition to the above words Sir Arthur Newsholme writes:—

"It would be folly to infer that the industrial occupation of mothers is not a most injurious element in our social life. It may be, however, that *under present conditions ... .. the gain in diminution of poverty overbalances the serious injury due to the absence of the mother at work during pregnancy and after the birth of her infant.*

When the statistics of large communities are considered, *the evil effect of the industrial occupation of women is concealed by the preponderant action of other maleficent influences.* These may be classified, not without overlapping, under one or other of the following heads: 1. Crowding of persons on area. 2. Defects of domestic and municipal sanitation. 3. Domestic overcrowding and allied evils of housing. 4. Ignorance and fecklessness of mothers resulting in lack of mothering."[13]

The full quotations from these writers place the rôle of married women's occupation in a very different perspective to that in which it was left by Dr. Brend's emasculated excerpts. And there, I think, we may leave it.

Question of Ignorance.

The last point I can take up in this article is the question of ignorance. It may be true, as Dr. Brend says, that ignorance is as rife amongst the rural mothers as amongst those dwelling in towns, amongst the Connaught peasantry as amongst the artisans' wives of Bradford; on this question I have no exact information and venture no opinion, but if we substitute for the word "ignorance" in its limited application the much wider term of "mothercraft," covering as it does many things besides mere ignorance, then I have no hesitation in saying that the infants of the agricultural classes are much better off than those in the towns. For "mothercraft" means carefulness, personal cleanliness, clean bedding, clean floors, proper storage and preparation of food—including milk—frugality, thrift, sobriety, early hours, and, above all, breast-feeding; and all these the country woman possesses to far greater extent than her sister in the slums.

I have already remarked on the better condition of the infants of the railway workers at my old consultation in Birmingham compared with the children of the casual and other unskilled labourers living in the same district, in the same type of house, with the same sanitary arrangements, and in an equally "polluted atmosphere." One reason was the more regular wage of the father, but another reason was, I am convinced, the fact that practically all these railway workers were freshly recruited from the agricultural districts of Gloucestershire, Cheshire, Shropshire, Herefordshire, &c.

Relative Frequency of Breast-feeding.

As to breast-feeding, Dr. Brend says:—

"There is no reason to suppose that it is not as widely adopted in towns as in the country."

This statement is open to very considerable doubt; my own impression is that rural mothers are more addicted to breast-feeding, and certainly to longer continued breast-feeding, than town mothers; but again I have no definite data and refrain from dogmatism. But it is quite certain that breast-feeding is much more common and long-sustained amongst the Irish peasantry than amongst the dwellers in our English towns. In Liverpool, which contains a large population of low-class Irish, it was found—

"That amongst the low-class English the loss of infant life is very much in excess of what it is amongst the same class of the Irish population, and the reason for this is that *the Irish mothers suckle their infants much more commonly than English mothers of the same class.* To this we ascribe the lower infant mortality from zymotic diarrhœa among the Irish population in Liverpool.[14]

Is there any reason to suppose that what is the rule amongst the Irish settlers in Liverpool is not the practice, and possibly to a greater extent, away in their original homes in the heart of Connaught and Munster?

Character of Mother and Home.

That the character of the mother and, through her, the home, has a most powerful influence on the life and physique of the infant I am sure. For some years I carefully analysed the case-papers of the children attending my Birmingham consultation with a view of testing this question. And, for the purposes of this paper, I have recently done the same with case-papers from the Baby Welcomes to which I am now attached in N.E. Derbyshire.

The Birmingham infants—1051 in number—were classified according to the nature of their homes as to cleanliness, tidiness, and sanitary condition; as to the apparent care given to their clothing and person; the personal hygiene of the mothers and other children of the family; and the intelligence and willingness to learn of the mothers—in other words, as to the grade of "mothercraft" attained. The growth of the infants under such varying conditions was carefully noted, and inquiries were also made as to the life-history of other children of the same families. Table VI. shows some of the Birmingham results:—

TABLE VI.

—	Bad homes.	Fair homes.	Good homes.
Number of mothers	76 (7%)	334 (32%)	641 (61%)
Average number in families	5·5	5	4·8
Infant mortality amongst previous children	222	183	130
Fed on breast to 9 months, previous children	79%	71%	74%
Weekly income (less rent) for each member of family	2*s.* 5½*d.*	3*s.* 5½*d.*	3*s.* 8½*d.*
Weekly rent	4*s.* 1½*d.*	4*s.* 2½*d.*	4*s.* 7½*d.*

Weights of Children Attending Consultation.

—	At 3 weeks.	26 weeks.	39 weeks.	52 weeks.
	lb. oz.	lb. oz.	lb. oz.	lb. oz.
All cases { Good homes	11 1½	14 2½	16 4½	18 10
All cases { Bad homes	10 4	13 8	15 3	17 10
Breast-fed infants only { Good homes	11 9	15 0	17 4	19 2
Breast-fed infants only { Bad homes	10 11	13 13	15 15	18 0

It will be noticed that, in regard to the children previous to the consultation infants, the infant mortality becomes strikingly greater as the homes deteriorate, and that the slightly increased percentage of breast-feeding in the bad homes could not counteract the evil influences of such homes. The class of house, as shown by the rental, was much the same, and it is within my knowledge that sanitary, housing, and *atmospheric* conditions were exactly alike. Of this same area Dr. John Robertson, medical officer of health of Birmingham, writes:—

"Many of the houses, if occupied by clean active persons, would have an entirely different appearance and would be much more healthful than they are at the present time."[15]

As to the consultation infants, the growth, whatever the nature of the feeding, is much better in the good homes. A striking confirmation of these results is afforded by my Derbyshire investigations into the growth of 250 infants attending Baby Welcomes in six mining villages, as shown by Table VII.

It may be argued that the difference in weights in Birmingham is due to the difference in income in the good and bad homes, but this cannot apply to the Derbyshire figures, for in these homes poverty at present is almost unknown.

TABLE VII.—*Growth of Derbyshire Babies, irrespective of Nature of Feeding.*

—	Average number in family.	At 13 weeks.	26 weeks.	39 weeks.	52 weeks.
		lb. oz.	lb. oz.	lb. oz.	lb. oz.
Good homes	5·8	11 10½	15 4½	17 13	20 4
Bad homes...	7·4	11 10½	14 10	16 7	18 0

The infant mortality in the good homes was *95* and in the bad homes *224*.

That the home and the mother have a most powerful influence on the child is certain, and such factors cannot possibly be excluded from any consideration of the causes of excessive infant deaths in the large urban communities. It is the existence of fecklessness, thriftlessness, carelessness, and general instability amongst the mothers, and rank bad management in the homes, just as much as ignorance in its restricted sense, that is the very *raison d'être* of the educational campaign, and I maintain that the reports of Brend and Findlay have entirely failed to prove that such conditions can be ignored, or even that they are of comparatively minor importance.

Value of Infant Consultations.

Finally, I give in Table VIII. a résumé of cases dealt with at infant consultations in Birmingham and Derbyshire, the figures being taken from 250 case-papers from each district selected at random :—

TABLE VIII.

(A) Birmingham (250 infants).

	(A)	(B)
Faulty feeding ...	34	70
Indigestion	35	61
Rickets	8	9
Atrophy	1	2
Puny at birth	16	12
Scurvy	1	1

* All prior to war.

(B) Derbyshire (250 infants).

	(A)	(B)
Triplets	1 case.	—
Put back on breast	5	9
Referred for medical treatment	11	11
Extra food given to mothers	*15	†3

† War-time cases.

The puny babies included cases weighing 3 lb. at birth, 3 lb. at 14 days, 4 lb. 12 oz. at birth (induced labour), 4½ lb. at 9 weeks (21 lb. at 12 months artificially fed), 5 lb. 2 oz. at 10 weeks, and others almost as poorly developed. At the time of writing most of them are alive and doing well.

This is, of course, only one example of what is now going on all over the kingdom. Can it be fairly claimed that such work is futile or even of comparatively small importance?

It will be noticed that there is evidence in the above figures of more poverty and malnutrition amongst the Birmingham cases and much more improper feeding and consequent digestive troubles amongst the Derbyshire children, mostly coming from a coal-mining population. This is just one proof, though perhaps a small one, of the real principle which must guide us in considering the problem of infant mortality, the folly of generalisation. Every district has its own problem to solve; in one it may be housing; in another, sanitation; in another, poverty and underfeeding; in another, overfeeding or improper feeding, carelessness, and low morale; and in yet another it may be atmospheric pollution; and in most a combination of some or all of these.

Infant mortality is a hydra-headed evil. Every district is a law unto itself. Not by wide, sweeping generalisation, but by careful *local* consideration of strictly *local* conditions, will, in time, this problem be solved.

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Stonebroom, Alfreton, Derbyshire.

EPIDEMIC ENCEPHALITIS.

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DURING the last two or three months a number of cases classifiable after their main features in the general group of acute encephalitis or polioencephalitis have occurred in different parts of the country, both in urban and rural districts. These cases, as might be expected, do not conform to a rigid type; as polioencephalitis is essentially the product of the activity of a toxic or toxi-infective agent, both general and localising symptoms may be met with, and the relative prominence of either of these may be extremely variable. At one time the occurrence of ophthalmoplegia in a considerable number of instances led to the suggestion of its identity with the ophthalmoplegia of botulism, a rare disease in this country; with the result that the public, preoccupied with food questions in these days, became somewhat alarmed, especially since the lay press has persistently, if unintentionally, dragged the red herring of botulism across the trail of epidemic polioencephalitis. The subject being very much *à l'ordre du jour* at present, it is desirable to accumulate clinical and pathological evidence of precise significance before acceptable generalisations are put forth.

This, naturally, raises the question of what cases to include in the category of encephalitis. When a comparatively rare nervous disease occurs in epidemic form and professional attention is directed to it there is a tendency for various ill-recognised and perhaps obscure conditions to be ticketed with the name as a convenient means of saving patient investigation. Apart from this, the neurologist himself may well experience difficulty in assigning to their proper place incomplete, abortive, or atypical cases; in fact, until adequate data are forthcoming it is best to adopt a non-committal attitude and to avoid restriction or limitation on the clinical side. Although, therefore, careful perusal of all the recently recorded cases in this country leaves some doubt in the mind as to the propriety of some of them being styled encephalitis, we are really not yet in a position to dogmatise.

But if we seek a common denominator for the groups of clinical syndromes as given in the communications of Harris, Hall, Batten and Still, Crookshank, Melland, Christopherson and Mawer, and others, and from the various briefer reports that have appeared in the correspondence columns of THE LANCET, we are justified in asserting that a nervous disease is just now prevalent in England in epidemic form, presenting features sufficiently indicative of encephalitis, and characterised in a large number of instances by pathological drowsiness amounting not infrequently to stupor, as has not hitherto, in the experience of neurologists, been remarked to anything like the same extent in poliomyelitis, endemic or epidemic, as it occurs in England. That a resemblance should be noted between this disease and certain aberrant forms of epidemic polio-encephalomyelitis is natural, but the weight of evidence at present suggests that it is not identical with that affection. To this point attention is directed below.

Out of thirteen cases that have been personally observed, seven have been chosen as exemplifying various types of the disease, differing either in severity or in localising symptomatology.

CASE 1.—*Acute and Fatal Case with Mainly Mesencephalic Localisation.*

A. B., aged 18, residing in Hornsey, previously healthy, was taken ill on Good Friday evening, March 29th, 1918. Walking home from a sacred concert that evening, she suddenly felt an acute pain in her head and cried out to her friend "take my bag"; at the same moment it slipped from her left hand, while her left leg simultaneously gave way and she fell to the ground. She was assisted into her home and put on a sofa, moaning continuously "Oh, my head, my head!" and vomiting slightly. Dr. H. B. Brackenbury, of Stroud Green, saw her within half an hour of the onset and found her lying on the couch with her eyes closed; on their being passively opened the pupils were seen to be contracted and the axes of the eyes widely divergent; in addition the left limbs were paralysed. There was no rise of temperature and no trace of any symptoms of meningitis. During the night the condition was unchanged; occasional vomiting occurred.

The patient was seen in consultation with Dr. Brackenbury on the afternoon of March 30th. She was in bed, with eyes closed, drowsy, and apparently indifferent to her surroundings, her right hand wandering over her forehead, while she kept muttering "my head, my head."

In spite of her seeming sleepiness and apathy, it was remarkable how quickly and pertinently she answered questions and how rational were her responses by word and act in every particular. She was unable voluntarily to open her eyes, the frontalis overacting in the effort; complete bilateral oculomotor paralysis was present except for the pupillary fibres, the pupils being contracted, not dilated, and reacting to light through a minute range. The optic discs were both normal. The left side of the face was moderately weak for volitional movements; dysarthria and dysphagia were not observed and the palate moved on phonation; the tongue was protruded slightly, but definitely, to the left.

The left arm was toneless and immobile; the left leg was rather less paralysed, but equally limp. A considerable degree of impaired sensibility to pin prick was determined over the whole of the left side and limbs, including the face. On that side, further, absence of the abdominal reflex, heightened deep reflexes, ankle clonus, and an extensor response were noted; on the right no change was found.

No rise of temperature was remarked and no signs of meningitis were found on careful testing.

On April 4th the patient was admitted to Westminster Hospital under my care. It was then noticed that the pupils were dilated and the bilateral oculomotor paralysis complete. The other nervous symptoms and signs were unaltered.

During the next day the temperature rose for the first time to 101·5°, and it continued elevated till her death four days later. On several occasions in the course of that week the cerebro-spinal fluid was examined by Dr. Braxton Hicks. Coming out under moderate pressure it had a yellowish colouration, and on examination showed a considerable leucocytosis (95 per cent. being polymorphs) Smears and all sorts of cultures, including those in anaerobic media, remained uniformly negative; no recognisable organism was at any time found. The Wassermann test in the blood was negative. A blood count gave a leucocytosis of 33,600 per c.mm., 92 per cent. being neutrophil polymorphs.

[In this case the oozing of blood into the cerebro-spinal fluid unquestionably is responsible for much of the state of that fluid, as Netter also has observed.]

During these days, further, the patient's mental state presented some features of considerable neurological interest. Her closed eyes and expressionless facies belied altogether the relative activity of her mind. A well-marked degree of Witzelsucht was observed, everything being turned into a joke or made the occasion of witticisms. Any chance word overheard by the patient—as when I remarked to my house physician that the optic discs showed some hyperæmia—was taken up and made an occasion for jocularity: "Go on; I've not got any hyperæmia."

On April 6th she became incontinent and sank gradually into a deeper lethargy. At the same time some signs of meningeal irritation made their appearance. Difficulty in swallowing supervened, and with a temperature running up to 105·8° the patient died on the twelfth day of her illness.

Necropsy.—At the necropsy the brain was seen to be greatly congested, and a trifling degree of patchy meningitis was present in the interpeduncular space and elsewhere over the vertex. After hardening, a section through the mesencephalon showed the appearance in Figs. 1 and 2. The striking feature was the diffuse hæmorrhages over the section, mainly punctate, but on the right massed into a confluent group seen in Fig. 1. These small hæmorrhages were both in grey and white matter, and were found irregularly scattered from the regio subthalamica on both sides to a mid-pontine level approximately. There was also a subpial patchy oozing at a number of spots on the cortex and in the brain stem.

On microscopical examination the hæmorrhages were discovered to be almost entirely of venous origin, and intense capillary congestion reigned everywhere throughout the brain. Vessel coats were unchanged, but peri-adventitial lymphatic sheaths were here and there moderately filled with cellular infiltration, composed of polymorphonuclear leucocytes, lymphocytes, plasma cells, and polyblasts in varying degree. This cellular infiltration was not conspicuously of small-cell type and was highly irregular in distribution. Further, in various areas of white matter small collections of half a dozen or a dozen cells, mainly lymphocytes, were to be found bearing no apparent relation to capillaries. A similar very irregular patchy infiltration of the leptomeninges was recognised in which plasma cells were present in considerable numbers. At certain places in the vicinity of the older hæmorrhagic areas numbers of typical compound granular corpuscles were seen.

Toxic changes in the cells of the oculomotor nuclei and diffused in various groups in the regio subthalamica were characterised by moderate chromatolysis, nuclear eccentricity, and occasionally by the proximity of a few parasite glial cells round degenerating nerve cells. No obvious change was found in the cells of the cortex in the parts examined (frontal, Rolandic). Actual neuronophagia was not definitely remarked.

The spinal cord was not obtained.

FIG. 1.—Section through mesencephalon of Case 1. Confluent hæmorrhages on the right, and punctate hæmorrhages scattered elsewhere in grey and white matter.

FIG. 2.—Section through lower mesencephalon of Case 1. Hæmorrhagic oozing on the right, spreading into substantia nigra; also round iter.

CASE 2.—*Mild Recovering Type.*

C. D., aged 41, residing in Wandsworth, became ill on Sunday, April 7th, 1918, with simultaneous onset of dimness of vision, diplopia, and abnormal drowsiness.

Up to that day he had been in good general health and had slept well the night before.

He tested his vision himself and found he could not focus for reading with either eye; he also established the fact that his diplopia was at first crossed, the left eye image being to the right and slightly above the other. He felt a little feverish and had occipital headache, but no sickness. He remembers he was badly constipated at the outset.

In the course of 24 hours or less both eyelids began to droop, and in another 24 hours the right eye was completely closed and the left incompletely. Neither dysarthria nor dysphagia was complained of, and the limbs were unaffected.

Apart from the ophthalmoplegia the most striking feature of the case was the patient's pathological drowsiness. For the first fortnight of his illness he slept more or less all day long, being awakened for his meals by his wife. Nothing else disturbed the prolonged dream that his life seemed to have become. He was grossly disoriented in time and unable to distinguish one meal from another, yet when awakened he made no mistake in replies to questions, was always rational in conduct except for occasional incontinence, and had neither hallucinations nor delusions.

FIG. 3.—Facies of Case 2. Double ptosis, external strabismus, mask-like face, obliteration of facial lines.

On his first visit to hospital, three weeks after the onset, he was still abnormally drowsy, and slept in the out-patient hall while waiting. On examination the optic discs were normal; there was bilateral ptosis, ophthalmoplegia externa and interna, the pupils being rather large slightly unequal, and very sluggish in reaction to light, while divergent strabismus was noted and also weakness of both upward and downward movement. The facies was peculiarly expressionless, with obliteration of the facial lines. (Fig. 3.) No other cranial nerve defect was discovered, the limbs were unaffected, and both cutaneous and deep reflexes were unchanged. The Wassermann test proved negative in the blood, while lumbar puncture revealed no particular departure from normality, chemically or microscopically.

The patient has been making an uninterrupted improvement since, the ophthalmoplegia externa having entirely disappeared, though pupillary reactions are still sluggish. All the sleepiness has gone.

CASE 3.—*Ponto-medullary (Superior and Inferior) Type.*

E. F., a girl of 20, residing in Clapham, was noticed by her mother on the morning of April 18th, 1918, to be abnormally listless and quiet. As she sat in a chair her eyelids kept drooping exactly as though she were falling asleep. When the girl opened them she complained she could not see properly with either eye to do her work. She was not sick and had no obvious fever, and she answered all questions rationally.

During the course of the week the drowsiness became extreme; the patient sat about in the garden and at once fell asleep; when remonstrated with she did not appear to be aware of this unusual feature, her only complaint being that her head felt "funny" and that her eyes were "misty." At the same time it was remarked that her voice had become peculiarly high-pitched and monotonous, a modification in its character which was very striking.

In the course of a second week her condition altered for the worse; she took to her bed, was incontinent of urine and fæces, became very confused and disoriented in time and space; when she got up in the afternoon, she made mistakes in her dressing; she lost herself going about the house, and altogether became incapable of looking after herself.

On admission to hospital her condition was briefly as follows: Bilateral ptosis; weakness of lateral deviation of eyes to left, and very imperfect upward and downward movement; pupils dilated, left larger than right; reaction to light fair; well-marked ectopia pupillæ on both sides; optic discs normal. Slight weakness of left motor fifth and definite

weakness of left side of face, upper and lower; palate paralysed on the left and poor movement on the right; curious high-pitched, monotonous voice with nasal intonation; tongue protruded straight. The deep reflexes were active and the cutaneous reflexes unaltered. Stimulation of the sole of the foot always produced an unexpectedly brisk reaction of defence.

The patient's mental condition was one of apparently deep torpor, yet in response to questions she spoke correctly, if briefly, and her actions similarly were accurate. She lay all day with eyes closed or half-closed and her general immobility suggested a condition of hibernation. A variable degree of flexibilitas cerea was noted on several occasions.

Examination of the blood and of the cerebro-spinal fluid proved negative in all respects.

Since the end of May her condition has shown definite signs of improvement.

CASE 4.—*Severe Type with Prominent Mental Symptoms.*[1]

G. H., a girl of 12 years, whose home is in Edmonton, was seized on the morning of April 25th, 1918, with violent vomiting, which recurred at intervals during the day and for the next two days. On the 28th she became mildly delirious, got up and dressed herself in her mother's clothes, and muttered mostly about her school, in which apparently she imagined she was. Sometimes she acted as though she were shopping and going errands. In the course of the next day or two she became very noisy, talking and shouting loudly, and it was almost impossible to keep her in bed. On the seventh day of the illness, for the first time, she was noted to be distinctly drowsy, while her eyelids kept falling over her eyes, and by the ninth day she was excessively drowsy and stuporose and also incontinent. She lay in bed with eyes closed; when spoken to she would answer as if just wakened out of sleep; she would sit up and take her food and immediately thereafter return to her stuporose condition.

Her clinical state on admission to hospital was as follows: Bilateral ptosis, paresis of ocular movements in all directions; normal pupillary reactions, optic discs normal. Mask-like, or "Parkinsonian," facies; limbs normal; sensibility normal, reflexes normal.

A pronounced degree of flexibilitas cerea was present in all limbs. During the examination the patient seemingly paid no attention and various manipulations of the limbs did not suffice to make her open her eyes. Only when placed on her feet did she waken, but she remained oblivious of her surroundings, standing like a statue. Loud noises made in her vicinity were ignored. When ordered to sit down on a chair she looked at the observer, turned her body slightly to the right, but did not move her legs. Ordered again, she walked a step or two like a pure automaton and sat down like a piece of soft wax. When her eyes were open she frequently yawned. Her answers to questions were quite correct, though delayed. On one occasion, eating her tea, she was in the act of putting a piece of bread in her mouth when her eyes closed and the hand was kept in the same position, the bread touching her lips, for several minutes.

In the course of a fortnight, however, the condition began gradually to clear up, and at present her condition is rapidly becoming normal.

The cerebro-spinal fluid was negative, chemically and microscopically, and in the blood the Wassermann test was also negative.

CASE 5.—*Severe and Fatal Case with Meningeal Symptoms.*

I. J., aged 47, female, from a suburb of London, was admitted to hospital on May 23rd, 1918. She gave a history of having been ill for the past 11 days with severe headache and, latterly, equally severe attacks of vomiting.

Careful examination failed to show any definite localising signs in the nervous system. The vomiting was suggestively cerebral, but vertigo was not complained of, and the optic discs were normal. No local abdominal condition was discovered. The temperature rose to 100° on the evening of admission.

Two days later her condition altered for the worse. She became delirious and violent, frequently trying to get out of bed, shouting and muttering alternately, and was with difficulty restrained. The temperature rose to 102°. Still no definite organic nervous system signs were to be found. By lumbar puncture a clear fluid was withdrawn, which gave a mixed pleocytosis of 245 per c.mm., lymphocytes being in the majority, but numbers of polymorphs were also seen. No organisms were detected in numerous smears examined, and cultures on various media remained negative.

On the sixth day of her stay in hospital it was noted that the pupils were large and their reaction to light sluggish. The facies became curiously expressionless, the patient staring in front of her and paying little or no attention to her surroundings. She appeared indifferent to questions addressed to her. The reflexes were unaltered; slight stiffness of the neck was remarked for the first time, and a doubtful Kernig sign was present, on the left only.

Thereafter she gradually became more and more apathetic, lethargic, drowsy. The fixity of expression remained, and ocular movements were found to be imperfectly sustained in all directions, without any actual paralysis being detected. Cheyne Stokes respiration supervened, and the patient gradually sank, dying on the twentieth day of her illness, June 1st.

At the necropsy the brain was found to be congested generally, and a minimal degree of meningitis was present in the interpeduncular space, but nowhere else on naked-eye investigation. Macroscopical sections through the brain showed an irregular scattering of numerous minute punctate hæmorrhagic spots in grey and white matter, in cerebrum, cerebellum, pons, and medulla, and not more obvious in the mesencephalon than elsewhere. Over several small areas, several millimetres across, situated irregularly in the frontal lobes, subpial hæmorrhagic oozing was conspicuous. Nothing else of a pathological nature was found. Microscopical examination is not yet completed. There was no trace of any tubercles on the meninges or cortex or elsewhere in the central nervous system. (The spinal cord was not obtained.)

CASE 6.—*Cortical Type: Lethargy, Catatonia, Mental Symptoms.*

K. L., female, aged 31, whose home is in Pimlico, previously in normal health, complained on Whit-Monday, May 20th, 1918, of being out of sorts and of headache and fatigue. She went to business the following day, but had to return home. In 48 hours the patient became delirious, imagined a big air-raid was on, thought her room was filled with people taking shelter, spoke to them, heard guns going off and bombs exploding; in short, exhibited a whole series of visual and auditory hallucinations. On May 25th the patient occasionally became drowsy, and a slight rise of temperature occurred. At this stage she became peculiarly indifferent to her surroundings and retired into a little cosmos of her dreams, not speaking to her friends around her, frequently trying to get out of bed, and muttering about air-raids. Her sphincter control was not impaired, and she took her food fairly well.

A day or two later her mental condition rather changed, in the sense that she became more conscious of her entourage, while the hallucinations persisted, and she responded to suggestions quite after the style of the confabulation of Korsakow's psychosis. Thus she lay in bed and began to describe lovely pictures she saw around her, of old china, tapestry, old lace, oil paintings, at once picking up any suggestion from her sisters and enlarging and improving on it. She remarked that she "was having a picture show all to herself." On another occasion she felt she was going to die, and said she was ready to go to heaven. Suddenly stripping herself naked, she got up in bed and said she was going to be married to "a Prince of the Church" and had to meet him in the air. Throughout this stage her speech was quite rational for the ideas expressed; her answers to questions were apposite and in no way confused; there was no evidence of Ideenflucht, of verbigeration, perseveration, or of answering at random (Ganser syndrome).

From this point, however, the patient definitely became more and more drowsy and lethargic, and lay more or less motionless in bed, with vacant expression, or more commonly with eyes closed. It was observed that she often maintained a curious fixity of attitude for indefinite periods.

On admission to hospital the patient's clinical condition was one, to all appearance, of profound stupor. Left to herself, she lay in bed with eyes closed, oblivious of her surroundings and indifferent to the life of the ward. When aroused for her meals she took her food well enough, and in response to questions answered correctly, if slowly. No confusion of thought was discoverable at such a time, but at other times she showed restlessness and automatism, getting out of bed and wandering in a confused fashion. An advanced degree of catatonia was present in the arms and legs. When she was being photographed she obeyed requests with accuracy, yet each moment she would sink back into complete indifference, her head slowly rolling into the position assumed by gravity, while her eyes closed again, and with a sigh she would fall apparently fast asleep. (Figs. 4 and 5.) Her control over her sphincters was not maintained.

Examination of the cranial nerves showed nothing beyond inability to sustain any movement voluntarily, e.g., ocular movements, but no paralysis in the strict sense was noted. The pupils reacted to light and the optic discs were normal. The reflexes, cutaneous and deep, were similarly normal. The cerebro-spinal fluid showed nothing of

FIG. 4.—Facies of Case 6. Double "ptosis," as in sleep; expressionless face; mouth half open, as from loss of tone in the orbicularis oris.

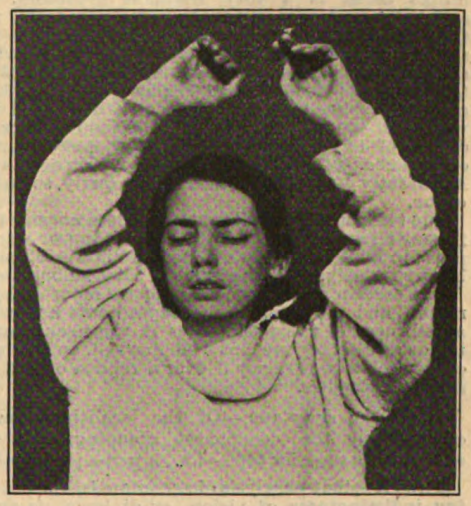

FIG. 5.—Catatonia in Case 6.

[1] This case was under the care of my senior colleague, Dr. James Taylor, at Queen-square, who very kindly allowed me to see and examine it and to cite it here, partly from notes taken by Dr. L. R. Yealland.

pathological importance, chemically or microscopically; the Wassermann test was negative and cultures were without result.

In the course of a fortnight the patient has been making distinct if slow improvement.

CASE 7.—*Regio Subthalamica Localisation; Paralysis Agitans Type.*

M. N., male, aged 46, took ill about May 24th, 1918, with feverishness and malaise, and general drowsiness. During the first week he frequently fell asleep over his meals, and at other times during the day. His movements became slow, and tremor developed in both arms and legs, especially on the right side. Articulation became tremulous. His face developed a typical fixity of expression like the Parkinsonian mask. After some two to three weeks the tremor entirely disappeared, and the patient made a notable improvement in all his symptoms. On examination at the end of five weeks the only signs are a mask-like facies, which is not so fixed as it was, and a certain slowness of movement. There are no ocular symptoms. The deep reflexes are exaggerated, with ankle clonus on the right, and a double flexor response. It has not been possible to examine the cerebro-spinal fluid.

Without here attempting a rigid schematisation, I am of the opinion that the following conclusions may be tentatively put forward.

1. *Clinical.*

Epidemic encephalitis is an acute nervous disease characterised by both general and localising symptoms; in a minority of cases the latter are not prominent.

The sexes are affected indifferently and there is no special age-incidence, infants, children, and adults alike being affected.

Its onset is relatively acute, the condition being usually established within a few days; occasionally it opens in a fulminant fashion.

General symptoms.—Of the general symptoms, apathy, lethargy, drowsiness, pathological sleepiness, stupor, absence of initiative or spontaneity is in one or other form prominent from the outset and throughout at least the earlier stages of the disease; sometimes this lethargy appears later during the illness; occasionally it is not a noticeable feature.

A degree of restlessness, of restless delirium, with a reduction of mental activity to the level of automatism, is common enough; in some of the cases I have seen the automatic reproduction of familiar movements in a purposeless fashion has been most pronounced; occasionally periods of restlessness, which it would be an exaggeration to regard as amounting to subacute mania, alternate with profound indifference or hebetude. Catatonia or flexibilitas cerea is a very frequent symptom. Delusions and hallucinations, as in any toxic psychosis, may occur. One of my cases showed a typical condition of Witzelsucht. It is a remarkable fact, however, on which nearly all observers agree, that even at the height of the illness the patient's response to requests is in act and word surprisingly accurate and rational, a feature of the disease worthy of special attention. A frequent indication of the degree of temporary impairment of mental activity is incontinence. Headache, giddiness, vomiting may be noted. Apparently epileptiform attacks, properly so called, do not occur.

The temperature is often more or less normal throughout; it may rise moderately at the beginning or during the illness; in fatal cases it has sometimes increased progressively but irregularly, after the mode of tuberculous meningitis.

In a certain percentage of cases (as reported by Economo, myself, and others) meningeal symptoms are present, such as stiffness of the neck, pains in the neck, Kernig's sign; but as a rule they are not well marked, and in any case the clinical picture is rarely if ever a replica of that of a typical acute meningitis.

Localising symptoms.—Of the localising symptoms, unquestionably the commonest grouping is of the polioencephalitis superior type—i.e., a peri-aqueductal grouping.

Thus it is that paralysis of accommodation and corresponding indistinctness of vision, or diplopia, is an extremely frequent and early symptom, and any degree of ophthalmoplegia externa and interna, with ptosis, symmetrical or asymmetrical, complete or incomplete, may be found. The pupils may be contracted, or dilated and fixed, or normal. I have observed well-marked ectopia pupillæ similar to what I have described in other mesencephalic lesions. It should be noted that the patient may have the appearance, from mere drowsiness, of bilateral ptosis where there is no paralysis. Further, inability to sustain ocular movements may be the only defect.

Involvement of lower cranial nerves to a variable extent is the next common type of nuclear invasion. The facies is often expressionless, with obliteration of the facial lines from a bilateral paresis. Palate, tongue, larynx, pharynx, may have their musculatures implicated in greater or less degree, and this implication may be essentially transient.

The predilection for motor as opposed to sensory cranial nerve nuclei points to specificity of action of the postulated virus of the disease, and is of a significance to be subsequently alluded to.

More rarely are the limbs involved; where this occurs the indications point to cortical, subcortical, mesencephalic, or pontine invasion of the corticospinal paths and not to cord invasion; this is shown by the absence of wasting and by the conservation of the tendon reflexes, as well as by the occasional occurrence of an extensor plantar response.

Sensory symptoms are insignificant or absent, or, if present, are as it were accidental (as in Case 1 above).

The diversity of localisation of the pathological process precludes the likelihood of any constant or characteristic change in cutaneous or deep reflexes.

As for the cerebro-spinal fluid, almost all the recorded cases and my own have been carefully investigated from this standpoint.

No organism has been detected by any observer, and cultures from the fluid have remained uniformly negative. It is practically always normal chemically and microscopically; pleocytosis is rare and moderate in degree, not specially lymphocytic in type. The yellowish colouration of the fluid in my Case 1, and its pleocytosis, are exceptional, and partly attributable to the hæmorrhagic condition of the leptomeninges; although the patient became steadily worse and died on the twelfth day, the fluid improved and was more nearly normal at the fifth puncture than at the first. It was absolutely sterile.

In cases where meningeal symptoms occur there may be a definite pleocytosis; it was so in my Case 5 and in Economo's Case 11, where meningeal symptoms were prominent and where the fluid was slightly yellowish in colour, with a leucocytosis of 100. In Case 5 the fluid was not predominantly lymphocytic or polymorphonuclear, but mixed; Economo does not specify the type of cell in his case.

It is distinctly curious that the fluid shows, in average cases, so little departure from the normal, in view of the perivascular cellular infiltration usually found on microscopical examination of the nervous system, including the meninges.

The duration of the disease in typical cases is very variable: it may end fatally in a few days or it may be prolonged for weeks and months. Whether there is a complete restitutio ad integrum in the recovered cases is not quite certain; thus the patient (Case 2) whose illness began on April 7th has been back to work for some weeks, but his pupils are still sluggish in their reaction to light, and he has had one or two turns of diplopia for a few minutes at a time.

Netter also has noted that in recovered cases defect of accommodation may persist "for a long time." He states that a change for the better often sets in rather abruptly, and he has seen a cure result in a case which at one time was so severe as to be associated with the appearance of bedsores on the sacrum and elsewhere.

Economo's figures for the ratio of mortality are 6 cases out of 11; Netter's, 7 out of 15; my own, 2 cases out of 13.

2. *Pathological.*

From a consideration of the findings in the two fatal cases (here reported but briefly for reasons of space), which bear a close resemblance to the details given by Economo and by Netter, it may be stated that, speaking generally, little is manifest macroscopically on the cranial surfaces beyond meningeal congestion, and perhaps a quite minor amount of patchy localised meningitis: there may also be small limited areas of subpial hæmorrhagic effusion, hæmorrhagic foci of which the largest in one of my cases was about the size of a threepenny-piece.

On macroscopical section, both grey and white matter is the seat of minute hæmorrhagic areas scattered irregularly ("piqueté hémorragique" in Netter's phrase), and occasionally massed in a confluent fashion. These, however, may scarcely be individually visible to the naked eye, the appearance being rather one of general congestion or hyperæmia. The pathological condition is essentially diffuse and variable in distribution; from the comparatively small number of necropsy reports published little evidence is forthcoming of any specific, in the sense of invariable, incidence, though no doubt the regio subthalamica, neighbourhood of the third ventricle and iter, and mesencephalon generally, are as often affected as any other part, and motor cranial nerve nuclei are involved while sensory nuclei escape.

Microscopically, the meninges are always affected in greater or less extent, a patchy diffuse thickening of the leptomeninges, with scattered cellular exudates, or with vascular congestion and perivascular cellular infiltrates, being a feature of the condition. The cells are by no means only or even mainly lymphocytic; polymorphs and plasma cells may be found. As for the cerebral substance itself, the grey matter of cortex, basal ganglia, mesencephalon, pons, and cerebellum is the seat of obvious perivascular cellular

infiltration, especially round the veins, of the same mixed type as already described. It is of varying extent and amount, while the blood vessel walls are unchanged; in places it consists of only a few cells, less than one complete layer round; many vessels may appear normal in this respect. The hæmorrhagic foci present under the microscope no special features. Minute collections of mixed cells may be seen scattered through the grey matter apparently independent of vessels.

In addition to these interstitial changes parenchymatous alterations in the shape of nerve-cell degeneration, acute or subacute, and actual neuronophagia, just as in polio-myelitis, may be seen here and there. Parasite glial cells or nuclei are occasionally found round nerve cells in a condition of early change. In one of my cases this was noticeable in the cells of the oculomotor nuclei.

Economo has found evidence of regenerative processes in his cases.

Compound granular corpuscles were discovered in patches round the older hæmorrhagic foci in my own preparations, and they have been described by Economo in one of his.

White matter and nerve fibres generally are unaffected directly, but, of course, may show secondary alterations.

Minor changes of the above general nature may be found in the cord.

3. *Nature of the Disease.*

A. Clinical and pathological evidence points clearly in the direction of an encephalitis, amounting usually to a hæmorrhagic encephalitis, which by analogy one has every reason to presume to be toxic or toxi-infective in origin. In all the reported cases the cerebro-spinal fluid has been bacteriologically negative, while both ordinary and anaerobic cultures have proved sterile. Further, no recognisable organism has been detected in the tissues on microscopical examination. Attention, however, must be for a moment directed to one of the Viennese cases.

Economo's Case 10 was that of a girl of 14, whose illness lasted about a month, with fairly characteristic symptoms, and who died on the day of her admission to the clinic. There is no record of a blood or fluid examination. Economo states specifically that the pathological appearances were those of polioencephalitis but not of hæmorrhagic type. With due aseptic precautions an emulsion of the brain and cord was injected subdurally into a *Macacus rhesus* by von Wiesner. The animal died in 46 hours, having presented the symptoms of profound stupor for at least 24 hours previously, and with a paresis of the right hind limb. On examination its brain showed all the characteristic appearances of acute hæmorrhagic encephalitis, and from it von Wiesner recovered a Gram-positive diplo-streptococcus which he was able to cultivate and from a bouillon culture of which injection into other apes produced somnolence and muscle weakness, while peritoneal injection in guinea-pigs caused death from internal hæmorrhage. It is important to note that a filtrate from the original brain-cord emulsion of the patient (Berkefeld filter) injected into a macaque monkey produced no symptoms. Von Wiesner argues, therefore, that the cause of the disease is this actual bacterial virus, this diplo-streptococcus found in the leptomeninges and in cellular infiltrates in the cortex of the first experimental monkey.

Obviously such results are of much interest and importance; equally obviously they call for confirmation. In this connexion one or two points suggest themselves by way of criticism.

(1) It is curious there is no mention of this organism in the tissues of the patient from whom the emulsion was made.

(2) It is conceivable that the brain-cord emulsion contained some quite other specific virus and that the diplo-streptococcus was accidental. That the emulsion-filtrate proved negative does not invalidate this criticism altogether, for only one animal was tried with it, which is scarcely adequate in so important a question.

(3) Von Wiesner states that *from all the human cases* whose material he was able to avail himself of (he does not say how many) he succeeded in growing this organism. Apart from the fact that other investigators have not had a similarly successful experience, he nowhere states that the organism was found in the microscopical preparations of the cases concerned, nor does Economo mention his finding such an organism. We are apparently faced with the problem of an organism as definite as a diplo-streptococcus not recognisable microscopically in nervous tissues but, nevertheless, culturable from them. In view of the unsatisfactory nature of von Wiesner's conclusions, the question whether this diplo-streptococcus is the specific cause of the disease must be left open; the negative bacteriological findings in the tissues in my two fatal cases militate against the acceptance of the somewhat summary statement in von Wiesner's communication.

B. It has been maintained that the disease is but an aberrant or unusual type of epidemic poliomyelitis, or polio-encephalo-myelitis. Needless to say, there are obvious resemblances between the two classes of case—this particular encephalitis, and the familiar polio-encephalo-myelitis—which scarcely require pointing out. Anyone familiar with the history of the various epidemics of poliomyelitis within the last decade, say, is conversant with the occurrence of pure polioencephalitis cases resembling in some respects those occurring at present. But apart from epidemics polio-encephalitis of the common variety occurs sporadically all the year round, and cases belonging to that category are very familiar to the neurologist, who in out-patient departments is frequently meeting with instances of infantile cerebral hemiplegia, say, from recent polioencephalitis. Take, as a typical example, the following case:—

O. P., aged 2½ years, female, took suddenly ill on April 10th, 1918, with malaise and vomiting and within a few hours had a series of convulsions of epileptiform nature, with unconsciousness, cyanosis, &c. When these came to an end, about 24 hours after the onset, the child was found to be paralysed down the right side and was completely aphasic: before she had been prattling normally. On examination the characteristics of right hemiplegia were found.

A case such as this, in my opinion, would be taken by any neurologist as the common type of sporadic polioencephalitis, and a brief consideration will show in what respects the type it represents differs from the variety of disease that is the subject of this communication.

(1) The lethargic element, so strikingly manifest in the present epidemic, is largely wanting in the ordinary cases of polio-encephalo-myelitis met with hitherto in England.

(2) Lethargic encephalitis appears to occur in winter and spring; poliomyelitis in epidemic form is essentially a disease of summer and autumn.

(3) The former, further, is certainly showing a greater percentage of incidence among adults than has ever occurred in epidemic poliomyelitis.

(4) The insignificant and minor changes in the spinal fluid in the condition, speaking generally, are not consistent with what is constantly found in acute cases of ordinary polio-myelitis.

(5) Meningeal symptoms occur in a much larger proportion of cases in poliomyelitis than in the present epidemic encephalitis.

(6) In not a few of the present cases there is much less, and a more patchily distributed, perivascular cellular infiltration than in the average case of poliomyelitis.

(7) As Professor F. W. Andrewes remarks (in an introduction to the paper by Christopherson and Mawer) it is certainly curious that if the present epidemic is merely one of aberrant polio-encephalo-myelitis only aberrant cases seem to be occurring. The case just quoted, of typical polioencephalitis, does not go contrary to this statement, for such instances are not appearing in an increased degree just now, as far as my experience goes.

(8) The hæmorrhagic element is proportionately considerably more prominent, pathologically speaking, than in epidemics of polio-encephalo-myelitis of the usual type.

(9) As far as I am aware, no family cases have occurred in the present epidemic; such are far from infrequent in ordinary poliomyelitis, epidemic or otherwise.

In brief, the evidence now available suggests that in the present epidemic we are dealing with a form of infection akin, no doubt, to the virus of poliomyelitis, but not identical with it—a form of infection which has a special tendency to involve the oculomotor nuclei, and the dissemination of which through the brain is associated with the special clinical symptom of lethargy or stupor.

C. An epidemic of cases apparently in every way analogous to those under consideration occurred in the beginning of 1917 in Vienna, and a painstaking description of them will be found in the papers of Economo, already referred to above. He coined the name encephalitis lethargica for the condition, being duly impressed, as we in England have been, by the prominence of lethargy in the clinical picture. Netter has recorded the occurrence of a similar epidemic in Paris and its environs this spring, and he adopts the name of encéphalite léthargique épidémique. The objection may be advanced that it is illegitimate to apply a clinical adjective to a pathological substantive; not the encephalitis, but the patient suffering from it, is lethargic. For that reason it appears preferable to omit the qualifying epithet, unless one follows the grammatically more correct suggestion of Batten and Still, and speaks of epidemic stupor. As a pathological terminology is always preferable to a clinical, epidemic encephalitis seems to me to be the best description at

present justifiable, at least until we are more certain of the nature of the condition.

For the student of the subject should not forget that in the first place sleepiness, lethargy, or stupor may well accompany any form of encephalitis, and, in the second, it is not clear we are dealing with an entirely new affection.

He may be referred, for instance, to the excellent monograph of Chartier (1907) on acute non-suppurative encephalitis. In it will be found collected a series of cases of acute encephalitis, mainly from the service of M. Comby of the Enfants-Malades in Paris, more than one of which—for example, his Case 3—may well be regarded as belonging to the same category as this "new" disease. In this case, a child of four months, torpor and ophthalmoplegia were prominent symptoms.

Again, in the acute encephalitis of influenza, and in numerous toxi-infective conditions, it has long been recognised that symptoms may occur closely analogous to those under review.

Economo refers to the mysterious "nona," an epidemic which took place in Italy and Hungary in the spring of 1890. A full and informative review of that question was published by Longuet in 1892. Reference to it also will demonstrate to the student that there is nothing novel in the appearance of stupor, lethargy, or even catatonia, in the course of encephalitis. The contention, now probably all but forgotten, was then advanced, apropos of nona, that the cause of the pathological sleep frequently noted in that affection was the incidence of the morbid process on the grey matter of the iter and anterior part of the floor of the fourth ventricle. Sleep, physiological and pathological, was thus "localised" in these important structures. There is more support for this interesting contention than may appear at first sight, but I cannot go further into the matter in this place.

Reference may also be here made to a valuable paper by Breinl describing a "mysterious disease" which occurred in Queensland and New South Wales in 1917 and which had an alarming mortality. This paper will repay careful perusal, for it gives an idea of the extent to which the disease spread in these States and adduces evidence showing that the affection closely resembled the disease with which we are concerned. In particular the pathological appearances, the trifling changes in the spinal fluid, and some of the clinical data suggest an intimate relationship to epidemic encephalitis. Unfortunately, I have been able to procure only the first instalment of Breinl's paper, and cannot therefore quote his conclusions.

Conclusion.

In conclusion, what appears to be new is the occurrence in epidemic form of cases of encephalitis not to all appearance due to the action of a known infective or toxi-infective agent, but presenting clinical symptoms any or all of which have been noted in various kinds of encephalitis with which the neurologist has long been conversant. Unquestionably there is now afforded an excellent opportunity, thanks to modern methods of investigation, of solving the problem of the affection, and thereby incidentally of clearing up much that has been obscure in our knowledge of encephalitis in general.

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BRITISH ORTHOPÆDIC ASSOCIATION.—The annual meeting of the British Orthopædic Association will be held on Friday, July 26th, and Saturday, July 27th, at the rooms of the Medical Society of London, 11, Chandos-street, W. On the morning of the first day the President of the association, Mr. E. Muirhead Little, will deliver an address; this will be followed by a discussion on the Indications, Technique, and End Results of Tendon Transplantation in Gunshot Injuries of Nerves, to be opened by Captain T. P. McMurray, R.A.M.C. On the second day Mr. D. M. Aitken will open a discussion on the Abbott Treatment of Scoliosis. The programme on both days will include short communications from other members of the association.

THE OPERATIVE TREATMENT OF TRIGEMINAL NEURALGIA.*

BY J. HUTCHINSON, F.R.C.S. ENG.,
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FOR epileptiform neuralgia involving the superior and inferior maxillary divisions of the fifth nerve the only treatment which can afford a lasting cure consists in operating on the Gasserian ganglion.

From the time of the first performance of excision of the ganglion in April, 1890, by Mr. William Rose, it was considered necessary to divide or pull away the roots above the ganglion, thus destroying the ophthalmic division and rendering the cornea permanently insensitive. In many of the cases ulceration of the cornea subsequently damaged vision; in some the eye had to be removed. Moreover, if the ophthalmic division be excised the cavernous sinus is almost certain to be opened up, and the risk and difficulty of the operation thereby increased.

These considerations, together with the fact that in only 25 per cent. of the cases is the ophthalmic division materially involved in the neuralgia, led me in 1898 to urge that it should always be spared, the greater part of the ganglion being removed, together with the second and third divisions, by a line of section shown in Fig. 1. This modified operation I have since carried out in over 60 cases, in all of which the ganglion has been approached by the temporal route.

The Modified Operation.

The chief points may be thus summarised:—

1. The patient throughout the operation is seated in a dental chair.
2. The flap, with its base at the zygoma, is of ovoid form, small in size, and kept wholly within the hairy scalp. The scar left is inconspicuous and completely hidden later by the hair, as seen in Fig. 2.
3. After carefully trephining the squamous part of the temporal bone the dura is detached and the opening enlarged, especially downwards, until it allows of the introduction of a broad flexible metal retractor. It is quite unnecessary to turn down a large bone flap (a method apt to leave considerable disfigurement).
4. The operator works inwards towards the foramen ovale, which lies opposite to the pre-glenoid tubercle, and the foramen spinosum, which lies about 3 mm. behind and a little external to the exit of the inferior maxillary nerve. The middle meningeal artery is now tied and divided between two ligatures (fine silk).
5. The dura is further raised until the ganglion with its two main branches, superior and inferior maxillary, are exposed. The latter branch is cleared as far forwards as the foramen rotundum. The ganglion is removed by three lines of section made with a fine, blunt-pointed, sickle-shaped knife. One cut divides the lower maxillary division at the foramen ovale, another the superior maxillary at the foramen rotundum, the third passes horizontally below the ophthalmic division, which is thus spared. This is, of course, the most difficult and critical part of the operation; it is essential that oozing of blood should not hinder the surgeon from seeing exactly what to cut.
6. Two small drainage-tubes are left in the wound; the flap is sutured in place without any replacement of bone.

A good head-lamp is essential during the operation, together with great care in the use of the retractor so as to spare the brain from injurious pressure, and endless patience in securing a bloodless field of vision. Unless the ganglion and its main branches are clearly exposed, it is, of course, impossible to perform the section aright.

Hæmorrhage, chiefly from minute vessels coming through the foramina, is the chief difficulty, and the operation takes from 50 minutes to 1½ hours to perform. I have not found adrenalin of any use in checking the bleeding; in a few cases preliminary ligature of the external carotid artery has perhaps been useful, but in the great majority it has been dispensed with. Its performance adds to the probable length of the operation.

Results of the Operation: Mortality.

Considering the advanced age of most of the patients (many have been from 50 to 60, and one was 72 years old) and their exhausted condition from the effects of years of agonising pain; taking also into account their malnutrition from inability to masticate their food, &c., and often their edentulous state from fruitless removal of teeth, the results of the operation have been most satisfactory.

First, as to the mortality of the operation, which by many is still held to be formidable. Until the last month, out of over 60 cases I operated upon not one proved fatal.

My solitary death was in an old man, the subject of both ataxia and true epileptiform neuralgia. He was so feeble that I tried to avoid operation by resorting to alcohol injections—which made him worse—and ultimately the Gasserian ganglion was excised. His dura mater was the thinnest I have ever seen and it gave way in detaching it from the skull. Probably owing to this there was undue pressure on the brain during the operation. He died of sudden cardiac syncope an hour after its completion.

There were a few others in which anxiety has been felt, in two cases recurrent hæmorrhage necessitated opening up the wound within 24 hours, but this is the only patient I have lost out of some 80 operations either on the Gasserian ganglion or its main branches.

Professor Krause, who did the complete operation (including the ophthalmic division) 36 times, had 8 deaths—i.e., 22 per cent.

Sir Victor Horsley had 6 deaths out of 120—i.e., 5 per cent. I understand that Professor Harvey Cushing's mortality has been very low, and although the earlier records collected from the work of a

* Part of a lecture delivered at the Royal College of Surgeons of England.

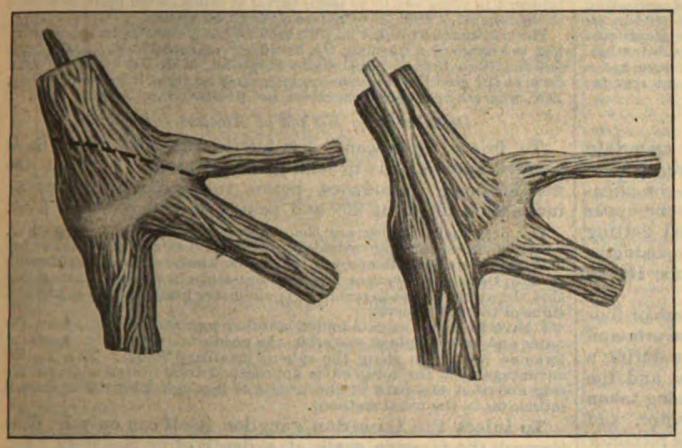

FIG. 1.—The Gasserian ganglion with its roots and three branches seen from both aspects. The dotted line indicates the section which is made to spare the ophthalmic division. The removal of the ganglion is completed by division of the superior maxillary trunk at the foramen rotundum and of the inferior maxillary at the foramen ovale.

great number of operators gave a death-rate of 20 per cent. or more, it may safely be affirmed that the risk of the modified operation I have described is very small indeed—about 1 or 2 per cent.

Permanence of Cure.

Experience with peripheral neurectomy and alcohol injections has usually obtained respite from the neuralgia for a varying period of months, but return is practically invariable.

Moreover, spontaneous cure of true epileptiform neuralgia is unknown; it goes on with increasing severity until the patient's death. Some operators have been content to divide the second and third branches just beyond the ganglion; this is not sufficient, as speedy union is certain to occur. I operated in one such case after the performance of this extra-ganglionic section by another surgeon owing to the return of sensation and of intense neuralgia *within a year*.

But after removal of the ganglion, so far as my experience yet goes, there is no reproduction of the nerves; the cases which have thrown doubt on this have proved to be incomplete removal of the superior maxillary branch at the first operation. I have followed up many cases for over ten years, some for nearly 20, and the neuralgia has not returned. This statement is true of the great majority, but I have met with a few exceptions, difficult to explain. One or two of them will be referred to later.

When I first brought forward the method of operating so as to spare the ophthalmic trunk I was assured that the neuralgia would inevitably return in this, but fortunately the lapse of years has not borne this out. In only one of my patients has this recurrence taken place, some ten years after the operation. In her I resected the supra-orbital nerve with complete success so far (three years).

Abbe in 1903 brought forward his method of dividing the superior and inferior maxillary trunk (without removing the ganglion) and urged, as I had done five years before, that the ophthalmic division should be left alone.

He plugged the foramina rotundum and ovale with rubber or other suitable material just beyond the points of section. In this way Abbe maintains that union of the two divided trunks and recurrence of the neuralgia is prevented. I am not sure that this method is so thorough as mine (Abbe admits a fair percentage of recurrence, partial or complete), nor do I think it is a less severe form of operation. The main steps of exposing the ganglion, &c., are precisely the same in the two procedures, and the time occupied in plugging the foramina cannot be less than in excising the greater part of the ganglion.

But as regards the main point, that of sparing the ophthalmic division and thus of avoiding all future danger to the patient's eye, we agree completely, and I believe the present position is that for all cases of undoubted epileptiform neuralgia either Abbe's method of operating or my own is the safest and best to follow.

Frazier and Spiller have proposed to divide the sensory root of the ganglion alone before it pierces the dura mater, and it is possible that this has been successfully carried out. But this method seems to me too hazardous and uncertain ever to come into favour, moreover it has the disadvantage of destroying the ophthalmic division.

Deformity or Other Untoward Result of the Method.

With the opening in the skull limited to the squamous portion, and the skin incision concealed by the hairy scalp, there is no subsequent deformity to be feared.

This will be seen by reference to Fig. 2, showing the two sides of the face from a patient operated on ten years previously. It is difficult to detect on which side the operation was performed; slight flattening of the temporal region from atrophy of the paralysed temporal muscle alone indicates it.

Of course the cheek, inside and out, together with the gums, palate, and tongue, on the operated side are left insensitive.

It is surprising how little inconvenience is produced, and the patient is able to masticate food far better than before the operation.

Before operation every meal was a torture. And if only medical men would abstain from removing healthy teeth in these cases of epileptiform neuralgia before they come to operation the patients would be still more comfortable after it. This pernicious and useless removal of sound teeth is rarely abstained from, no doubt from the widespread belief (advocated by the late Sir Victor Horsley and others) that epileptiform neuralgia is really a spreading neuritis of dental origin. Space does not allow me to adduce here all the arguments against this theory, for which there is no proved foundation. I will only mention two.

The fifth nerve is a mixed motor and sensory nerve; true neuritis would involve loss of sensation and muscular power. On the other hand, if epileptiform neuralgia lasts 20 years we never see it produce

FIG. 2.—The two sides of the face ten years after operation on the Gasserian ganglion by the author's method. The deformity left is so slight that the reader may be left to determine which side was operated upon.

either (apart from operative interference). Again, if a spreading neuritis travelled from one division of the fifth to another the inflammation must affect the Gasserian ganglion; in epileptiform neuralgia the ganglion is quite normal to microscopic examination. The latter fact has been proved over and over again. I have had a number of ganglia examined from my cases, always without results; there is no trace of neuritis.

Other Complications.

After the operation facial paresis or paralysis of uncertain duration has occurred in a few cases, *on the side operated on*. I have come to the conclusion that this infrequent complication is due to detachment of the dura mater from the upper surface of the petrous bone, and hence to blood getting through the small openings leading to the aqueductus Fallopii. With due care one should avoid this, if my explanation be correct.

A more important complication, met with in three or four of the 60 cases, has been weakness of the opposite arm and leg apparently from retractor-pressure on the brain during a long operation. Recovery from this is very slow and the risk of its occurrence points to the greatest care being taken throughout the operation in the use of the retractor, and frequent relaxation of all pressure by depressing the retractor against the bone or removing it for a time.

Satisfactory Results of the Operation.

Finally, it should be admitted, and will be by all who have extensive experience of operations for this dire disease, that sometimes the result is disappointing, for the following reason. The patient owing to years of suffering and disappointment (perhaps from repeated failure of alcohol injections or neurectomies) has become a confirmed neurotic. Careful selection of cases is necessary before deciding to perform one of the most difficult and protracted operations in the whole range of surgery. But when every possible drawback has been reviewed, when every argument of the opponents of operation has been heard, the conclusion remains that it has given a long series of permanent cures for one of the most inveterate and terrible diseases which afflict humanity.

Nearly a thousand years ago the Arabian physician Avicenna described it as *tortura oris*—facial agony. Until Wm. Rose's pioneer operation 30 years ago it remained absolutely incurable, and even Rose gave up his method after a time. I am certain that the modified operation, which spares the ophthalmic division, constitutes a real advance. It is attended with little danger to life and is free from subsequent risk to the eye.

I am fully aware that there is a prevalent belief that permanent cure after any form of operation is unknown, that sooner or later recurrence will show itself. Even a well-known surgeon whose name has been attached to a particular method, Professor Sébileau, declared a year or two ago that he had given up operating on this form of neuralgia as his results had been so unsatisfactory, especially as regards recurrence.

The use of the term radical cure to any operation—whether for hernia or neuralgia, &c.—may be objected to by some. But if complete relief from attacks of agonising pain—relief felt the day after operation and continuing for 10 or 20 years without the smallest recurrence—does not constitute a permanent cure I know no other words by which to describe it.

With the complete freedom from pain and the ability to properly masticate solid food the patient gains in weight and vigour to a remarkable degree. In short, while the operation is one of the most difficult in surgery, its results are amongst the most satisfactory of any the surgeon will meet with in his work.

Results of Treatment by Alcohol Injection.

The method of alcohol injection, either of branches of the fifth nerve or into the foramen ovale and its neighbourhood, is at present much in vogue. From personal experience, as well as observation of many cases in which it had been performed by others, I am sure that it is but an indifferent substitute for the operation on the Gasserian ganglion.

In some cases no relief whatever is given by the alcohol injection; in others temporary anæsthesia and freedom from pain may last from a few months to about a year, but recurrence of the neuralgic attacks is practically certain. If the injection be repeated a shorter interval is the rule; as a rule the patient is left ultimately in a worse condition than at first, and the prognosis of the major operation is distinctly prejudiced.

For example, I saw in Belfast an elderly woman who had travelled to London and submitted to alcohol injections no fewer than 15 times at the hands of one of the prominent advocates of this method. The epileptiform neuralgia was in her case finally worse than ever, and the repeated failures led her to refuse the offer of cure by operation.

Some writers have claimed success from alcohol injection prematurely; thus one physician reported 31 "cures" out of 33, but in 19 of his cases the result had been followed up for less than nine months.

The most candid report I have yet seen is that given by an Austrian physician, Dr. Flesch. Of 62 cases in which he had employed alcohol injection there were 8 "cures," but in each of these only a peripheral branch of the fifth nerve had been injected. We may conclude with certainty that none of these were cases of real epileptiform neuralgia, for in this no operation on a peripheral branch—however thorough the destruction of the nerve—ever effects a permanent cure. Of Dr. Flesch's other cases, 54 in number, *he found that the neuralgia returned in every one*, in 50 the interval of relief varied up to 18 months at the longest. Even in war-time a year soon passes.

The treatment by injection with alcohol has invariably in this country had the name of a German, Dr. Schlösser, attached to it. I may point out that two French ophthalmic surgeons, MM. Pitres and Verger, deserve the credit of its introduction; they brought it forward in July, 1902, whereas Schlösser's paper was not published until a year later.

Drawbacks to Method of Alcohol Injection.

To inject the second division of the fifth nerve it is usually approached in the pterygo-maxillary fossa, the needle being introduced below the malar bone at an inclination of about 20° and passed to a depth of 4·5 cm.

The drawbacks to this are that there are no guides to the nerve, which is, moreover, approached from its lateral aspect; that anatomical obstacles in some skulls account for frequent failure; and that untoward results, such as diplopia or loss of colour-sense in the eye, have shown that the alcohol is apt to reach the oculo-motor nerves in the sphenoidal sinus or the optic nerve.

I have in a few cases adopted another way of approach, from the outer and lower angle of the orbit, the needle being passed towards the foramen rotundum along the spheno-maxillary fissure. This has the advantage that the foramen is approached from in front and not the side and that the path of the needle is through fatty tissue and not muscle (as in the usual method).

To inject the Gasserian ganglion itself can only be done through the foramen ovale at a depth of no less than 7 cm. from the side of the cheek.

It is undoubtedly possible in many skulls to reach the foramen, though what happens to the alcohol injected and exactly where it goes appear to me to depend upon "the Fates and Destinies, the Sisters Three, and other branches of learning," rather than upon any special skill or knowledge of the physician. In some cases the alcohol probably diffuses itself in the subarachnoid space and does no harm; in some the posterior part of the ganglion may be reached by the needle.

It is an open question whether this method gives any better result than injecting the branches of the fifth nerve that are chiefly affected by the neuralgia. In either case, if the latter be of the true epileptiform type, relief is uncertain and at the best temporary.

Choice of Method.

My own feeling is this: When the patient wishes it and fears the major operation a careful trial of alcohol injection should be made, but if this fails the good prospect of a permanent cure by excision of the Gasserian ganglion (or else by Abbe's operation) should not be unduly deferred. Where the neuralgia involves both superior and inferior maxillary divisions, as it does in most of the advanced cases, nothing short of the major operation is likely to be successful. In a certain number, however, the second division is alone involved for several years, and in these it may be worth while to resect the trunk of the superior maxillary, after trephining in the manner described at the beginning of this paper between the ganglion and the foramen rotundum.

I did this operation first in 1902, but can only speak as to the results of four cases. In all relief was obtained for several years, in one there was entire freedom from recurrence for six years, but then the tic douloureux developed in the third division (inferior maxillary). In this case and in another of the four I was obliged to remove the Gasserian ganglion at a second operation, which was rendered easy by the previous performance of the first one.

Recurrence on Opposite Side.

In conclusion, attention may be drawn to a fact of much interest, which, so far as I can ascertain, has hitherto escaped comment.

Perhaps the most striking feature about epileptiform neuralgia is its one-sided distribution, but experience has now shown that after a successful cure by operation on the Gasserian ganglion there is a definite tendency—after a varying number of years have elapsed—for the disease to develop in *the opposite* fifth nerve. As before, the spasmodic attacks of pain may be confined to one division only, or they may involve both second and third.

If there were no other reason for discrediting the view urged by the late Sir Victor Horsley that epileptiform neuralgia is due to a neuritis set up by dental irritation, this fresh development (on the other side of the brain) would alone be conclusive.

I have met with three cases, and the question of their treatment is obviously a difficult one.

One does not wish to paralyse the masticating muscles on both sides, and there ore the alternative lies between resecting the superior maxillary by the intracranial method (when the neuralgia is confined to this division) and operating on the Gasserian ganglion, whilst preserving the motor root and its continuation into the inferior maxillary nerve.

Alcohol injections were tried without success in two of the three cases before resorting to open operation. When last seen the result of the second operation in all three cases was satisfactory, and fortunately this recurrence of the neuralgia on the opposite side of the head is quite uncommon.

On the present occasion it is only possible to refer to the operative treatment of epileptiform neuralgia of the fifth nerve, to emphasise the importance of preserving the ophthalmic division during the operation, to point out the small risk which now attends it, and the permanence of the cure that is to be hoped for in properly selected cases.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF EPIDEMIC LETHARGIC ENCEPHALITIS.

BY A. J. RICE-OXLEY, M.D.DUB., M.R.C.P.LOND.

IN the following case the general indication pointed to it being one of those obscure cases recently reported of epidemic lethargic encephalitis rather than cerebral hæmorrhage or cerebro-spinal meningitis. This opinion was based on these facts: character of onset, the fever, somnolence, suspicions pointing to some ophthalmoplegia, regular and slow pulse, facial and lingual weakness, severe pains in neck (referred pain), age of patient, and absence of meningeal symptoms.

The patient, aged 74, appeared in her usual not very good health when, on May 17th, 1918, she went to visit some friends, where she arrived thoroughly exhausted. While at lunch she suddenly ceased talking, became confused, and threw her arms wildly about; she vomited freely for some little time. No definite loss of consciousness or signs of paralysis. The mental confusion continued. Severe frontal and cervical pain developed, with, at first, inability to sleep on account of the pain. T. normal until the 22nd; then rose to 100° and next day to 102°; thereafter between 98° and 102°. Patient had then become very drowsy and lethargic, capable of being roused but soon relapsing intosomnolence, with irregular Cheyne Stokes breathing; pulse regular, rather slow. Tendency to incontinence of urine. Tongue dry and typhoidy-looking. Bowels confined but acting to drugs.

May 23rd: When roused speech is heavy and difficult to interpret, but the patient appears to understand what is asked, but has difficulty in answering the question. The eyes are closed, but opened when requested. Resistance with some force is offered when eyelids are opened with the finger. Eyes slightly drawn over to right; some unsteadiness in lateral movements, but no nystagmus; some facial weakness; movements of tongue halting and uneven. Upper limbs quite normal; grip of hand fair; no noticeable spasticity or rigidity or flaccidity. The same holds good as regards lower limbs. Knee-jerks could not be elicited. No signs of Kernig, Babinski, or Brodzinski. Abdominal reflexes are normal; no marked tache cérébrale. Very definite tenderness in region of neck, especially over lower cervical area; no rigidity; complete incontinence of urine.

Dr. J. A. H. Brincker, who most kindly saw the case with me, advised lumbar puncture.

This was done May 25th; about 40 c.cm. of cerebro-spinal fluid withdrawn. The fluid was clear except for a small quantity of blood which accidentally got into the fluid. The patient improved very distinctly for a short time and appeared to recover a definite degree of consciousness, but about half hour later she was taken with a seizure associated with unconsciousness. Convulsive movements of the facial muscles; eyes now diverted to left; failure of respiration and heart's action. She very slowly improved under thyroid injection and artificial respiration, &c., but never recovered consciousness and died on May 28th, noticeable features being incessant nystagmus, rapid, jerky, irregular respiration, and a much quickened pulse-rate.

Examination of the cerebro-spinal fluid gave a result in complete agreement with the findings in other cases of this disease. The patient had certainly been in somewhat failing health since March, when I attended her for an acute attack of intestinal irritation, the exact cause of which I could not determine. Had the cause being lying dormant and suddenly resumed its fatal activity?

London, W.

THE OCCURRENCE OF SKIN LESIONS DURING TUBERCULIN TREATMENT.

BY A. G. M. GRANT, M.D. EDIN., D.P.H.,
TEMPORARY MEDICAL SUPERINTENDENT, MANCHESTER SANATORIUM, ABERGELE.

FOLLOWING on the administration of tuberculin the presence of skin manifestations is uncommon. A passing erythema is very occasionally seen, but any more lasting and definite lesion is rare. Papular eruptions of the nature of tuberculides have been described by different observers, but even in the recent exhaustive works on tuberculosis only meagre reference is made to them. Owing to the rarity of the condition the following case may be worthy of record.

A woman, aged 24, came under sanatorium treatment on Dec. 16th, 1916; had suffered from a cough for a year. Seven years previously acute pains in and swelling of ankles; in bed for three weeks; otherwise health had been good. Involvement of whole of upper lobe and apex of lower lobe of right lung, with numerous tubercle bacilli in sputum. No cardiac murmurs. Progress after admission satisfactory and uninterrupted; temperature remained normal; fit for moderate exercise.

On Feb. 16th, 1917, first injection of tuberculin B.E., 0·001 c.mm.; four days later 0·0015 c.mm. In 18 hours after second injection temp. 99° F., headache, cough increased, and over affected portion of right lung crepitations more numerous. With rest in bed focal reaction gradually subsided. On March 3rd pain around knees and elbows, feeling as if she had been badly bruised; some hours later papular eruption in these sites on extensor aspects. The nodules were very slightly raised, inflamed, and somewhat tender to the touch, resembling an erythema nodosum. Within 24 hours they had disappeared, leaving hæmorrhagic spots varying roughly in diameter from 3 mm. to 15 mm.

On March 8th a similar eruption associated with pain appeared on ankles and dorsum of feet, spreading round towards the soles. The following day the rash was seen on extensor surfaces of forearms; on March 14th small petechial hæmorrhages on posterior aspect of shoulders. On March 17th there suddenly developed œdema of left parietal and frontal region, which for a few hours closed up left eye. On following day œdema of left hand; on March 28th right hand similarly affected. This quickly passed off and the eruption gradually faded, leaving a brownish stain on the skin; on March 27th, April 1st, and April 11th recurrences, but to lesser degree, of hæmorrhagic lesions, preceded by slight papular eruption over extensor surfaces of arms and legs, with pains in elbows, knees, and ankles. The appearance of the rash was associated with profound constitutional disturbance, marked by anorexia, sickness, and acute pain in epigastrium, severity of pain coinciding with a fresh eruptive crop. On March 23rd epistaxis; on 24th slight melæna.

During the whole of this period patient seemed tired and worn out, although temperature was only slightly raised. After middle of April no return of eruption; general condition improved. Examination of lungs revealed, however, a definite spread to lower half of right lower lobe. A left-sided pleurisy developed in May; signs of infiltration of lower lobe of left lung. Further progress slow; she left sanatorium in July.

Scrapings from the papules and hæmorrhagic patches were examined microscopically; T.B. not found. Arneth counts were done at intervals, but did not show deviations corresponding with altered clinical state. Index 78 before injection of tuberculin on Feb. 16th. On Feb. 23rd, March 9th, March 30th, April 14th, June 25th, and July 9th it was 81, 76, 82, 78, 78, and 73 respectively.

The exact nature of the production of these skin affections is still not definitely known.

In a few cases tubercle bacilli have been demonstrated in the lesions, and this has led to the belief that the tuberculides are caused by the dissemination of attenuated bacilli which are readily destroyed by the specific cellular defence of a hypersensitised person. The rapidity of the destruction of the bacilli explains the difficulty of their detection microscopically. The eruption is not due to the presence of any living bacilli in the tuberculin, as with a tuberculin free from ultra microscopic particles of bacilli similar skin changes have been produced. Tuberculin acts indirectly by causing a focal reaction, and thus lets free increased numbers of tubercle bacilli into the blood stream. With reference to the above case several other patients were treated with the same tuberculin and showed no untoward symptoms.

In connexion with this skin manifestation, Dr. Marcel Pinard, of the French Army, has observed acute nettlerash with œdema develop 12 to 15 days after the use of poisonous gases by the Germans, and followed later by active pulmonary tuberculosis. It is interesting to note that the lapse of time between the toxic stimulus and the skin eruption coincides closely in both instances, 15 days supervening between the first injection of tuberculin and the appearance of the papules.

I have to thank Dr. C. F. Walker, medical superintendent, Westmorland Sanatorium, for permission to publish this case.

NOTE ON HÆMATEMESIS AS A COMPLICATION OF APPENDICECTOMY.

BY E. DRYBROUGH-SMITH, M.D., CH.B. EDIN.

THIS case simulates in many respects the condition known as post-operative hæmatemesis, a serious complication, with a death-rate equivalent to 69 per cent.[1] Perhaps by recording the case other cases of a similar kind may be brought to light and views expressed as to the frequency and etiology of this uncommon complication.

A boy, aged 12, had attack of appendicitis; acute during first four days; continued in subacute form for four weeks, during which time temperature rose each afternoon to 100° F. and he complained of sharp shooting pains in right lower quadrant of abdomen. No symptoms of stomach disease; no vomiting during attack and appetite fairly good after the first four days. He suffered from constipation, which required aperients. He looked ill, pale, and thin.

After temperature had been normal for two days I decided to operate. Castor oil administered night before; enema of soap and water at 7 A.M. on day of operation—Feb. 12th last. At 11 A.M. he was given chloroform. A few minutes after its commencement he vomited repeatedly; on continuing anæsthetic he became pale and ceased breathing. Head lowered; artificial respiration; 0·5 c.cm. pituitary extract hypodermically, followed by saline. When he recommenced breathing open ether was administered; on this he did fairly well; operation proceeded with. Vomiting caused escape of a few loops of intestine; otherwise no great manipulation of bowel.

On opening abdomen exploration of gall-bladder and pyloric region with two fingers; nothing abnormal. Search at once made for appendix, which was slightly adherent to outer side of cæcum. It was easily brought out and removed. Wound closed without drainage. Appendix showed circular ulcer of mucosa within an inch of base.

Before patient left operating table and while still semi-conscious he vomited dark-brown fluid (altered blood). This vomiting continued all day at intervals; on each occasion the same fluid ("black vomit") brought up; quantity 3 or 4 ounces to 8 or 10 ounces. He complained of strong acid taste and pain in pit of stomach. He was given every four hours one drachm of bicarbonate of soda in hot water and salines

[1] Purves: Edin. Med. Jour., March, 1902.

by rectum; kept in Fowler position. The vomiting continued until 3 o'clock next morning, when adrenalin chloride in 10 min. doses (sol 1 in 1000) was given by mouth every two hours. When this was commenced pulse was 112 per minute and very feeble; he was cold and sweating. The vomiting did not recur. Pulse-rate became normal and condition rapidly improved. When bowel acted on third day no melæna.

Shebbear, N. Devon.

A NOTE ON SOME SYMPTOMS FOLLOWING THE TAKING OF QUININE.

BY G. R. FOOTNER, M.B. CAMB., F.R.C.S. ENG.

THE statement occasionally made by patients that they cannot take quinine usually turns out an exaggeration, and the following example of quinine idiosyncrasy may therefore be of interest.

The patient, a young married lady, had lived for 11 years in British East Africa and had never suffered from malaria, though often exposed to infection. She had taken quinine twice. The first time a dose of 10 gr. by the mouth produced shortness of breath, œdema of eyelids, and urticaria. The second time similar but milder symptoms followed taking a drachm of Easton's syrup.

While going through the Sudan she had a severe attack of malaria on Dec. 24th, 1917, and the doctor gave, unknown to her, 5 gr. of quinine by the mouth. Great shortness of breath, œdema of eyelids, and urticaria occurred. Four grains were given by rectum; same result. After this no more quinine: fever slowly subsided. On the day after first dose of quinine (Dec. 24th) uterine hæmorrhage began and continued till Jan. 4th, 1918.

On Jan. 3rd no fever, no malarial parasites found in blood. After calcium chloride in daily dose of 30 gr. for two days quinine was given in ½ gr. doses three times a day for 24 hours and 1-gr. doses three times a day for 48 hours. After this two doses of 2 gr. each produced dyspnœa and itching of hands and feet. Amount reduced to 1 gr. thrice daily; fever recurred, subtertian parasites found. After 30 gr. of calcium chloride, ½-gr. doses of quinine were used hourly for ten doses, followed by 1 gr. hourly for four doses. This produced nausea, and three intramuscular injections, each of 7½ gr., were given in 24 hours. An urticarial rash appeared after second injection; no other bad effects.

Temperature now became normal and blood free of parasites. Before leaving Khartoum patient was taking 2 gr. of quinine thrice daily and received an intramuscular injection of 15 gr. with no ill-effects.

She was susceptible to the pollen of "black wattle," a kind of acacia found in British East Africa, but in England had never had "hay fever." Proximity to horses did not produce symptoms, and no other members of her family suffered. The symptoms were on all occasions witnessed by a doctor. The salt used was quinine bihydrochloride.

Khartoum, Sudan.

Medical Societies.

SOCIÉTÉ DE BIOLOGIE, PARIS.

THE following is a summary of the papers read at a meeting of this society on June 22nd:—

BRODIN, CHARLES RICHET, and ST. GIRONS.—Density of the Blood in Dogs.

En expérimentant sur 47 chiens normaux, pour déterminer les constantes en densité, en masse du sang, en hématies et en leucocytes, B., R., et G. font les constatations suivantes: l'élément le plus constant c'est la masse du sang; l'élément le plus variable, le leucocyte. La densité est proportionelle aux hématies.

H. CARDOT.—Density of the Blood after Hæmorrhage.

En suivant la variation de la densité sanguine au cours d'une série d'hémorragies successives, à la fois à l'aide des indications données par l'aéromètre et en déterminant l'extrait du sang, C. signale un notable abaissement de la densité dans ces conditions.

TRIBONDEAU.—New Blood Stains.

T. ajoute un nouveau colorant (colorant I) du genre May-Grünwald, de préparation très facile, au colorant simplifié genre Giemsa (colorant II) qu'il décrit récemment. En fixant les frottis avec ce colorant I, on obtient des colorations plus rapides avec le colorant II. Le colorant II était une solution alcaline d'éosinate de bleu de méthylène transformé par l'ammoniaque; le colorant I est une solution neutre d'éosinate de bleu de méthylène naturel.

E. SAQUEPEE.—A Small Epidemic of Alimentary Poisoning.

Petite épidémie (6 atteintes) d'empoisonnements alimentaires collectifs. Le *Bacillus enteritidis* est décélé dans les selles d'une part chez les malades, d'autre part chez un cuisinier demeuré indemne pendant l'épidémie. Mais le sérum du cuisinier, au 4e jour de l'épidémie est fortement agglutinant pour le *B. enteritidis;* au contraire, à cette date, le sérum des malades ne présente pas encore de propriétés agglutinantes, ces dernieres n'apparaissant que plus tard. De cette confrontation on peut conclure que le cuisinier a été en réalité malade quelques jours avant l'apparition de l'épidémie. Ce qu'il finit par avouer. Il a ensuite contaminé des aliments et provoqué l'épidémie.

HARDE and JACKSON.—Tolerance Acquired by Staphylococci towards Antiseptics.

Il résulte des expériences de H. and J. qu'il ne s'agit pas d'une loi générale et que l'accoutumance du staphylocoque, par exemple, facile à obtenir vis à vis de l'acide phénique, ne s'obtient nullement, ni *in vitro*, ni *in vivo*, vis à vis de la solution de Carrel-Dakin, dans laquelle l'action antiseptique est exercée par l'hypochlorite de soude. Cette remarque offre un interêt au point de vue du traitement des plaies infectées.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

(1) STANNOXYL, AND (2) KINECTINE.

(ANGLO-FRENCH DRUG CO., LTD., GAMAGE BUILDING, HOLBORN, E.C. 1.)

1. THE observation that tin-workers were apparently immune from boils has led to the elaboration of metallic tin preparations containing the oxide as well as the lead-free metal for the treatment of furunculosis. Such is stannoxyl, presented for administration in the form of greyish-coloured tablets. The treatment is empirical, but the clinical cases reported certainly call for attention on account of the favourable results obtained in skin eruptions which are staphylococcal in origin. This is supported by a series of cases in a paper by Dr. A. Compton, published in THE LANCET.[1] So far the method has been tried in the treatment of carbuncles, boils, anthrax, acne, and styes. Our laboratory examination confirmed the absence of lead in the stannoxyl tablets submitted to us.

2. Kinectine is a somewhat complicated compound having quinine as a pharmacological basis. It is, in fact, a combination of hectine (sodii-benzo-sulpho-*p*-amino-phenyl arsenas) with quinine hydrochlorate. It has been reported, chiefly in French clinics, as a specific in the treatment of hay fever, malaria, and influenza. This combination of quinine with an organic arsenic group is of interest.

COFFEE PERLETTES.

(GILTSPUR CO., LTD., 33 AND 35, EASTCHEAP, LONDON, E.C. 3.)

It is not in our experience that the so-called coffee essences (fluid) satisfactorily replace the well-made infusion of the ground and fresh-roasted coffee berry. This is probably in a large measure due to the lack of freshness of such preparations. These coffee perlettes, however, appear to retain the aroma and fragrance of coffee because they represent a well-prepared extract or infusion subsequently reduced to the dry solid state; they are moulded into rounded particles which look like the roasted berry in miniature. These are readily soluble in hot water and the solution approaches more closely the attractive characteristics of the freshly prepared infusion than any essence or extract we have examined. According to our analysis, the pure coffee perlettes contained as much as 5·16 per cent. of their weight of caffeine, so that, calculated on this basis, the preparation represents about five times its weight of coffee, since the berry contains 1 per cent. of caffeine. The moisture amounted to only 2·80 per cent., and the mineral matter is 14·5 per cent., consisting chiefly of potash salts. The perlettes made with the addition of some chicory gave similar results. For the extemporaneous preparation of a quite good cup of coffee these granules will be found convenient, and they are also economical in use, since they are free from "grounds." The composition of the fluid extracts of coffee upon the market formed the basis of a report from THE LANCET Laboratory published in our issue of July 7th, 1894, p. 43. Twelve specimens in all were examined, and the general result was to show a deficiency of caffeine, due probably to the deposition of this alkaloid as insoluble tannate in the course of manufacture.

COLLOSOL CUPRUM.

(THE CROOKES' LABORATORIES, 50, ELGIN-CRESCENT, LONDON, W. 11.)

Colloidal copper has recently received attention in regard to its application in malignant disease, the view being held that under a favourable environment it serves as a carrier of oxygen. However this may be, certain interesting results have been recorded as to colloidal copper restraining the growth of embryonic cells. We have received specimens of ampoules of collosol cuprum for intramuscular or subcutaneous injection, and pessaries and suppositories for local treatment containing this agent. The fluid in the ampoules is of a brownish-red colour and does not respond to the ordinary reaction of crystalloid copper until the colloidal condition is broken up. The application of catalytic agents in the treatment of disease undoubtedly promises interesting development with further study.

[1] THE LANCET, 1918, i., 99, 143.

THE LANCET.

LONDON: SATURDAY, JULY 6, 1918.

Belgian Doctors' and Pharmacists' Relief Fund.

WE appeal this week jointly with our important contemporaries, the *British Medical Journal* and the *Pharmaceutical Journal and Pharmacist*, for further and immediate support for the Belgian Doctors' and Pharmacists' Relief Fund. At the close of 1914 the Fund was started by an appeal emanating from a committee fully representative of the medical and pharmaceutical professions in Great Britain and Ireland, and as a result about £20,000 were received almost entirely from members of those professions, the contributions from the colonies and India being conspicuous in the total. Support was also received from the United States of America, but it must be remembered that ever since the war began relief of the most generous kind has been afforded to the whole population of Belgium by the United States through the Commission for Relief in Belgium, and in this relief the professions with which we are immediately concerned have had, and are having, their share. At the beginning of the movement the money collected by the Committee of the Belgian Doctors' and Pharmacists' Relief Fund was spent in relieving distress among the members of the medical and pharmaceutical professions, being Belgians, who had taken shelter in this country, often accompanied by a considerable number of dependents. Through the representations made by the Committee, and through the personal work of the officers and the whole-hearted devotion of Dr. DES VŒUX, the honorary treasurer, the needs of the immigrant refugees were speedily met. Sums of money as grants, or as weekly allowances for a period, were provided in certain directions; employment was obtained in other cases. By the help of advertisement medical posts were found both for the Belgian doctors and Belgian pharmacists; and, the General Medical Council having admitted Belgian doctors of approved standing to the Medical Register of the United Kingdom, the necessary registration fees for those doctors were paid by the Fund. In this way, both with promptitude and with no large cost to the Fund, the refugees on our shores were succoured, while in time a good many of the Belgian medical men joined up with their national army.

But in the meantime the hand of Germany grew heavier and heavier upon the outraged Belgian land, when it was learned through Mr. C. HOOVER, then the Director for Europe of the Commission for Relief in Belgium, that it would be possible for the Fund to supply the Belgian doctors and pharmacists remaining in their own country with material assistance in money and drugs. He undertook the forwarding to safe hands of any subsidies sent to him by the Fund. The machinery for disbursing the money was provided by a representative committee of Belgian doctors and pharmacists sitting regularly in Brussels; and through Mr. HOOVER, since March, 1916, up to December, 1917, £800 were sent regularly every month to this Belgian committee for allocation among the doctors and pharmacists of Belgium. When this policy of regular disbursement was embarked upon it was easy for the Executive Committee of the Belgian Doctors' and Pharmacists' Relief Fund to fix the date by which their resources would be exhausted, that date being the end of 1917. There was a general belief that actual military operations would have come to an end by that date; but, alas, the Fund reached the bottom of its purse while the war remained in full blast.

At the beginning of this year it was determined by the Executive Committee that a second appeal should be made to enable the Fund to continue its work, and, at the time when the appeal was issued, only sufficient money remained to warrant the sending of £400 in the months of January and February; and this was the more bitterly disappointing to the committee in that, at the end of 1917, a representation was received from the

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND

AN APPEAL

TO ALL MEMBERS OF THE MEDICAL AND PHARMACEUTICAL PROFESSIONS

In 1914, by resisting Germany, ***Belgium saved you*** *from starvation and ruin.*

In 1915 you honourably responded to an appeal by subscribing a fund for your Belgian colleagues in their distress.

During 1915, 1916, and 1917 this money was sent in instalments to Brussels—at first £800 per month, later £400. The Fund is now exhausted, all but £700.

In 1918 will you leave your Belgian colleagues to starve?

Subscriptions may be sent to the Honorary Treasurer, Dr. H. A. Des Vœux, 14, Buckingham Gate, London, S.W. 1

Commission for Relief in Belgium, through Mr. W. B. POLAND, who had succeeded Mr. HOOVER, to the effect that never was the money and the moral support more urgently required in Belgium by our suffering colleagues. Mr. POLAND wrote:—

"The most difficult class to reach is the very class that your Fund in the past has ministered unto—namely, the families of the doctors and pharmacists who may not dig, to beg they are ashamed. If the supporters of your Fund knew how much actual suffering they had allayed, and how much potential moral and physical suffering they had prevented, they would not cease to continue their support, many as are the claims now made upon them. ..... The people who receive your kindness and charity are grateful in the extreme. Wave after wave of gratitude sweeps over the country. Some day you will know of it. ..... The funds from your society are paid over to a commission of eminent gentlemen of your profession, and the distribution is under their personal supervision. The knowledge that their associates in England have not forgotten them is an inspiration to the whole profession at a time when moral support is perhaps as much needed even as food."

In view of this communication a general meeting of the Fund was held, a second appeal was issued, and the result of that appeal has been announced weekly in the medical and pharmaceutical journals. All our readers, therefore, know that, generous as the individual response to the second appeal has been in a certain number of instances, no general support of the movement was secured thereby. As a matter of fact, to-day the Executive Committee of the Fund is in much the same position that it was at the beginning of the year. Enough money remains to pay one more mensuality at the reduced rate of £400, and then, despite the moving cry of anguish and gratitude from our colleagues in Belgium, the subsidies must cease. We earnestly entreat our readers to do their utmost to avoid this miserable situation. A general and generous response to the request for subscriptions made now should enable the Fund to continue its sorely needed work until the end of the war.

We know what we are asking. From hard-worked professional men, many of whom are themselves pecuniary sufferers by the war, and all of whom are weighed down by the burdens of increased taxation and heightened expenditure, we are begging for money which they sorely need themselves and for which a dozen other admirable sources of expenditure present themselves. But we cannot conceive any more worthy object than the assistance of our Belgian colleagues. In the words of the chairman of the Fund, Sir RICKMAN GODLEE, in our columns last week—"it is to pay a debt which we owe to our hardly entreated brethren." The need of our Belgian colleagues is indescribable, and the national action and character which have brought them to this condition are beyond all praise. With measureless gallantry the Belgians faced and held up the German onrush, and in those first eventful weeks of the war saved Paris and France, saved the Channel ports and England—and ruined themselves. They preferred ruin to dishonour, and it is the bounden duty of all of us, remembering this fact, and recognising not only its moral grandeur but its practical benefits to ourselves, to do all in our power to alleviate their misery until the day of deliverance, now approaching, finally arrives.

Lessons from Baby Week.

LAST year National Baby Week was devoted primarily to propaganda work; the week which has just passed has been chiefly of an educational nature. By a strange paradox, during the fourth year of war much has been done to direct public attention to the value of infant life. Unification of effort is being achieved in this and other countries, emphasised by the visit to this country of such striking child-welfare advocates as Judge NEIL, of Chicago, Dr. W. PALMER LUCAS, of the American Red Cross, and Dr. F. TRUBY KING, of New Zealand. Many of the leading home agencies for the care of mother and child have combined in a National League for Health, Maternity, and Child Welfare and the new and influential Council for the Unmarried Mother and her Child was represented unofficially at the Baby Week inauguration. This being so, the arrangements for the London Week centred round a series of conferences and didactic lectures held within sight of an exhibition arranged by Mrs. OGILVIE GORDON, D.Sc., to show the thread connecting all kinds of child-welfare effort. More, probably much more, remains to be done in order to make an exhibition of this kind accord with the present level of exact knowledge, while still arresting public attention. The sections devoted to venereal disease and to the question of heredity were happier in achieving this than that devoted to alcohol. In general, the conception of fatherhood appeared again rather strangely absent from the exhibition, giving point to Mr. BEN TILLETT'S remark at the inaugural ceremony that although we required all the mothers we might easily do with half as many fathers.

The educational aspect of the child-welfare question is dealt with in a broad way by two writers in our present issue. Sir ARTHUR NEWSHOLME combats the prevailing ignorance of the elements of public health in an address recently given at a conference of sanitary authorities in the county of Durham. What the Bishop of BIRMINGHAM described at the Baby Week meeting as the Kingdom of Heaven on earth would be realised easily enough if we could start afresh with new materials, but the substructure of that Kingdom in Durham county is characterised at present by extremely filthy domestic arrangements. Sir ARTHUR NEWSHOLME shows that a thousand infantile deaths occur each year in the county which would have been saved if Durham shared even the mediocre average experience of the rest of the country. His remarks are primarily addressed to Durham authorities, but that no one elsewhere may glory in his superiority Sir ARTHUR NEWSHOLME states that in every area "pockets" may be found which form death-traps for the infants living in them. He asks whether any of us could live healthy lives in houses possessing no larder and no sink, and a malodorous ashpit and privy in the back-yard. Some of us with higher ideals and greater initiative may be inclined to reply that we could, possibly forgetting that the deplorable sanitary conditions described destroy

not merely physical health but any desire for betterment on the part of their occupants. Sir ARTHUR NEWSHOLME fairly claims for his address that it makes less venial the ignorance of town councillors and property owners in regard to the importance of local hygiene.

Dr. H. W. POOLER'S article is also a plea for education, but for education of a different and more definite kind His paper is a closely reasoned reply to a report published by the Medical Research Committee, which found that in the child-welfare movement educational methods were subsidiary to the clearing of slum areas and the abatement of smoke pollution. He stands for the consensus of opinion represented by 20 years' increasing and strenuous work for the education of the mother and the improvement of the home. House-to-house visitation by trained municipal and voluntary visitors has, as he rightly says, become the rule during this time in almost every town and county in the kingdom, and the Local Government Board has recently stiffened its demand in regard to the proportion of health visitors to notified births. One to four hundred is now the authorised standard. Has all this vast work to be unconditionally scrapped, Dr. POOLER pointedly asks; and we commend the careful attention of our readers to his reasons for finding the conclusions of Dr. W. A. BREND and Dr. LEONARD FINDLAY to be ill-grounded. With regard to the relative ignorance of urban and rural mothers Dr. POOLER speaks with the authority of experience, and taking ignorance of mothercraft in the broadest sense he asserts without hesitation that the infants of the agricultural classes are far better off than those in the towns. For, he says, "mothercraft" means carefulness, personal cleanliness, clean bedding, clean floors, proper storage and preparation of food, frugality, thrift, sobriety, early hours, and, above all, breast-feeding; and the opportunities for all these things the country woman possesses to far greater extent than her sister in the slums. The Research Committee's report was in large measure a plea not to lose sight of the wood—i.e., not to neglect the broader issues of public hygiene in the pursuit of its personal and private applications—for the trees which compose it. Dr. POOLER reminds us that the wood is made up of trees and that there is much accumulation of undergrowth to be removed, and we are in hearty accord with his conclusion that in the careful local consideration of local conditions the problem will be solved. No panacea has been or will be found. A central guiding Ministry of Health may help; the Local Government Board's "fertilising grants" will also help; but neither will avail without an influx of knowledge permeating down to the worker and the mother.

Sir Bertrand Dawson not being able to deal sufficiently exhaustively in one lecture with the subject "The Future of the Medical Profession" in the Cavendish lecture at the West London Hospital, will deliver a continuation of the lecture on Thursday next, July 11th, at the Royal Society of Medicine at 8.15 P.M., when a discussion will follow, whereat the views of all interested will be welcomed.

Annotations.

"Ne quid nimis."

PHYSICAL DISABILITY AND PUBLIC SAFETY.

THE problems of conduct presented to the medical profession as a result of the clash of the duty of professional secrecy with the duty of care for the interests of others have often enough been discussed. A correspondent sends us for criticism a modern instance as met with in the work of the medical recruiting boards of the Ministry of National Service.

These bodies have recently, and in great numbers, had before them for medical examination men of mature age, and men who for one reason or another have not volunteered for military duty. Such recruits are, of course, of low physical efficiency, generally speaking, and will naturally present a large amount of disease and defect, disabilities which, on the one hand, the prospect of military service may make them communicative about, and amongst which (on the other) are sometimes now coming to light such as, if known to employers, or, indeed, to fellow employees, would entail dismissal, being plainly incompatible with the safety of others, sometimes of very many others, if not of their own as well. Medical boards have found here and there anomalies like colour-blind signalmen, epileptics in charge of colliery lift apparatus, syphilitic glass-blowers, these gross physical disabilities having been previously concealed by their subjects through carelessness or self-interest. It is said, too, that requests by the presidents of boards for instructions as to possible action in view of the menace to public safety have not been answered in a positive sense. Hard as the saying "do nothing" may seem, it yet does apply in many cases where the relation between medical examiner and examinee is the ordinary one between physician and patient. But the instance under question seems of a different complexion, for here the relation in question is public, not private, is brief and casual, not intimate and confidential. There is no "cash nexus"; while, it might be added, the present is a time when any man in any degree able-bodied can find employment somewhere, and when public health and welfare need conserving as never before. As a matter of practical politics, would it not be better to remove the individuals alluded to from their dangerous posts and compensate them rather than run the continual risk entailed by the plan of leaving ill alone?

The point raised is one of interest to the public as well as to the medical profession, but the situation, as matters stand, is fairly clear. The medical practitioner who ascertains the physical condition of a proposed recruit is working as a servant of the Crown under the instructions of a Government department, and the man whom he examines presents himself under orders in like manner. No relation exists such as that between a medical attendant and his patient, and there is no question of ethical obligation in such publication of the physical condition of the person examined as may arise out of work done for the recruiting board. It is quite different, however, when it is proposed to make known to employers conditions in a workman which may render him unfit for his employment. To do this in the present circumstances would hardly be justifiable ethically; it might quite possibly constitute a breach of the Official Secrets Act, and any such action taken independently of official authority might render those responsible for it the object of litigation at the hands of the person reported upon. This, however, is hardly what is proposed, the suggestion being, as we understand it, that official reports should be made to employers as to conditions which render continued employment of a workman undesirable. No doubt such reports, if they could be made upon the authority of medical men gaining knowledge through the discharge of duties primarily connected with recruiting, would in an appreciable

number of cases be advantageous to the workmen in contact with the person reported upon and to the public. The extent of that advantage would, however, probably have to be established with reasonable certainty before the Government would move in the matter, and it seems likely that an Act of Parliament would be necessary in order to ensure complete safety for all those connected with the passing on of information obtained for a particular purpose, with a view to use being made of it for purposes wholly disconnected from the first.

META-INFECTIVE FEVERS.

UNDER this heading Professor Umberto Baccarani, in *La Riforma Medica* of March 16th, calls attention to the fact that patients, subsequently to acute febrile diseases, not infrequently develop after a few days of complete apyrexia, a subfebrile condition which is not easy to account for. These processes are of variable duration and uncertain course, their pathology is different in different cases and often puzzling to explain. It is necessary, in the first place, to exclude from this category relapses and reinfections of the primary processes, and complications attended by febrile manifestations of evident origin and easy interpretation. True meta-infective fevers may be the only manifest expression of a slight and temporary complication of the previous acute disease or may have their origin in the flaring up of some morbid condition not previously recognised, or depend on some unusual complication which has no relation to the preceding infection. But in other cases the meta-infective fever is cryptogenetic or essential in the sense that its real cause remains obscure in spite of the most diligent investigation and laboratory research. When, therefore, a patient in an apparently well-established state of convalescence has a rise of temperature from causes which otherwise are not capable of raising it, the implication is that we have some potential morbid condition which should be thoroughly investigated. Such meta-infective fevers usually make their appearance a few days after the cessation of the illness, from three days to a week. After this period the occurrence of fever cannot be classified under this appellation, since it almost invariably points to a true and recognised complication of easy diagnosis and special characteristics. Their duration is short, not usually more than a week, their form and course strikingly variable, and their intensity moderate, the temperature ranging from 37° to 38° C. Professor Baccarani's clinical observations have led him to attribute the cause of these meta-infective fevers to the following conditions:—

1. A simple follicular colitis, usually concomitant with a return to more substantial diet and associated with slight abdominal pain and distension, loose stools, or constipation. The condition disappears rapidly on a return to milk diet. 2. A mild appendicitis with absence of any prominent symptoms at the time, but which becomes evident by subsequent events. 3. Cholecystitis, most often after a typhoid infection. 4. Pyelitis and cystitis, revealed by examination of the urinary sediment, and especially frequent after typhoid and paratyphoid infections. 5. Endocarditis of a benign type. 6. Slight localised pleurisies. 7. Osteomyelitis of mild type, the only symptom being an aching and tenderness in the lower third of the thigh; this cause is most frequently met with in young adults and children. 8. Crypto-bacillary fever—tubercular, malarial, or syphilitic. 9. Adenoids. 10. Diseases of the female genital system. 11. Slight inflammatory conditions of the skin or subcutaneous tissue caused by hypodermic injections of camphorated oil.

Professor Baccarani's observations are singularly interesting and suggestive. The interaction of morbid processes is a subject which has as yet not attracted the attention it merits. The occurrence of febrile or subfebrile conditions during convalescence is very frequently observed, and is too often disregarded or looked upon as a mere incident in convalescence. We hope that Professor Baccarani's paper will lead to a more scientific analysis of these conditions in this country. It is more than probable that research on these lines might lead to some valuable results both in pathology and treatment.

THE SUPPLY OF "MARYLEBONE CREAM."

DIFFICULTIES in connexion with the supply of cream for infant feeding have created a great demand for substitute fats, and an enormous quantity of specially prepared emulsion of linseed oil, known popularly as "Marylebone cream," has been supplied to welfare centres. Unfortunately, the supply of linseed oil available for this purpose is rapidly becoming exhausted. We understand, however, that one at least of the large wholesale firms which supply Marylebone cream has made application to the Food Controller for the release of a sufficient quantity of this oil to satisfy the requirements of welfare centres, urging as a plea that its use for this purpose is of national importance. We hope that the Ministry of Food will take a favourable view of the application, as deprivation of a physiological supply of fat is a serious cause of malnutrition among the infants of the poorer classes, and linseed oil is one of the cheapest forms in which fat can be supplied, while experience goes to prove that it gives excellent results when used judiciously.

REGISTRATION OF NURSES.

TWO important meetings of nurses have recently been held, at both of which the question of registration was to the front. The conference organised by the College of Nursing, Ltd. (by guarantee), was of a more general character, dealing in successive sessions with the higher education of nurses, with the preliminary course of training for probationers, and with reconstruction in nursing ideals and practice. The attendance at this conference was large and the discussions of a free and helpful character. At two sessions medical men occupied the chair, and both medical men and women contributed to the discussion. The other meeting was the annual gathering of the Society for the State Registration of Trained Nurses, and this meeting dealt more exclusively with the immediate and pressing question of the adoption by Parliament of the Registration Bill. Major W. A. Chapple, who is in charge of a Nurses' Registration Bill, stated that he had been in communication with the College of Nursing and could come to an agreement whereby two-thirds of the electorate of the proposed Nursing Council should be nurses. In addition to this, he said that it could be agreed in the Bill that two-thirds of the actual Council should be nurses. These two things, he thought, were sufficient to ensure the principle of the government of nurses by nurses, and therewith the economical independence of the worker on which every profession now lays stress, and Major Chapple himself is prepared to assist in an agreed Bill upon these lines. We welcome an assurance made by Mrs. Bedford Fenwick from the chair, speaking on behalf of the

Society for the State Registration of Trained Nurses, that the society has never been obstructionist; and now is evidently the time to give practical proof of this. A resolution was passed at the annual meeting of the Society for the State Registration of Trained Nurses, and sent up to the Central Committee for State Registration, which contained a clause dissociating the society from the College of Nursing. The affirmative vote was by no means a large one, but an amendment to secure freedom from "the domination" of the College of Nursing, "without dissociation from it," was not accepted by the chair. We find this attitude hard to distinguish from obstruction. We have every confidence in the ability of nurses to settle their own polity without help from outside, but the statement of a speaker at the second meeting already referred to, that nurses had made up their minds decades ago and resented the butting-in at the end of a new group, may make even the sympathetic outside observer a little anxious in regard to a wise and just settlement. It is, after all, the present and the future of the nurse that really matter, and the past—like other pasts—may well be buried. Nothing is more certain than that the profession of nursing is likely to undergo profound changes within the next few years, and provided that it is placed in a position to manage its own affairs plasticity is altogether desirable. A new vista of public health work has already opened before the nurse in America, where she is acquiring a position of usefulness and importance in relation to the maintenance of health rather than to the treatment of developed disease. Conditions of training in this country need to be widely modified before the nurse is fitted for this. The present hospital routine disciplines the nurse rather than trains her. Unless possessed of superhuman powers, the nurse throughout her training course is too fatigued by her routine ward duties to think or read of anything outside them. The training becomes largely one of patience, endurance, and self-sacrifice. Essential though these traditional virtues are, the community could forgo some part of them in favour of a more thoughtful and intelligent health agency. In the change just introduced by University College Hospital, London, where an eight-hours day for nurses has practically been adopted, we see the beginning of better things. Moreover, it is impossible for us to believe that the nurse will not wish to take her share in the great wave of infant welfare activity now sweeping over the country, from which the tendency is at present to exclude her on account of the onesidedness of her training.

WE deeply regret to announce the death of Viscount Rhondda, which occurred on Wednesday morning last, at the age of 62. To Lord Rhondda's courage, energy, and resourcefulness this country owes an incalculable debt.

Colonel William Hunter will give a lecture on the Prevention and Arrest of Lice-borne Diseases at the Royal Society of Medicine, at 5.30 P.M. on Wednesday, July 17th. As president for two years of the advisory committee for the prevention of epidemic diseases in the Eastern war areas, and colonel in charge of the British Military Mission to Serbia in 1915, Colonel Hunter has had exceptional opportunities of practical experience in the new methods of disinfection. The lecture will be accompanied by lantern demonstration and is open to any member of the medical profession.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions and donations to the Fund have been received during the week ending June 29th:—

	£	s.	d.
The Right Hon. T. R. Ferens, M.P.*	21	0	0
The Right Hon. Lord Leverhulme*	10	0	0
Dr. A. B. Kingsford ...	1	1	0
Mr. F. Ransom†	10	0	0
Sir Rickman Godlee ...	2	2	0
The Lady Betty Leslie Melville‡	50	0	0
Dr. Thos. Wingrave ...	1	1	0
Sir Anderson Critchett	5	0	0
Dr. F. R. Proctor-Sims	1	1	0
Dr. M. M. Bowlan	3	3	0
Dr. Norman Walker ...	10	10	0
Dr. Wherry Wilson ...	1	1	0
Dr. A. H. F. Barbour ...	25	0	0
Dr. T. Steele Sheldon ...	1	1	0
Dr. H. G. Turney	3	3	0
Dr. H. Lyon-Smith ...	5	5	0
Dr. A. H. Copeman ...	5	5	0
Dr. Victor Philippe ...	1	1	0
Dr. Hervey Bodman ...	5	0	0
Lt.-Col E. Le Cronier Lancaster, R.A.M.C....	2	2	0
"R."	2	0	0
Dr. M. Black Jones ...	2	2	0
Sir Alfred Pearce Gould (monthly)	5	0	0
Dr. E. Farquhar Buzzard	5	5	0
Mr. and Mrs. Herbert Tilley	15	15	0

* Per Sir Thos. Barlow. † Per Sir Rickman Godlee.
‡ Per Dr. Des Vœux.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

MEETINGS OF THE EXECUTIVE COMMITTEE.

A meeting of the Executive Committee was held at the offices of THE LANCET on Wednesday, June 19th, when a letter was read from the Commission for Relief in Belgium (C.R.B.) stating that the subsidies of the Fund were always received by those for whom they were intended, and were of enormous value and moral support. In the letter was enclosed a long statement from the Belgian Commission Mixte sitting in Brussels, which proved the dire need of the Belgian medical and pharmaceutical profession of drugs, the careful steps taken to distribute to the best advantage their supplies, and their dread of a failure of those supplies.

Dr. DES VŒUX stated that the Fund had now only £600 to its credit, and that a further subsidy was due to the Belgian Committee at Brussels in July, which meant the virtual end of the Fund unless appeals to the medical profession proved more fruitful. He commented on the fact that the Fund was very poorly supported by the leading members of the medical profession. He said that the second appeal had brought in £1100 5*s*. before the issue of the circular letter and £1156 since, but added that £400 of that money had been given in response to personal appeals to friends made by the chairman and himself.

Dr. HERBERT SPENCER said that, judging from, among other things, the attitude of the Fellows at a recent Comitia of the Royal College of Physicians of London, the profession did not believe that the money reached its destination in Brussels, but was chiefly distributed among the Belgian doctors in this country; and several members of the Committee agreed that this was a prevalent feeling despite the categorical statement to the contrary repeated in the medical and pharmaceutical press.

In a debate on the course to be pursued to raise more money, in which every member of the Committee took part, it was agreed that for the present the appeal should be made to medical men and pharmacists only, but that they should be asked to bring the urgent need of the Fund before their personal friends.

A meeting of the Executive Committee was held on Monday, July 1st, at the offices of THE LANCET, when Dr. Des Vœux reported that the letter from Sir Rickman Godlee, published in the *British Medical Journal* and *The Lancet* the previous week, and urging members of the medical profession to support the Fund, had produced good results. The publication in the *Pharmaceutical Journal* of excerpts from the statement of the Commission Mixte (see below) had been very serviceable. The mensuality of £400 for July would be sent off.

An Urgent Appeal from Belgium for Immediate Assistance: A Guarantee that the Relief Reaches the Distressed Classes.

The following passages from a communication addressed to Dr. S. Squire Sprigge, Honorary Secretary to the Fund, by Mr. Lewis Richards, the Assistant Director of the C.R.B.,

speak eloquently as to the imperative need for further substantial succour of our hapless professional brethren in Belgium :—

"I need hardly remark that the charities thus in receipt of subsidies through our channels are most carefully administered, and there is no possibility of any leakage on the way. I would like, however, to repeat—nor can we emphasise this point too strongly—that the need of help for Belgium grows with every day, and the reports which we receive from all branches of the work are nothing short of heart-rending. In this connexion we think you will be interested in reading an appeal which we recently received from a commission of doctors in Belgium asking for various medicines. You will see from this letter [the appeal of the Commission Mixte—see below] the difficulties against which the medical profession in all its branches has to contend."

"Your Fund is one which reaches a class which cannot be helped in any other way. For the most part the professional men are too proud to come to the public soup-kitchens, and after four years of terrible privation any little savings which they may have had are by now exhausted. But they will and do most gratefully receive help from your Fund, and with the assistance thus given them goes a most comforting feeling that their happier colleagues overseas are not forgetting them—a feeling which brings moral support, as the money brings them material comfort."

The Grave Need for Drugs.

The communication from the Comité National des Secours et d'Alimentation (Commission Mixte des Médicaments, Brussels), addressed to the Director in Europe of the C.R B., is the document alluded to in Mr. Richards's letter. It is signed by M. Herlant, pharmacien and D.Sc., professor at the Free University of Brussels, and M. Coelst, pharmacien, echevin of the commune of Laeken, as well as by Dr. Pechère, Dr. Herman, and M. Meunier, the secretary. It is a clamant appeal for the despatch to Belgium of supplies of chemical and vegetable drugs, of which there is a total lack. The dearth is such that many practitioners have to resort to inferior alternatives, and many antiseptics are practically unobtainable, so that in the event of an epidemic the situation would be of unheard-of horror. The drugs distributed by the Commission are also supplied to the middle classes, who are grievously impoverished, and as a consequence of innutrition or malnutrition the whole population is seriously enfeebled, and is therefore consuming a larger and larger amount of tonic and fortifying drugs. In order to cope with these adverse circumstances the Comité National has organised a Medical Secours and Pharmaceutical Secours. Medical cards are issued, and the medicines prescribed by 2000 doctors united for the service are dispensed by 1500 chemists throughout the country at a uniform rate, and the Comité pays the bill, which averages 1,500,000 francs monthly. In Brussels there is a Central Pharmacy, under the control and administration of the Comité, which manufactures and distributes the large bulk of the standard pharmaceutical products to doctors and chemists, and also undertakes dispensing. In less than two years it has dispensed 250,000 prescriptions, and by means of statistical analysis of the drugs used in these prescriptions and those issued through the Medical Secours the Comité can determine what quantities of the drugs commonly prescribed are essential for the maintenance of the pharmaceutical service for one year.

Special attention has been directed by the *Pharmaceutical Journal* to the statement in the closing passages in this document, which ought once for all to allay the suspicion that the money or goods destined for the relief of Belgian doctors and pharmacists and of the general population in Belgium get into the wrong hands or are improperly administered :—

"The Commission Mixte, which the C.N. has specially created to assure the distribution and control of medical supplies which it manufactures or imports, can give the assurance that the drugs imported will never give rise, under its dispensation, either to smuggling or to abuses. They are in a position, without commercial interference, to send them direct to the hospitals, to the 1500 chemists' shops of the country, to the 500 doctors holding office, according to the real needs of each one, needs which are determined according to a rationing of indigenous products in use for more than two years, and which, up to the present, has given every satisfaction to the services of control instituted by the Comité National.

"The Commission Mixte would be happy to be able to convince the C.R.B. of the absolute necessity of immediate intervention. The profession, the larger hospitals, the official Medical Commission, all those who in this country have a practice, a post, or a responsibility, are conscious of the danger, and send us constant expressions of alarm. We will be glad to believe that the C.R.B. will not neglect any means by which it can be avoided that to all the sorrows, inevitable sufferings, should be added for our enfeebled and anæmic populations the terrible prospect of even worse days to come, when to moral tortures shall be joined physical sufferings which it will be in no man's power to alleviate or to cure.

Similar assurance has been regularly given by the *British Medical Journal*, the *Pharmaceutical Journal*, and *The Lancet* that the money subscribed invariably reaches the Belgian sufferers in that country, and that the benefits derived from it are allocated with scrupulous care.

THE FUTURE OF THE INDIAN MEDICAL SERVICE:

DEPUTATION FROM THE BRITISH MEDICAL ASSOCIATION TO THE SECRETARY OF STATE FOR INDIA.

A DEPUTATION from the British Medical Association met the Secretary of State for India, the Right Hon. E. S. MONTAGU, M.P., on June 27th, to discuss the present conditions and the future of the Indian Medical Service.

In introducing the deputation, Sir CLIFFORD ALLBUTT expressed the general feeling that the I.M.S. is not so attractive as it might be to the young medical man, mentioning as a deterrent the absence of opportunities for research. Lieutenant-Colonel R. H. ELLIOTT, I.M.S., alluded to the reasons which made the I.M.S. at the present time "the despair of British medical schools." Financial stress, constant supersession by junior officers of other branches, and interference with retirement, were some of the points he mentioned. Sir BERKELEY MOYNIHAN spoke of what he considered the progressive deterioration in the qualities of the Service, and pressed for reform in the substitution of a single Royal Indian Medical Corps for the two corps at present serving in India, for increase of pay, and for the right of private practice. Dr. J. NEAL, speaking as deputy medical secretary of the B.M.A., desired the Government to know the extent of the discontent existing among the officers of the Service. Dr. DAWSON WILLIAMS compared the cream of men entering the I.M.S. in his own early days with the deteriorated tone, changed outlook, and discouragement of the present service. Surgeon-General P. H. BENSON, I.M.S., concluded with an expression of regret that the Service had no direct access to the Council or Governor.

Mr. MONTAGU then read a comprehensive reply to the deputation, recalling his own medical study and giving his personal views on a policy which he intended to see through. He agreed with the apprehension felt at the very unsatisfactory state of affairs. He desired himself to consider the whole question as one of doing something for India by insuring a supply of good doctors. In regard to what had already been done he said :—

"We have improved the rates of staff pay in the field; we have developed a scheme of accelerated and acting promotion to prevent supersession of I.M.S. officers by officers of the R.A.M.C.; and finally we have made promotions in the place of officers who have had to be retained beyond the normal limit. In addition two temporary surgeons-general have recently been appointed to meet the special needs of the war."

Mr. Montagu went on to lay down the following four governing principles to guide future action :—

1. To ensure for the I.M.S. suitable opportunities of interesting practice, wide experience in the cure and prevention of disease, and the retention of private practice in so far as it did not interfere with the efficient discharge of public duty. The indigenous medical profession should, he thought, grow up in an atmosphere of free competition with highly trained European doctors.

2. To revise the present inadequate pay and emolument of the I.M.S., for which the introduction of the station hospital system afforded opportunity of reconsidering. Sufficient periodic leave must be available for Europeans serving in India.

3. To provide increased opportunity for Indians to enter the I.M.S. on equal conditions and with equal opportunities of promotion, and to extend medical education in India.

4. To remove sources of friction in the service at present producing great unhappiness. The two services in India must, he said, be considered together with a view to achieving unification.

Mr. Montagu concluded by an expression of agreement with the deputation in regard to the training of all members of the services in the diseases of women and children, and of the provision of facilities for research, stating that the Viceroy was determined to provide for India the medical assistance needed by the Empire.

EPSOM COLLEGE.

Annual General Meeting.

Sir HENRY MORRIS, the treasurer, presided at the annual general meeting of the Governors of Epsom College on Friday last, June 28th, at Soho-square.

The SECRETARY submitted the report of the scrutineers and mentioned that as two further vacancies for pensionerships had occurred the Council would admit at their meeting immediately after the annual general meeting the first two unsuccessful candidates—namely, Mrs. Lydia A. B. Clark and Mrs. Emily Archer.

Successful Candidates.

Pensionerships.

	Votes.
*Thomas, Margaret	4019
†McCalman, Jeannette M.	3961
†Samuel, Louisa	3953
†Morgan, Catherine	3006

* Burney Yeo pensioner.

Foundation Scholarships.

	Votes.
Bucknall, Rupert V. ...	13,483
Martineau, Alfred R. ...	7,385
Cooper, Peter A.	6,050
Thomas, Granville N. E.	5,969
Seal, Arthur M. B. ...	4,953

† Ordinary pensioners.

In submitting the annual report for the past year the CHAIRMAN drew attention to the establishment in perpetuity of four Entrance Salomons Scholarships of £50 a year each and three Leaving Salomons Scholarships of £100 a year each. These scholarships, he said, had been established as a result of a grant of £10,000 by the committee appointed under the will of the late Mr. Leopold Salomons to distribute his residuary estate, the award having been made "as a slight recognition of the splendid work of the medical profession carried on during the war." The Chairman also drew attention to the War Memorial Fund for rebuilding the nave of the chapel in harmony with the new chancel, wherein a suitable monument could be placed bearing the names of Old Epsomians and Epsom masters fallen in the war. At present, he said, there were over 700 Old Epsomians serving with the forces, of whom 600 had joined since the outbreak of war. In the Roll of Honour of Old Epsomians were included 75 who had been killed in action, 4 who had died in hospital, 7 accidentally killed, 10 who had died of wounds, 120 who had been wounded, 6 who were missing, and 5 who were prisoners. Fifty-eight Old Epsomians had been mentioned in despatches, 1 five times, 2 four times, 2 three times, and 4 twice; 1 had been awarded the Victoria Cross (Brigade-General R. B. Bradford, since killed), 7 the Distinguished Service Order (2 with additional bars), 1 the Distinguished Service Cross, 47 the Military Cross, and 1 the Croix de Guerre.

The report was adopted, but certain paragraphs therein, reflecting upon the attitude of the Royal Medical Bevevolent Fund, were made the subject of discussion. The paragraphs in question alluded to disputes which have arisen during the last ten years between the College and the Fund with regard to the testamentary intentions of certain donors. Dr. G. E. HASLIP, Mr. ERNEST PAGE, K.C., the Vice-Chairman, and Sir RICHARD DOUGLAS POWELL took part in the discussion, and the last suggested the formation of a Conciliation Committee composed of a few members of the Council of Epsom College and of the Committee of the Royal Medical Benevolent Fund. The CHAIRMAN having said that a resolution to that effect, being carried by the annual general meeting, would have the greatest influence in determining the Council towards carrying out such an arrangement, the following resolution was moved, seconded, and carried unanimously:—

"That the Council be and is hereby requested and authorised to take such steps as they may think best calculated to avoid friction arising between them and the Royal Medical Benevolent Fund on any questions that may hereafter arise as to the title to funds in which either body may from time to time consider itself interested."

Mr. Horace E. Haynes was elected a Vice-President in recognition of his having collected the sum of £1000 for the Royal Medical Foundation attached to the College, when a vote of thanks to the Chairman brought the proceedings to a close.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Previously reported Missing, now reported Died of Wounds.

Capt. E. Newton, R.A.M.C., qualified at Aberdeen in April, 1915, and shortly afterwards joined up.

Died.

Capt. D. T. O'Flynn, R.A.M.C., attached R.F.A., qualified in Ireland in 1906, and held appointments at the London County Asylum, Cane Hill, and at the Isle of Man Lunatic Asylum. At the time of joining up he was assistant M.O. at the London County Asylum, Hanwell.

Wounded.

Capt. J. W. Darling, M.C., R.A.M.C., attached R.F.A.
Capt. A. Malseed, M.C., R.A.M.C., attached Liverpool Regt.
Capt. R. Craig, R.A.M.C., attd. Northumberland Fusiliers.
Major R. H. Hodges, M.C., R.A.M.C.
Major A. E. P. McConnell, M.C., R.A.M.C.
Capt. W. M. Cameron, R.A.M.C.
Capt. W. F. Shanks, R.A.M.C., attached R.G.A.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Capt. M. D. Quill, Royal Marine Artillery, died as the result of an accident whilst on leave, elder son of Surgeon-General R. H. Quill, C.B., of Cheltenham.
Lieut. K. T. Campbell, R.A.F., killed in action, only son of Lieut.-Col. S. Campbell, C.A.M.C., of Winnipeg, Canada.
Second Lieut. J. F. Northcote, West Yorkshire Regiment, reported missing in October, 1917, now believed to have been killed in action, younger son of Dr. A. B. Northcote, of Monkgate, York.
F. G. Thomas, Mercantile Marine, torpedoed at sea, fifth son of Dr. W. Thomas, of Birmingham.
Lieut. G. Wilson, R.A.F., reported missing in May, now reported killed in action, younger son of Dr. H. Wilson, J.P., of Cheadle, Cheshire.
Major C. F. Clarke, Indian Cavalry, died in hospital after long illness contracted on active service, only son of the late Dr. J. F. Clarke, of Nightingale-lane, London, S.W.

MENTIONED IN DESPATCHES.

The name of the following medical officer is mentioned in despatches:—

Surg. Andrew Harman Pearce, R.N.

FOREIGN DECORATIONS.

French.

Legion of Honour: Officer.—Surg.-Gen. J. L. Smith, C.B., M.V.O.

VENEREAL DISEASE AND THE DEFENCE OF THE REALM ACT.

During the month of June three cases of solicitation by women suffering from venereal disease in a communicable form came before the justices at Eastbourne, Brighton, and Hove. The maximum term of imprisonment (six months) was imposed at Eastbourne and Brighton and three months at Hove. The Canadian military authorities have, with the assistance of the civilian police, been taking the initiative, and an officer told the justices that the military authorities considered the Act under which the proceedings were instituted to be "the best that had ever been placed on the Statute Book." The Canadian military authorities, the officer added, were willing to prosecute in every case that came to their notice. The proceedings, it should be stated, were taken under section 40d of the Minutes of Emergency Legislation under D.O.R.A., which provides that—

"No woman who is suffering from venereal disease in a communicable form shall have sexual intercourse with any member of H.M. Forces or solicit or invite any member of H.M. Forces to have sexual intercourse with her."

The section provides also, *inter alia*, that—

"A woman charged with an offence under this regulation shall, if she so requires, be remanded for a period, not less than a week, for the purpose of such medical examination as may be requisite for ascertaining whether she is suffering from such a disease."

Syphilis, gonorrhœa, and soft chancre are cited in the section.

MEDICAL TREATMENT OF DISCHARGED DISABLED SAILORS AND SOLDIERS IN IRELAND.

FOR some weeks past the Irish Insurance Commission has had under discussion with representatives of the Irish Medical Committee a scheme for providing medical treatment for discharged disabled sailors, soldiers, and marines, and it is understood that the scheme proposed by the Commissioners, which has received general approval on behalf of the profession, is now under the consideration of the Treasury. The scheme presented greater difficulties in Ireland than in Great Britain owing to the exclusion of medical benefits from the Insurance Act in its application to Ireland. As there were no panels some other system of attendance had to be arranged, and the scheme as proposed follows closely on the lines of the scheme for certification of insured persons which has been working smoothly since the beginning of 1916. The total sums available for payment will be put into a common pool for the whole country, and medical practitioners will be paid quarterly in proportion to the work done by each. Each service rendered will have a definite "token value"—e.g., a consultation at medical practitioner's house, 1; at patient's residence, 2; with journey of defined distance, 3; operation, 4. The total sums available will accrue from a capitation rate for every discharged disabled sailor, soldier, or marine in Ireland, of 12*s.* 6*d.* for those resident in urban areas and 15*s.* for those in rural. As practitioners who join in the scheme will also receive the certification capitation grant, varying from 1*s.* 3*d.* to 2*s.* 6*d.* in different areas, the remuneration appears not to be unfair.

OBITUARY OF THE WAR.

FREDERICK ARTHUR JOHN ROBERTSON BROOKE, M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain F. A. J. R. Brooke, who was killed in action in France on May 27th, was elder son of the late Thomas George Brooke, surgeon, of Langport, Somerset. Educated at Epsom College and the London Hospital, he took the qualifications of the Conjoint Board in 1894. In July, 1915, he accepted a commission in the R.A.M.C., and after taking charge of wards at Sidmouth Barracks he was appointed to the H.S. *Britannic*, and made many voyages with wounded in that vessel. Later he was at Thornhill Camp, Winchester, at a convalescent camp in France, and finally with a field ambulance.

From his student days Captain Brooke was at heart a soldier. He entered the R.A.M.C. with enthusiasm, and would have been glad to accompany his men over the parapet. His friends speak of him as an exceptionally brave man and a gifted letter-writer. He married in 1895 Constance Blanche, daughter of the late Rev. Francis Wellington Moore, of Duffield, and leaves a widow and six children. His son Cecil was killed in action at Arras on April 24th, 1917.

WILLIAM FRASER HALE, M.D. BALTIMORE,

CAPTAIN, CANADIAN ARMY MEDICAL CORPS.

Captain W. F. Hale, who died as the result of accidental injuries on June 8th, the 42nd anniversary of his birthday, was son of the Rev. Joseph Hale, of Louisburgh, Nova Scotia. He was born at Springhill, Nova Scotia, and graduated in medicine at Baltimore, Maryland (U.S.A.), in 1902. In January, 1917, he joined the C.A.M.C., went to France, and later served with a general hospital.

FRANCIS GEOFFREY THATCHER, M.B., CH.B. EDIN.,

MILITARY CROSS,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain F. G. Thatcher, who died of wounds on June 1st at the age of 27 years, was youngest son of Charles H. Thatcher, F.R.C.S., of Edinburgh. He was educated at the Edinburgh Academy and University, graduating M.B., Ch.B. in 1913. He passed into the Royal Army Medical Corps in July, 1914, and on the outbreak of war was sent almost immediately to France, attached to the Queen's Royal West Surrey Regiment. Wounded at the first battle of Ypres, he was on hospital duty in this country for a few months before being given command of a hospital ship. Being again sent to France, from May, 1917, he acted as D.A.D.M.S. to a division, and while so engaged was fatally wounded by a bomb, only surviving his injuries two days. Captain Thatcher was a keen sportsman, a member of the Edinburgh University O.T.C., and one of the team who won the Territorial Marathon race in 1910. He acted as first whip to the Edinburgh Beagle Hunt for several seasons. His cheerful disposition made him a pleasant companion and accentuates the loss felt by his colleagues and brother officers.

Captain Thatcher married, in 1915, Gladys, daughter of Maxwell Grayson, of Harrogate.

Correspondence.

"Audi alteram partem."

ACUTE ŒDEMA OF THE LUNGS.

To the Editor of THE LANCET.

SIR,—I have only just seen in THE LANCET of May 11th Dr. F. de Havilland Hall's letter with reference to this subject. I should like to quote a case in point which I met with two years ago.

The patient, a girl aged 12, went to bed at 11 o'clock well, but became seriously ill about 12.30. I saw her at 2 A.M., when she was cyanosed, lying on her side, coughing and hawking; the frothy, tinged mucus which one finds in the trachea P.M. was pouring out of her mouth; there were râles all over lungs, and she died in about half an hour. I had never met with a description of the disease, but, strange to say, a few days after I came across an account of it in *Le Monde Médical*.

Two days ago I attended a sister of the above, aged 6 days. She had only been ill a few hours, but was slightly cyanosed, unable to swallow, no expectoration, fine râles all over both lungs. She died the following day. There is a great amount of whooping-cough about, and possibly an elder child is commencing with it.

As to the treatment by atropine, I should have been afraid to attempt it. I attended many years ago a young man for bronchitic asthma; he was spitting some three pints of frothy mucus a day. I gave atropine to check it and succeeded; but oh! how ill I made him! I had to do my best to neutralise it a few hours after, as he was nearly suffocating. I am, Sir, yours faithfully,

A. BOWES ELLIOTT, F.R.C.S. Eng.

Abergele, June 10th, 1918.

THE MEDICAL DIRECTORY, 1919.

To the Editor of THE LANCET.

SIR,—The annual circular in connexion with the Medical Directory has been sent to every member of the medical profession. It will help the editors considerably if this circular is returned promptly. If in any instance it has failed to reach a practitioner, a duplicate will be forwarded on request. We are, Sir, yours faithfully,

THE EDITORS.

7, Great Marlborough-street, London, W. 1, July 2nd, 1918.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Midwives Bill.

THE Midwives Bill passed through Committee in the House of Lords on Tuesday, July 2nd. The alterations made concerned the delegation of powers by local authorities. As the Bill now stands county councils and county borough councils cannot delegate the powers of inspection entrusted to them.

Medical Inspection and Treatment of School Children.

Clause 18 of the Education Bill deals with the medical inspection of schools and educational institutions. An amendment proposed in the House of Commons by Sir W. WATSON CHEYNE was accepted providing that the local educational authorities in making arrangements for treatment should consider how far they could avail themselves of the services of private medical practitioners.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 26TH.

Promotion in the Royal Army Medical Corps (Territorial).

Sir F. BLAKE asked the Under Secretary for War whether any and, if so, what steps had been taken to provide for the regulated promotion of officers of the Royal Army Medical Corps, Territorial Force; and, particularly, whether he would arrange to give the charge of hospitals which were lieutenant-colonels' commands to senior majors of that force of 20 to 30 years' service when they had served abroad with distinction and were strongly recommended by their commanding officers.—Mr. MACPHERSON replied: The recommendations of the committee appointed to report upon the promotion and pay of officers of the Royal Army Medical Corps have been complied with in accordance with the decision of the Government. In this connexion I would refer my honourable friend to Command Paper 8643 which was issued in January last. Duly qualified officers recommended for the posts referred to in the second part of the question are equally considered, and those best fitted for the command are appointed.

THURSDAY, JUNE 27TH.

Provision of Artificial Limbs.

Major CHAPPLE asked the Parliamentary Secretary to the Ministry of Pensions how many limbless men had been fitted with artificial limbs; how many were still unfitted; how many of those unfitted were ready and waiting to be supplied; how many of those fitted had returned for refitting or repairs; and what was the average cost of each artificial limb supplied.—Sir A. GRIFFITH-BOSCAWEN replied: Up to the end of last month 18,307 men had been fitted or were in process of being fitted with artificial limbs, and 12,855 were still unfitted. Of the latter number 4321 were ready and waiting to be supplied. It is not possible to state how many of those fitted have returned for refitting or repairs, as in many cases the orders are given direct to limb makers by local committees or commandants of military hospitals. As the prices of artificial limbs vary so greatly with the nature of the amputation, the type of limb selected, and the attachments, appliances, and fittings necessitated by the circumstances of the case, it would be misleading to name any figure as representing the average cost of each limb supplied.

Major CHAPPLE: Will he say what is being done for those who are now unfitted in the way of supplying them with temporary artificial limbs pending the provision of permanent artificial limbs?—Sir A. GRIFFITH BOSCAWEN: We are making large additional purchases, and in the next few weeks the accommodation in this respect will be much better.

Medical Grading at Bristol.

Mr. JOYNSON-HICKS asked the Parliamentary Secretary to the Ministry of National Service what was the total number of men examined and the number of men passed Grade 1 by the National Service medical boards at Bristol for the weeks ending May 4th, 11th, 18th, and 25th, and June 1st, 8th, 15th, and 22nd last, respectively; and what number of such men were between 43 and 51 years of age.—Mr. BECK replied: It would be contrary to the public interest at the present time to give the figures asked for by my honourable friend, but I may say that excluding re-examinations the percentage of the total number of men of the old military age examined at Bristol during May and the first fortnight of June who were passed Grade 1 was 71 per cent., while the percentage of the total number of men over 43 examined who were passed Grade 1 was 18·6 per cent.

Medical Examinations and Grading.

In Committee of Supply on an Estimate for the Ministry of National Service, Sir AUCKLAND GEDDES (Minister of National Service) made a long statement concerning the work of his department, with particular reference to medical examination and grading. He elaborated many of the points which he made in his speech in the House on June 20th.

He pointed out that in allocating men to the Army two considerations fell to be taken into account. The first was the purely medical consideration as to how fit a man was; the second was how the man who possessed such fitness could best be employed by the Army, and that fell to be decided by men with experience of the conditions of this war. Under the old scheme it was attempted to carry out these two functions and to get the medical men working on the medical boards to decide not only the medical problem as to how fit a man was, but also the further problem—what class of work he was fit to do in the Army. That led, as was inevitable, to great waste, because civilian medical practitioners in large measure were being asked to decide something which required military experience, and he thought that the great difficulty which led to the breakdown of the military recruiting boards was the imposition of this double function upon them. This system was changed after the medical examination of recruits was taken over by a civil department, and the advice received from the Medical Advisory Board and a large number of civil consultants was that the furthest a medical board composed of civil medical practitioners should be expected to say was whether a man was fit for his age. That was the advice which lay behind the terms Grade 1, Grade 2, and Grade 3 when they were introduced last autumn. The system of posting the men to the various branches of the Army took account both of the man's grade and the man's age. The whole of the posting was carried out under most careful supervision. When the men went to the reception station there was a posting board, which consisted of a field officer who had experience of how men of various ages were standing, a medical officer, and also a posting officer, who had full information given to him every month as to the requirements of each of the arms of the service and the classes of men who should be posted to the various arms. The medical men (the right honourable gentleman proceeded) who were doing the medical examinations for the Ministry of National Service were not officials, but in the vast majority of cases they were civil practitioners who were giving a portion of one, two, three, or four days in the week to help in this work.

Mr. P. A HARRIS: What is the tenure of their office? Are they subject to dismissal?

Sir A. GEDDES: The medical men are provided by the profession itself through its local official organisations, the local war (executive) committees. They prepared panels which included medical men in practice in the district, who were willing or who had time to do a certain amount of work on the medical boards. The local war (executive) committee might refuse to put a man's name on the panel. That, he believed, had happened, but no Government Department had anything to do with whether a man's name was on the panel or not, or was removed from the panel or not. They were paid by sessions of two and a half hours. These medical men were not in any sense servants of the Ministry of National Service; the Ministry did not, in fact, appoint them, but gave a formal approval which had never been withheld from the names sent forward by the local professional committees. Nor did any Government Department dismiss them. If any individual on one of the panels was guilty of misconduct the tribunal which would decide would be in the first instance the local war executive committee of the medical profession, and if it thought it a case of misconduct it would remove a man's name from the panel. So in fact there was no Government control over the individual medical men who were working on these boards. It was recognised that there would in all probability—and he believed that this was absolutely borne out by experience—be a far higher standard of professional work if the Ministry left it to the profession itself to select the men who were to perform it.

General Directions to the Boards.

The general directions with regard to the working of the boards—that was to say, the professional technical medical direction, not the administrative direction about hours, pay, and so on—were issued from the Ministry of National Service after consultation with the heads of the profession. They were issued after full discussion by the medical officers in the Medical Advisory Board and there was consultation in all cases dealing with certain physical disabilities with recognised specialists in particular branches of the profession. Once these instructions were issued the whole of the medical boards were expected to conform to them. A great deal of the recent criticism of medical boards had been directed to the wrong place. The medical boards had been working very well in the overwhelming majority of cases. The criticism about the grading of the older men that had been hurled at these boards had been, in his opinion, directed to the wrong place. It ought to have been directed against the Minister. There had been a lot of criticism directed quite unfairly against the practitioners who constituted the boards. They had been accused of grading men without proper examination, and so on. That might have happened in the case of one or two boards, but it was certainly not the case with regard to the vast majority. There were no fewer than 2500 medical practitioners from civil practice who were the very salt of the profession on the general practice side working on these boards. They did the work, not because it paid them, but out of a spirit of patriotism and because they realised that at this time it was a form of national work which they could do for the country. The right honourable gentleman, with the assistance of diagrams, explained what had been done with regard to the examination of the older men, and said that less than one-third of 1 per cent. of them had been posted. A man who was dissatisfied with his grading had a right of appeal to a National Service medical board for re-examination. Afterwards an appeal tribunal might send him to the medical assessors.

Mr. MCKINNON WOOD: Suppose the medical officer at the reception station classifies the man in a higher grade than he is classified at his medical examination—what is his position then?

Sir A. GEDDES: The medical officer there cannot classify him. He cannot put a man up. He can only send a man back.

Mr. MCKINNON WOOD: He has done so. I know of cases.

Sir A. GEDDES: I would be very much obliged to my right honourable friend if he will let me have any cases, because that is strictly against the instructions. He would certainly consider the question of putting up a notice at the boards, explaining the rights of appeal which a man had. The older men were carefully differentiated in their medical history sheets from the younger men. It was not intended to use the older men primarily in the first line trenches, or even in assault work. As far as possible the War Office had pledged itself to accept the undertaking to put the men of the new age-period to secondary services in connexion with the Army.

Important Suggestion.

Sir DONALD MACLEAN (who is chairman of the House of Commons Appeal Tribunal) said that the demand was now made to the Ministry that the men of the older ages should have at least as favourable a medical examination as the men of the lower ages. What was the definition of Grade 1? In the National Service Instruction, dated Nov. 17th, 1917, it was stated: "Grade 1 is generally equivalent to Category A, i.e., general service in the old classification." The definition went on: "It includes those who attain the normal standard of health and strength, and are capable of enduring the amount of physical exertion suitable to their age. They must be free from any organic disease or deformity." That was followed by M.N.S.R. 24 at a later date. He did not quite know that date.

Sir H. NIELD: In May.

Sir D MACLEAN: Then that was after the passing of the last Military Service Act. I will read it. "Grade 1. This grade will comprise those who attain the normal standard of health and strength and are capable of enduring physical exertion suitable to their age. The men must not suffer from any organic disease, with certain exceptions specified hereafter, and must have no grave physical disability or deformity. Minor defects, such as of the teeth and of eyesight, which can be removed or compensated for by artificial means, will not be regarded as disqualifications. Men who fulfil the conditions of Grade 1 will also be fit for general service in the Army." Again, there was "general service." In the first circular quoted by him they were the governing words, at the start of the definition. Here they were at the end, but still they were the dominating words of the whole definition. Now he came to another document, which was of April 29th, 1918. "Amendment of M.N.S.R. 24, Grade 1. The older men will be placed in Grade 1 if they possess the full normal physical fitness to be expected of their age. Such men must not have any serious physical defect and must not suffer from progressive organic disease. They must be able to endure physical exertion involving a considerable degree of strain, and to undergo gradual physical training in order to fit them for military duty. *Note.*—The physical training for the older men in this grade will be carried out under special medical supervision." There was not one word in the circular of April 29th of men of this class being fit for general service. There could be no conclusion other than this, that there was a change in the physical standard by which men were to be examined after the Act was passed as compared with when the Bill was in the hands of the House. Not only was that change made in the circular, but it was made in the instructions to the medical officers. When men came up classed Grade 1 before the tribunals they did not get the same consideration. Grade 1 men were wanted, and the result was that at the tribunals the men of the older age were getting far less consideration as compared with men of the lower age under the conditions. In his tribunal he had taken a drastic step in dealing with the older men of Grade 1. All he could do was to say, "Very well; it is called Grade 1. The only way we can work it is to call it Grade 2." He suggested that five or six Members of the House who had great experience of tribunal work, with the honourable Member for the University of Edinburgh (Sir W. Watson Cheyne) and the honourable Member for Derby (Sir William Collins), who were great experts in the medical profession, should meet and consider these matters. He was quite certain that they could thus settle the whole thing, always providing that they got rid of this physical standard of fixing a man's grade according to his age and not according to his physical fitness for the Army.

Sir WILLIAM COLLINS remarked that there was a good deal of confusion of thought in the proposition that a man who was fit for his age was therefore fit for some service in the Army. The medical profession required no justification. It had done its service nobly in the war; but it could not do impossible tasks. He did think that the method of making examinations, whether according to category or by the grade system, was setting an impossible task to the medical profession.

Conference with Chairmen of Tribunals Accepted.

Mr. LLOYD GEORGE said that he understood his right honourable friend (Sir Donald Maclean) had thrown out the suggestion that Members of the House who were chairmen of tribunals should meet the Minister of National Service and try to clear the matter up. It was an admirable suggestion and was far and away the best means of clearing up misunderstanding. He believed that there were seven honourable Members who were chairmen of tribunals and had direct and special experience of the administration of the Act. The Minister for National Service thought it desirable that these gentlemen should come together and interchange views, so that his right honourable friend should get the benefit of the special experience of those who were administering these Acts and should clear the matter up. He had not the faintest doubt that if they did meet all these difficulties would be swept on one side and the public would be considerably reassured in regard to the subject. He was very glad to be able to say that they had arranged to meet. The sooner they met the better, because it was interfering with the administration of the Acts and the need for men was very great. For that reason he hoped the meeting would be arranged at the earliest possible moment, and that they would be able to clear up these difficulties. He knew that the men from 41 to 51 were only too anxious to do their best for their country, but they wanted to be treated fairly. It was the intention of the Minister of National Service that they should be fairly treated. In his (Mr. Lloyd George's) judgment, and in the judgment of his right honourable friend, they were being treated fairly, but there was a misunderstanding about it. Therefore let the matter be cleared up.

The Medical Profession and Military Service.

In the course of the subsequent debate Sir W. WATSON CHEYNE dealt with some of the aspects of the relation of the medical profession to the recent Military Service Act. He said that he had received a number of communications from the older members of the profession asking whether it was necessary that they should leave their practices where they were doing a large amount of work to go elsewhere to meet the needs of the Army. He asked whether the Minister of National Service had assured himself that there was not a waste of medical man power in the Army in France. A committee which had investigated this matter had reported last December, and the non-publication of the report was giving rise to a great deal of trouble among medical men. He would ask whether the right honourable gentleman had satisfied himself by a consideration of that report that it was necessary to call on medical men to leave their practices. If he had not done so, would he do so and get it published, so that medical men might see what it contained. Medical men, especially those over 50, were filled with anxiety lest they should be asked to leave their practices, which would mean ruin to them, and to go and take up practice, say, in a mining district. At that age they were not, in many cases, physically strong enough to carry on a practice of that kind. On the other hand, they professed their readiness to take a commission in the Army and do work in base hospitals and in other ways, so as to allow the younger men to be sent abroad. One suggestion had been made in some quarters was that temporary employment in the R.A.M.C. should be offered for periods in the summer months when the work abroad was heaviest. A return to practice might be allowed in winter, when the demand at the front was less. A certain number of medical men objected to be sent to do panel work. He thought that the older men might be given part-time work in their own neighbourhood as far as possible. He could not help thinking that the raising of the age of service to 55 had been a little rash, and he hoped that means would be taken to mitigate the hardships as far as possible.

The vote had not been agreed to when the debate terminated.

TUESDAY, JULY 2ND.

Whole-time Women Doctors in the Army.

Sir ROBERT NEWMAN asked the Financial Secretary to the War Office whether he was aware that women serving as whole-time doctors in the Army and doing precisely the same work as their male colleagues received neither military rank nor status, thereby being deprived of equal pay, ration, and travelling allowances, as well as a gratuity; that they had their letters censored and suffered under many other disabilities owing to their not holding commissioned rank; and whether, under these circumstances, steps would be taken to grant women temporary commissioned rank, thus removing these grievances, and at the same time showing a just appreciation of the services rendered by women doctors in connexion with the war.—Mr. FORSTER replied: My honourable friend is misinformed. Women serving as whole-time doctors in the Army for service at home and abroad receive the same pay, ration, and travelling allowances and gratuity as temporary commissioned officers of the R.A.M.C. Those serving for home duty only on temporary engagements are treated in the same way as civilian medical men similarly employed. All officers have their letters censored. It is not proposed to grant commissions to women doctors.

A Ministry of Health.

Major ASTOR asked the Minister of Reconstruction whether he could state when he would be in a position to introduce a Bill setting up a Ministry of Health.—Dr. ADDISON answered: The Bill on this subject is under the consideration of the Government and I am not able to make any statement as to its introduction.

Glycerine for Medicinal Purposes.

Mr. MOLTENO asked the Parliamentary Secretary to the Ministry of Munitions whether it would now be possible to arrange for the release of a suitable quantity of glycerine for the preparation of medicines of which it was an ingredient and meet a want which was pressing.—Mr. KELLAWAY replied: Glycerine is released for medicinal purposes where it is indispensable, competent medical advice being taken in doubtful cases.

ROYAL INSTITUTION.—A general meeting of the members was held on July 1st, Sir James Crichton-Browne in the chair. The Duke of Northumberland was elected President and Sir Thomas Wrightson a visitor, while the treasurer announced that the managers had appointed Sir James Dewar Fullerian Professor of Chemistry.

METROPOLITAN HOSPITAL SUNDAY FUND.—The following are among the amounts received at the Mansion House up to July 2nd, the total sum to date being £46,000.

American Red Cross Commission, £5000; St. Mark's, North Audley-street, £2453; St. James's, Piccadilly, £356; Watts, Watts, and Co., Ltd., £315; Mr. John Latta, £282 10s.; Paddington Parish Church, £239; Brompton Parish Church, £238; Lieut.-Col. More Nisbett, £200; Mr. Alexander Miller, £200; Chapel Royal, St. James's £156; St. Paul's, Finchley, £145; All Saints, Eaulsmore-gardens, £131; Westminster Chapel, £120; Emmanuel, Wimbledon, £118; C. Goodall and Son, Ltd., £105; Cory Bros. and Co., Ltd., £105; United National Collieries, Ltd., £105; W. Gardiner and Co., Ltd., £105; London and Brazilian Bank, Ltd., £105; Wilson, Sons, and Co., £105; Dorman Long and Co., £100; Mrs. E. H. Stevenson, £100; St. Alphage, London Wall, and St. Mary, Aldermanbury, £100; Hong-Kong War Charities Committee, £100; Sloper Bros., £100; Mr. W. D. Graham-Menzies, £100; Messrs. Erlangers, £100; Vivian, Younger, and Bond, £100; Mr. J. A. Roberts, £100.

THE LANCET, VOL. I., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of June 29th is in preparation. Owing to the increasing shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a *post-card* (which is more convenient for filing purposes than a letter) to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

Medical News.

UNIVERSITY OF OXFORD.—At examinations held recently the following candidates were successful:—

SECOND M.B. EXAMINATION.

Materia Medica and Pharmacology.—J. Harris, Jesus; B. G. Von Brandis Mellé, Brasenose; and K. F. D. Waters, Keble.

Pathology.—B. G. Von Brandis Mellé, Brasenose.

Forensic Medicine and Public Health.—E. H. Cluver, Magdalen; J. C. Dixey, Brasenose; S. C. Dyke, Exeter; C. F. Krige, Hertford; J. E. B. Morton, Queen's; T. Patterson, non-collegiate; W. V. Robinson, New; A. E. Thomas, University; and K. F. D. Waters, Keble.

Medicine, Surgery, and Midwifery.—E. H. Cluver, Magdalen; S. C. Dyke, Exeter; T. Patterson, non-collegiate; W. V. Robinson, New; J. J. Savage, Brasenose; K. F. D. Waters, Keble; and E. A. Woods, Magdalen.

UNIVERSITY OF CAMBRIDGE.—At examinations for medical and surgical degrees held in Lent and Easter terms the following candidates were successful:—

SECOND EXAMINATION.

Part I., Human Anatomy and Physiology (March).—J. G. D. Currie, Peterhouse; J. H. Doggart, King's; A. C. V. Gosset and S. Orchard, Caius; and L. R. W. Price, Sidney Sussex. Women: J. R. Batten, Newnham; and D. A. D. Cropper, Girton.

Part II., Pharmacology and General Pathology (April).—C. C. Beney, Jesus; N. D. Dunscombe, Downing; H. Franklyn, Christ's; D. G. Garnett, Pembroke; N. B. de M. Greenstreet, St. John's; C. Griffith Jones, Caius; W. E. Heath, Queens'; C. A. Horder, Emmanuel; H. A. A. Pargeter, Sidney Sussex; R. Y. Paton, Trinity; C. V. Patrick, Caius; M. L. Sawhney, Downing; C. Suffern, Emmanuel; and M. L. Young, Caius.

Part I., Human Anatomy and Physiology (June).—W. D. Doherty and C. I. C. Gill, King's; S. H. G. Humfrey, Caius; P. Lazarus-Barlow, Downing; J. R. Lund, Catherine; L. B. Maxwell, Caius; O. G. Misquith, Christ's; C. Sturton, St. John's; K. H. Tallerman and G. I. F. Tweedie, Caius; C. E. Whitting, Christ's; and H. L. Willey, Caius.

THIRD EXAMINATION.

Part I., Surgery and Midwifery (June).—G. T. Calthrop, Emmanuel; F. N. V. Dyer, Clare; G. A. Fisher, Jesus; F. Gray, Caius; N. B. de M. Greenstreet, St. John's; R. J. Hearn, Jesus; L. G. Higgins, Clare; C. McC. Jones, Downing; S. D. Kilner, Emmanuel; J. H. E. Moore and R. A. Olphert, Caius; N. Rumboll, Emmanuel; A. H. J. Smart, Caius; and J. Whittingdale, Downing.

Part II., Medicine, Pathology, and Pharmacology (June).—A. B. Appleton, Downing; I. de B. Daly, Caius; E. A. Green, Emmanuel; L. G. Higgins, Clare; B. B. Jareja, Trinity; J. D. Jones, H. Selwyn; S. D. Kilner, Emmanuel; J. H. E. Moore and H. Morrison, Caius; A. H. Pearce, Clare; C. H. Vernon, St. John's; and F. G. Wood, Jesus.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates were successful in the subjects indicated:—

Surgery.—G. H. Fitzgerald (Sect. II.), Guy's Hosp.; and H. M. Waller (Sect. II.), St. Bart.'s Hosp.

Medicine.—W. E. P. Briggs (Sects. I. and II.), Manchester; N. Cheua (Sect. II.), Middlesex Hosp.; D. A. Dyer (Sect. II.), St. George's Hosp.; G. H. Fitzgerald (Sect. II.), Guy's Hosp.; and F. W. Kemp (Sect. I.), Charing Cross Hosp.

Forensic Medicine.—H. Carter, London Hosp.; and F. W. Kemp, Charing Cross Hosp.

Midwifery.—W. E. P. Briggs, Manchester; J. F. E. Burns, Bristol; J. Gorsky, Westminster Hosp.; F. W. Kemp, Charing Cross Hosp.; and E. H. Musgrove, Cardiff and Guy's Hosp.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: W. E. P. Briggs, D. A. Dyer, G. H. Fitzgerald, and H. M. Waller.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful in the subjects indicated:—

FINAL M.B. AND CH.B. EXAMINATION.

T. H. Almond, Sybil Bailey, Mary G. Cardwell, Thomas Colley, S. E. Critchley, F. L. Heap, John Mills, Kathleen O'Donnell, Norah H. Schuster, L. J. Schwartz, V. T. Smith, and F. L. Whincup.

Obstetrics.—James O'Grady and Bryan Walley.

Forensic Medicine and Toxicology.—Nooman Abdoh, Mary E. Boullen, Elizabeth C. Davies, Kathleen Doyle, Georgiana M. Duthie, Olive M. Gimson, F. G. Hamnett, Archibald Harris (distinction), Simon Kelly, J. G. Nolan, James O'Grady, Olga G. M. Payne, F. L. Pickett, Ellis Pigott, William Reikan, A. El. H. Sadek, Annie G. Thompson, Dorris M. R. Tompkin, Brian Walley, Ethel D. Willis, and Ruth A. Wilson.

THIRD M.B. AND CH.B. EXAMINATION.

Pharmacology, Therapeutics, and Hygiene.—Samuel Adler, May Ashburner, F. A. van Collier, Phyllis M. Congdon, J. W. Crawshaw, K. V. Deakin, A. M. El-Aguizy, F. R. Ferguson, Evelyn A. Garnett, Joshua Harris, G. E. Hayward, Sylvia K. Hickson, J. B. Higgins, F. S. Horrocks, Irma M. C. Jéhansart, F. C. Jones, Mary S. Jones, H. A. Lomax, W. E. Mason (distinction), Doris B. Norman, E. R. Ormerod, Emily M. Peach, H. D. Preston, Harry Rosenthal, Gerald Sheehan, Annie E. Somerford, Geoffrey Talbot, Doris A. Taylor, G. L. Taylor, H. W. Taylor, Mary I. Turner, and Raymond Williamson.

Hygiene.—Martha F. Barritt, Florence M. L. Graham, A. S. Leigh, and Bertha Renshaw.

SECOND M.B. AND CH.B. EXAMINATION.

Simon Almond, Ernest Jones, and J. S. Robinson.

DIPLOMA IN DENTISTRY (FINAL EXAMINATION).

Norman Flitcroft, and E. L. Morgan.

UNIVERSITY OF DURHAM: FACULTY OF MEDICINE.—At the Convocation held on June 25th the following degrees were conferred:—

Doctor of Medicine for Practitioners of 15 Years' Standing.—Kenlyn Cobham Edwards and Percy Arthur Storey.

Bachelor of Medicine and Bachelor of Surgery.—Dorothy Edith Butcher, Cyril Charles Herbert Cuff, Wallace Alexander Freedman, Mary Kathleen Henegan, William Andrew Hewitson, William Arthur Jaques, Bertram Sergeant, and William Edward Mandall Wardill.

Bachelor of Surgery.—Stephanie Patricia Laline Hunte Taylour Daniel.

Bachelor of Hygiene and Diploma in Public Health.—Harold Mason Leete.

At the Third Examination for the degree of Bachelor of Medicine the following candidates were successful:—

Materia Medica, Pharmacology, and Pharmacy; Public Health; Medical Jurisprudence; Pathology and Elementary Bacteriology.—Tom Hugh Ronald Anderson, Paige Canney Arnold, Neil Robertson Beattie, Robson Christie Brown (second-class honours), Samuel Whately Davidson, Mark Julius Erdberg, Alfred Stoddart Graham, Mary Louise Griffiths, Kate Gray, Dorothy Holmes, George Hurrell, Edith Catherine Morris Jones, Malik Abdur Rahman Mansoor, Thomas Norman Vickers Potts, May Raw, Joseph Silverston, Henry Rochester Smith, James Stonehouse, Athelstan Woodman, Kathleen Mary Weldon Watts, and Arthur Guy Weston (second-class honours).

UNIVERSITY OF GLASGOW.—The following degrees were conferred on June 26th:—

DOCTOR OF MEDICINE (M.D.).

Thomas Symington Macaulay (commendation) and Thomas Baxter.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The following candidates have passed the Final Dental Examination and have been granted the diploma of L.D.S. R.C.S. Edin.:—

John Kohler Steel and Daniel van der Merwe du Toit.

NATIONAL UNIVERSITY OF IRELAND.—The degree of M.D. (honoris causâ) has been conferred upon Colonel R. J. Blackham, C.M.G., C.I.E., D.S.O.

ROYAL MEDICAL BENEVOLENT FUND GUILD.—A garden party in aid of the Guild will take place in the Royal Botanic Gardens, Inner Circle, Regent's Park, London, on Tuesday, July 16th, from 2.30 to 7 P.M. There will be music provided by bands, dancing in a ball-room marquee, concerts at 3 and 3.45 by distinguished artists, and gift sales at 3.30. Practically the entire fête will be covered in ("weather absolutely guaranteed") and tea and refreshments will be provided. Admission 2*s.* 6*d.*; concert, 2*s.* 6*d.*; tea, 2*s.*; dancing, 2*s.* 6*d.* The chairman of the Guild is Lady Tweedy, 100, Harley-street, London, W. 1, from whom and 25 other ladies named in the handbill tickets can be obtained, as also from Keith, Prowse, and Co., Alfred Hays, Ashton, and Mitchell, and the District Messenger Co. The honorary organiser is the Earl of Wilton, Cassiobury, Watford.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on June 19th, with Sir Francis H. Champneys in the chair. Certain midwives were struck off the roll, the following charges, amongst others, having been brought forward:—

Being in attendance at a confinement, a midwife was guilty of negligence in the following respects: The placenta and membranes not having been completely expelled within two hours after the birth of the child, she did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (3); the patient being in the condition aforesaid, the midwife neglected to hand to the husband or the nearest relative or friend present the form of sending for medical help, properly filled up and signed by her, in order that this might immediately be forwarded to a medical practitioner or to an

approved institution, as required by Rule E. 20; the midwife not being scrupulously clean in every way, including her person, clothing, and appliances, as required by Rule E. 2, and not keeping her register of cases, as required by Rule E. 24. Medical aid having been sought for the patient, the midwife neglected to notify the local supervising authority thereof, as required by Rule E. 22 (1) (a); she neglected to provide for the comfort and cleanliness of the patient during the ten days following, as required by Rule E. 12; she neglected to take and record the pulse and temperature of the patient at each visit, as required by Rule E. 14; and she neglected before leaving the patient's house to remove the soiled linen from the patient's neighbourhood and from the living-in room, as required by Rule E. 11. A child suffering from inflammation of, and discharge from, the eyes, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5). A midwife being drunk on duty while in attendance at a confinement, thereby being guilty of misconduct within the meaning of Section (3) (V.) of the Midwives Act, 1902.

At the meeting on June 20th a communication was considered from the Acting Registrar of the General Medical Council with reference to the action of a registered medical practitioner who had given a certificate to an uncertified woman certifying that she was "quite capable of undertaking the duties of an ordinary midwife." The Board decided that the chairman be asked to communicate with the President of the General Medical Council and to express the views of the Board on the doctor's letters.—A letter was considered from the Acting Medical Inspector of Midwives for the city of Bristol asking the Board to support a suggestion which he had made to the Food Controller proposing that midwives in active practice should be entitled to an extra meat ration. The Board decided that, while approving the suggestion, the Board does not see its way to initiate action in the matter.—A letter was considered from the Secretary of the Brighton Hospital for Women asking the opinion of the Board as to whether, having regard to the Board's resolution 12 (b) of May 16th, 1918 (Minutes, vol. v., p. 191), a pupil may be employed after delivery to act, under the conditions mentioned, as an assistant for a qualified midwife for visiting purposes only, although the midwife is primarily responsible. The Board directed that on the facts as stated a pupil may be employed as an assistant to a certified midwife provided that it is understood that the employment of an assistant in no degree relieves the midwife in charge of the case from all the responsibility entailed on her by the rules.

MEDICAL MAGISTRATE.—Dr. H. J. Thornton, of Acton, has been appointed a justice of the peace for the county of Middlesex.

AT their recent meeting the Senate of Glasgow University awarded the Bellahouston gold medal to Mr. R. T. Leiper, M.D., D.Sc., of the London School of Tropical Medicine, for his contributions to medical helminthology.

URBAN VITAL STATISTICS.

(Week ended June 29th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 13·2, against 11·4 and 11·7 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was also 13·2, and was 1·2 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 3·9 in Oxford, 4·2 in Edmonton, and 4·5 in Wolverhampton to 23·7 in Huddersfield, 23·8 in Merthyr Tydfil, and 30·2 in Stockton-on-Tees. The principal epidemic diseases caused 294 deaths, which corresponded to an annual rate of 0·9 per 1000, and included 109 from measles, 107 from whooping-cough, 30 from diphtheria, 27 from infantile diarrhœa, 12 from scarlet fever, and 9 from enteric fever. Measles caused a death-rate of 1·5 in Hull, 2·2 in Wakefield, 2·5 in West Hartlepool, and 4·4 in Barnsley; and whooping-cough of 1·8 in Enfield and in Walsall, and 3·5 in Merthyr Tydfil. The 857 cases of scarlet fever and 1189 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 30 above and 4 below the respective numbers remaining at the end of the previous week. The 1017 deaths from all causes in London included 67 from influenza, against 5 and 10 in the two preceding weeks. Of the total deaths in the 96 towns 130 resulted from violence. The causes of 44 deaths were uncertified, of which 12 were registered in Birmingham, 4 each in Liverpool and Gateshead, and 3 each in London and Sunderland.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 11·5, against 10·9 and 11·8 per 1000 in the two preceding weeks. The 250 deaths in Glasgow corresponded to an annual rate of 11·7 per 1000, and included 16 from whooping-cough, 11 from measles, 4 from infantile diarrhœa, 3 from diphtheria, and 1 each from scarlet fever and typhus. The 78 deaths in Edinburgh were equal to a rate of 12·2 per 1000, and included a fatal case each of whooping-cough and diphtheria.

Irish Towns.—The 120 deaths in Dublin corresponded to an annual rate of 15·7, or 1·2 per 1000 below that recorded in the previous week, and included 2 each from measles and infantile diarrhœa and 1 from whooping-cough. The 341 deaths in Belfast were equal to a rate of 45·2 per 1000, and included 10 from whooping-cough and 2 from infantile diarrhœa.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

L. Gibson to be temporary Surgeon.

ARMY MEDICAL SERVICE.

Col. (temp. Major-Gen.) G. B. Stanistreet, C.B., C.M.G., temporary Deputy Director-General, to be Deputy Director-General.

Col. (Hon. Surg. Gen.) Sir J. Maher relinquishes the temporary rank of Major-General on ceasing to be specially employed.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. G. J. Houghton to be temporary Colonel whilst employed as Assistant Director of Medical Services of a Division.

Capt. R. B. Phillipps relinquishes the acting rank of Lieutenant-Colonel and reverts to the acting rank of Major (with pay and allowances of his substantive rank).

Temp. Major E. L. Gowlland relinquishes the temporary rank of Lieutenant-Colonel on re-posting.

Capt. J. D. Kidd to be acting Lieutenant-Colonel whilst employed as Assistant Director of Medical Services.

Capt. J. Rowe relinquishes the acting rank of Major on re-posting.

Capt. E. D. Caddell relinquishes the acting rank of Lieutenant-Colonel and reverts to the acting rank of Major (with pay and allowances of his substantive rank).

Temp. Capt. A. J. Clayton to be acting Major whilst specially employed.

Temp. Capt. J. L. Jackson to be acting Major.

Lieutenants (temporary Captains) to be Captains: G. B. Hadden, H. C. Gooding.

Temporary Lieutenants to be temporary Captains: R. Calleya, J. S. Young, T. Gardner, A. H. Hall, J. T. Daly, D. R. Acheson, G. McNeill, P. Murphy, E. C. Tamplin, E. McK. Reid, J. L. Rankine, G. L. N. Miles, E. H. Noney, I. J. Roche, R. H. Dix, W. O. McKane, G. Wacher, J. E. MacFarlane, W. H. Pallett, W. Fleming, E. Lewis, R. W. Eddie, P. de S. Smith, A. H. Southam, J. W. Johnstone, J. B. O'Reilly, R. W. Reid, T. C. Innes, E. G. van B. Bergh, H. G. Barrie, W. Deane, L. C. W. Cane, H. R. Elliott, S. M. MacKenzie, G. McQ. Brunton, S. S. Brook, D. M. Humby, J. H. Porter, A. Roemmele, R. W. Brown, J. Wells, R. F. Lunn, H. D. Matthews, W. Kingdon, J. W. Miller, M. Stewart, H. A. Edwards, F. H. Kitson, F. R. L. Atkins, M. Macleod, E. F. Wills, S. H. Robinson, E. Thorp, T. D. Webster, J. C. Marshall, E. D. Struthers, F. M. Auld, C. E. Waldren, N. R. Ussher, F. W. W. Smith, W. B. H. Dundee, P. Hall-Smith, F. Thompson, R. H. Robinson, L. M. Markham, C. E. Lakin.

J. C. Turnbull, late temporary Captain, is granted the honorary rank of Captain.

To be temporary Lieutenants: E. R. Wheeler, I. Hodgkinson, C. H. Broomhead, J. B. McGranahan, E. F. Crabtree, C. G. Seligman, R. Rae, D. E. Carter to be temporary Honorary Lieutenant.

Officers relinquishing their commissions: Temp. Majors H. S. Raper, V. J. Blake; Temp. Capts. T. Pretsell, A. Emery, H. R. Sedgwick, J. C. Houston, W. R. White-Cooper, C. R. R. Huxtable, J. A. Vlasto, R. M. Forde, I. Campbell, F. W. Harrowell, R. C. Fuller, R. W. Ryan, W. Rogerson, H. F. Nolan, T. Gilchrist, A. J. Trinca, G. B. Simpson, G. D. Kerr, M. A. McKeever, E. H. Price, G. Holroyd, J. A. Tobin, E. A. Aylward, J. M. Morrissey, H. F. Vandermin, R. H. King, J. A. Giles, B. Beamish, W. Oliver, F. W. Davidson, H. C. A. Haynes, L. M. Dawson, R. W. Hogg, P. A. Doyle, J. F. Field, G. S. A. Bishop, K. Black, J. T. Courtice (and is granted the honorary rank of Captain), J. Loudon (and is granted the honorary rank of Captain), R. L. S. Nuthall; Temp. Capts. M. A. MacKinnon, H. P. Hamilton, R. L. Shields, H. R. Hurter (on account of ill health, and is granted the honorary rank of Captain); Temp. Lieuts. J. M. H. Caldwell, H. L. Blackley, J. H. Hall, M. B. Taylor, D. L. Davies, H. G. Bywater, F. J. Thornton, A. G. Gamble, H. W. Jeans, J. P. Moran, D. Ross, W. M. Brown, H. W. P. Young, W. C. Mayo, G. E. Downs, A. Fraser, W. T. Lydall, T. W. Lonsdale, W. A. Sharpin, R. F. Ballantyne, J. J. S. Scrase, F. Baillie, J. McKelvey, G. C. McL. Barber, F. W. Stewart, J. S. Higgs, R. W. H. Hillis, S. C. Jellicoe, H. L. Wilson, C. H. Wilson, F. R. Carroll, F. M. Matheson, S. Spencer; Temp. Hon. Lieut. C. E. Allison.

SPECIAL RESERVE OF OFFICERS.

Major W. A. Dingle is retired under the provisions of Para. 116, T.F. Regs., and is granted permission to retain his rank and to wear the prescribed uniform.

Major R. A. Bickersteth is restored to the establishment.

Capt. F. G. Stuart relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

Capt. W. H. L. McCarthy relinquishes the acting rank of Major on re-posting.

Lieutenants to be Captains: D. C. Beaumont, J. E. Carpenter, E. B. Andreae, K. Masson, J. A. Martin, N. M. Lewis, A. T. Woolward, M. F. Murphy, J. Wilson.

Granted temporary commissions as Captains: A. L. George, F. N. B. Smartt.

D. C. Rennie, from Birmingham University Contingent O.T.C., to be Lieutenant.

Granted temporary commissions as Lieutenants: H. G. James, H. L. Smallbone, S. G. Smith.

Lieut. G. O. Roper, from Flying Branch (K.B.), to be Lieutenant.

TERRITORIAL FORCE.

Major F. E. Fremantle to be Lieutenant-Colonel.

Major (temp. Lieut.-Col.) C. A. Stidston relinquishes his temporary rank on ceasing to command a Field Ambulance.

Capts. T. R. W. Armour, F. H. Robbins, and G. N. Anderson to be acting Majors whilst specially employed.

Major A. Cooke is seconded for service overseas.

Capts. J. Hobbs and A. B. Murray to be Majors.

Capt. (Brevet Major) H. F. Horne is seconded for service with R.A.F.

Capt. A. S. Parkinson relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

Capt. (acting Lieut.-Col.) A. T. Mulhall relinquishes his acting rank on alteration in posting.

Capt. N. C. Rutherford, from T.F. Res., to be Captain.
J. T. A. Walker to be Lieutenant.

ROYAL AIR FORCE.
Medical Branch.

Lieut. (temp. Capt) C. H. Biddulph-Pinchard to be temporary Major whilst employed as Administrative Major.
Lieut. F. R. McCambley to be Captain.
Granted temporary commissions as Lieutenants: L. C. W. Balls, R. A. Spong, H. L. Thorn.
Lieut. G. O. Roper to be Lieutenant (from K.B.).

Vacancies.

For further information refer to the advertisement columns.

Birmingham and Midland Ear and Throat Hospital.—Clin. Asst. £50.
Birmingham University.—Sen. Demonstrator of Anatomy. £250.
Bristol Education Committee.—Female Asst. School M.O. £350.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Bristol University.—Lectureship in Dental Mechanics.
Camberwell, Parish of St. Giles, Constance-road Institution, East Dulwich, S.E.—Locum Tenens. £8 8s. weekly.
Cheltenham Eye, Ear, & Throat Free Hospital.—Non-res. Asst. S. £300.
Derbyshire Royal Infirmary, Derby.—H.S. £200.
Devonport, Royal Albert Hospital.—H.S. £200.
Evelina Hospital for Children, Southwark, S.E.—H.P. and H.S. £160.
Gloucestershire Royal Infirmary and Eye Institution.—First and Second H.S. £175 and £150.
Great Northern Central Hospital, N.—Casualty Officer. £200.
Hampstead General and North-West London Hospital.—Cas. O. £150.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. 30 guineas. Also Asst. Res. M.O. £100.
Hospital for Sick Children, W.C.—H.S. for six months. At rate of £100 p.a.
Italian Hospital, Queen-square, W.C.—H.S. £150.
Lincoln General Dispensary.—Res. M.O. £400.
Liverpool Stanley Hospital.—R.M.O.
Macclesfield, Cheshire County Asylum.—Temp. Asst. M.O. 7 gs. p.w.
Maidstone, West Kent General Hospital.—Sen. H.S. £250. Also Jun. H.S. £125.
Manchester, Baguley Sanatorium for Tuberculosis.—Locum Tenens Second Asst. M.O. £400.
Manchester Education Committee.—Asst. School M.O. £350 to £500.
Munition Factory in Midlands.—Female M.O. £450.
Northamptonshire Sanatorium, Creaton.—Med. Supt. £300.
Nottingham City Asylum.—Locum Tenens for two mths. £7 7s. per wk.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Physician in Charge of Ante-Natal Department.
Queen Mary's Hospital for the East End, Stratford, E.—H.S.
Reading, Royal Berkshire Hospital.—H.S. £250. Also H.P. £250.
Royal Free Hospital, Gray's Inn-road, W.C.—Female H.P., Cas. H.S., and Gynæcological Registrar.
St. Pancras, Parish of.—Asst. M.O. of House and South Infirmary. £300.
Sheffield Royal Infirmary.—H.S. £120.
Swinton and Pendlebury Urban District Council.—Temp. Asst. M.O. £450.
Walsall Education Committee.—L.T. Sch. Med. Insp. £400.
West Riding of Yorkshire, Maternity & Child Welfare.—Med. Prac. £400.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at East Nottingham.

Births, Marriages, and Deaths

BIRTHS.

BATCHELOR.—On June 26th, at Fons George House, Taunton, the wife of the late Major H. W. Batchelor, R.A.M.C., of a daughter.
HEWITT.—On June 20th, at Bernard-gardens, Wimbledon, the wife of Fleet-Surgeon D. Walker Hewitt, C.M.G., F.R.C.S., R.N., of a daughter.

MARRIAGES.

GODDARD—EDWARDS.—On June 25th, at the Presbyterian Church, Mold., Captain C. E. A. Goddard, M.B., R.A.M.C., to Enid, second daughter of the late Dr. David Edwards, J.P., and Mrs. Edwards, Tanybryn, Mold, N. Wales.
MUIR—CARTWRIGHT.—On June 26th, at the Parish Church, Cannington, Captain W. A. Muir, R.A.M.C., to Ann Liddon, daughter of Edward C. Cartwright, Belvedere, Cannington.
WADE—ALEXANDER.—On June 22nd, at St. Andrew's Church, Rugby, Captain (acting Lieutenant-Colonel) E. W. Wade, D.S.O., R.A.M.C., to Winifred, daughter of Mr. and Mrs. Alexander, of Dublin.
WALMSLEY—TURNBULL.—On June 27th, at St. Martin's Church, Bedford, by the Rev. F. H. A. Williams, Norman W. Walmsley, M.B., D.P.H., late Captain, R.A.M.C., to Mary E. Turnbull, eldest daughter of Mrs. Turnbull, Clapham-road, Bedford.

DEATHS.

MEADOWS.—On May 8th, Frederick Evelyn Woolner Meadows, M.R.C.S., L.R.C.P. Lond. (Middlesex Hospital), of Otley, Ipswich, aged 39 years.
SERRA.—On June 30th, at his residence, Rushmere, Newton-by-Chester, Claude L. Serra, M.D., late of Eccles, Manchester.
SHARP.—On June 10th, in India, of cholera, Maria Sharp, L.S.A., M.D. Brux., aged 55.
WILLIS.—On June 26th, W. Morley Willis, F.R.C.S., 7, Regent-street, Nottingham.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.
MEETING OF SECTION.
Monday, July 8th.

ODONTOLOGY (Hon. Secretaries—F. N. Doubleday, J. Howard Mummery): at 7.30 P.M.
Casual Communication:
Mr. Ernest Sturridge: A Case of Rheumatoid Arthritis treated by Ionization of Periodontal Membrane.
Paper:
Mr. F. N. Doubleday: Local Anæsthesia in Dental Operations.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of Post-Graduate Course were given in issue of June 29th.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.

COLLEGE OF AMBULANCE, 3, Vere-street, Cavendish-square, W.
Course of Special Lectures and Demonstrations on Ambulance Work and First Aid (illustrated as far as may be possible and followed by a Discussion).
THURSDAY, July 11th.—4.30 P.M., Lecture IX.:—Dr. J. M. H. Macleod: First Aid in the Management of Burns and Scalds.

ROYAL SANITARY INSTITUTE, at the Town Hall, Swindon.
SATURDAY, July 13th.—11 A.M., Discussions:—Infant Welfare Work and its Difficulties (opened by Dr. W. F. J. Whitley). Camp Drainage, &c. (opened by Mr. W. H. Beswick). 2.15 P.M., Visits will be made to the Swindon Maternity and Infant Welfare Hospital.

EDITORIAL NOTICES.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

We cannot prescribe or recommend practitioners.

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. Ayres, Liverpool; Messrs. Claudius Ash, Sons, and Co., Lond.; Dr. G. R. Anderson, Southport; Dr. E. L. Ash, Newbury; *Answers*, Editor of; Col. J. G. Adami, A.D.M.S.
B.—Mr. C. H. Bridle, Clacton-on-Sea; British Science Guild, Lond., Sec. of; Major A. S. G. Bell, R.A.M.C.; Capt. W. Brown, R.A.M.C.; Major J. S. Bury, R.A.M.C.; Lieut.-Com. G. E. Beer, R.N.V.R.; Messrs. Barimar, Ltd., Lond.; Dr. A. G. Bateman, Lond.; British Drug Houses, Ltd., Lond.; British Orthopædic Association, Manchester, Hon. Sec. of; Dr. W. B. Brownlie, Blackburn; Dr. N. Bardswell, Lond.; Mr. H. Blakeway, Lond.
C.—Cumberland and Westmorland Asylum; Major W. A. Chapple, R.A.M.C.; Dr. E. L. Collis, Lond.; Dr. H. P. Cholmeley, Forest Row.
D.—Dr. V. Dickinson, Lond.; Capt. A. B. Dunne, R.A.M.C.(T.); Major-Gen. Sir Bertrand Dawson, G.C.V.O., C.B.; Prof. J. S. C. Douglas, Sheffield; Dr. L. Drage, Hatfield.
E.—Surg.-Gen. G. J. H. Evatt, C.B.; Mr. D. L. Eadie, Edinburgh; Eugenics Education Society, Lond.; Major R. Eager, R.A.M.C.(T.).
F.—Sir R. Fox Symons, K.B.E., Lond.; Factories, Chief Inspector of, Lond.; Capt. F. Fraser, R.A.M.C.
G.—Dr. A. G. Gibson, Oxford; Glasgow, Medical Officer of Health of; Capt. M. Greenwood, R.A.M.C.(T.)
H.—Mr. C. Higgens, Lond.; Major A. J. Hall, R.A.M.C.(T.); Major A. T. Henderson, C.A.M.C.; Prof. J. Hutchinson, Lond.; Dr. T. Horder, Newport; Prof. R. Howden, Newcastle-on-Tyne.
I.—Insurance Committee for the County of London.
K.—Dr. W. Kidd, Alum Bay.
L.—Dr. M. Lipinska, Lond.; Messrs. Lea and Febiger, Philadelphia; Local Government Board, Lond., Medical Officer of; Cpl. A. C. Lomax, R.A.M.C.(T.); Mr. J. B. Lamb, Lond.
M.—Dr. R. Morton, Lond.; Mr. J. Y. W. McAlister, Lond.; The Medical Directory, Lond., Editors of; Metropolitan Hospital Sunday Fund, Sec. of.
N.—Miss J. Neil-Kerrison, Smethwick.
P.—Dr. Eric Pritchard, Lond.; Mr. R. H. A. Plimmer, Lond.; Professional Classes War Relief Council, Lond.; Dr. O. F. Pedroso, Lond.; Mr. J. D. Pennell, Merton Park; Comtesse Michel de Purredon, Tours.
R.—Royal Society, Lond.; Royal Institution, Lond.
S.—Dr. R. H. Steen, Dartford; Prof. W. Stirling, Manchester; Dr. H. R. Spackman, Wolverhampton; Dr. R. B. P. Squibbs, Lenton; Messrs. G. Street and Co., Lond.; Mrs. K. Senter, Edinburgh; Society of Apothecaries of London, Sec. of.
T.—Dr. C. H. Thatcher, Edinburgh; Dr. J. Tatham, Oxted; Dr. H. J. Thornton, Lond.
U.—University of Manchester; University of Glasgow; University of Durham, College of Medicine, Newcastle-on-Tyne.
W.—Capt. R. Wade, R.A.M.C.; Dr. F. J. Waldo, Lond.
X.—Xerxes.
Z.—Dr. T. Zangger, Zurich.

Notes, Short Comments, and Answers to Correspondents.

"NO BLIND PEOPLE, BUT ONLY NORMAL PEOPLE WHO CANNOT SEE."

Taking the above statement as his text, Sir Arthur Pearson, chairman of the Blinded Soldiers' and Sailors' Hostel, St. Dunstan's, Regent's Park, who presided at the seventh of the series of lectures on first-aid at the College of Ambulance (3, Vere-street, London, W.), on June 27th, in introducing the lecturer, Mr. A. Hugh Thompson, surgeon to the Western Ophthalmic Hospital, gave a stirring account of the work which is being done at his institute, where there are at present some 600 injured men from the front being educated. Already 500 have been sent out to every part of the British Empire happy, cheery, and contented, and most of them earning more money than they were able to do before their sight was injured. Colonel Bruce Porter, the commandant at the 3rd West London General Hospital, had been so impressed by the work of the masseurs supplied to him by St. Dunstan's that he had remarked it was nothing short of a shame that people who could see should do the work which blind men did so perfectly. Men were also trained as telephone operators, poultry-farmers, basket-makers, shorthand writers and typists, shoemakers, mat-makers, and joiners, the last-named being particularly expert at their work. Sir Arthur Pearson, who believes that play is as important as work, also referred to the athletic exercises and the games in which blind men excelled. Altogether the blind man left the institution much better equipped for the world than he entered it. Mr. Thompson, whose subject was first-aid in injuries and affections of the eyes, after discussing the anatomy of the eye, referred to the many injuries to which this organ was liable and the need for its protection in peace and war. More than half the injuries that blinded our soldiers, he said, were caused by small particles entering the eye, and a visor had been invented which gave the eyes protection, but he did not know how far it had been adopted. In a recent report by the Health of Munition Workers Committee it was stated that over 5 per cent. of the industrial accidents to munition workers were eye injuries, and that was, of course, a larger percentage than occurred in factories during normal times. The only possible means of preventing small particles of steel, emery, and so forth, from entering the eye was the wearing of goggles made of strong glass. He then described various simple means of rendering first aid in injuries and affections of the eye and concluded by impressing upon his audience the importance of having the eyes of children medically examined, especially in the case of young children.

RESUSCITATION FROM DROWNING.

AT a recent inquest, following a fatal boating accident on the Thames with the loss of two young lives, the City coroner, Dr. F. J. Waldo, in summing up, said that many cases of preventable deaths from drowning in the River Thames came before him officially in his two riparian districts (City and Southwark), and that many such deaths were due to the lack of proper provision for the resuscitation of people apparently drowned. The only station or place of succour for the purpose was the Thames Police Station at Waterloo Bridge, and among other places a similar station was badly wanted near London Bridge.

On the Seine at Paris numerous stations of this sort were provided, and there, with prompt treatment and the means of applying warmth in the form of hot baths and blankets always at hand, it was considered a disgrace if people, rescued after five minutes' submersion, were not brought back to life.

AMERICAN POISON PLANTS.

IN his little book on *First-Aid in Emergencies* (J. B. Lippincott. Price 6s.) Dr. Eldridge L. Eliason, assistant surgeon to the University of Pennsylvania Hospital, writes for the needs of travellers and others beyond the reach of medical aid. The chapter on poisons is remarkably well illustrated with attractive sketches of toxic plants which will be of interest to other than an American audience, although some of the names may puzzle. For instance, *Euphorbia marginata* (p. 188) is given as "Snow on the mountain," a popular name applied in this country to the white arabis. Wise counsel is interspersed throughout the book—e.g., "First-aid should never necessitate the use of a knife or needle, except when there is dire need and no physician is available," and "Carry out the rules published by the boards of health of the various communities in which you live."

CLAVADEL AS A POPULAR SANATORIUM.

WE learn from a Swiss correspondent that the Zurich Cantonal Home for Tuberculosis at Wald of 150 beds, which admits nearly 500 patients a year, is overfilled and there is a long waiting list. Efforts have therefore been made to provide another sanatorium in the Alps as a *dépendance*. A committee formed for this purpose has collected within a month over £40,000 in the canton and town of Zurich (total population 520,000), the cantonal and urban authorities both contributing large sums. The private sanatorium at Clavadel, above Davos, known to many of our readers for its magnificent situation at the opening of the Sertig Valley, has been bought, and will be opened during the present month for 100 poor and 30 paying patients.

GUIDES TO MEDICAL SERVICE AT THE FRONT.

THE arrangements of the medical service behind the lines and of the disposal of the sick and wounded are of perennial interest, and many will welcome an excellent little book entitled "Medical Service at the Front" (Lea and Febiger. 1918. Price $1.25), by Lieutenant Colonel John McCourbe and Captain A. F. Menzies, of the C.A.M.C. Their aim has been "to give the simple facts in a plain way" and Surgeon-General J. F. Fotheringham, who contributes a foreword, writes that the volume "is hot from hell's gridiron and correct in all its details." The chapters deal in succession with the R.M.O., the F.A., the A.D.M.S., and the C.C.S.—the war has taught us to think in initials—and are full of illuminating paragraphs, such as: An outstanding feature [of the C.C.S. during battle] is the "surgical team," made up of a surgeon, an anæsthetist, a nursing sister, and two orderlies, all specially qualified for their work. Usually several of these teams are sent to each clearing station behind a battle front. Numerous diagrams help the reader to visualise the arrangements described.—A useful summary of the regulations and routine of the military medical officer is given in *Hints for R.A.M.C. Officers* (Edinburgh: William Bryce. 1918. Price 1s.), by "Ramcorps," in a format suitable for the pocket, and containing the information which a newly appointed officer is likely to need in his administrative duties—e.g., the filling up of forms, signing certificates, and making reports.

THE ROCKEFELLER FOUNDATION.

AN account of the work carried out by the Foundation during the year 1917 has recently appeared. The President, Mr. George E. Vincent, reminds his readers of the many directions in carrying out the work of the institution in which the Foundation has worked for medical education and for the amelioration of conditions produced by the war. On August 13th, 1914, two weeks after war broke out, an appropriation grant was made enabling Dr. Carrel to begin his surgical work in France, while in the hospital erected on the grounds of the Rockefeller Institute for Medical Research in New York City the Carrel-Dakin method is now being demonstrated to American Army and Navy surgeons, 292 of whom attended classes in 1917. During the same period 3000 doses of serum were distributed to Government hospitals. Last year Dr. Thomas W. Salmon was deputed to visit Great Britain and to make a study of nervous diseases and their treatment in British military hospitals, his report to the Surgeon-General's office determining American Army policy in regard to these cases. Other activities of the foundation have been: Care for the victims of infantile paralysis; a crusade against tuberculosis in France; and the establishment at Johns Hopkins University of a School of Hygiene and Public Health. Steady progress has been maintained in the campaign directed against hookworm, malaria, and yellow fever, as well as in the systematic efforts to secure the enactment of sanitary legislation and to persuade governments to increase their expenditure on preventive medicine. "Dispensaries and physicians have of late been peacefully penetrating areas of the Philippine Islands and demonstrating the fact that for the purpose of placating primitive and suspicious peoples medicine has some advantages over machine guns," and in China hospitals have been subsidised and travelling scholarships granted. The report concludes: "When at last peace comes it cannot quickly bring universal confidence and goodwill; there may be years of suspicion and bitterness, of misunderstanding and recrimination; there is sure to be keen industrial and commercial competition. Is it too much to hope that such work as the Foundation is doing in many parts of the world may tend at least to emphasise the common interests of mankind in turning science from the destruction to the healing and the happiness of men?"

M.D. Durham has omitted to enclose his card.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

The Goulstonian Lectures
ON
MODERN VIEWS ON DIABETES
AND ON THE SIGNIFICANCE OF ACIDOSIS IN DISEASE.

BY E. P. POULTON, M.A., M.D. OXON., F.R.C.P. LOND.,
ASSISTANT PHYSICIAN, GUY'S HOSPITAL.

LECTURE III.*

ACIDOSIS IN DISEASE.

MR. PRESIDENT, LADIES AND GENTLEMEN,—In the first lecture Barcroft's definition [2] of acidosis was given; it is an increase of acid relative to basic radicles in the blood, the CO_2 of the blood not being considered. It has nothing to do with the final reaction of the blood—i.e., its hydrogen ion concentration.

MECHANISMS OF BODY IN DEALING WITH ACIDOSIS.

Under many physiological conditions of acidosis the hydrogen ion concentration of the blood remains constant, because the CO_2 content of the blood is reduced to compensate for the increase in acid radicles—a condition of "compensated acidosis." In other circumstances the CO_2 may not be lowered sufficiently, when an "uncompensated acidosis" results—i.e., the hydrogen ion concentration is increased. In other cases the acidosis is "over-compensated" when the respiratory centre is over-active, and washes out more CO_2 than is necessary, so that the blood becomes more alkaline than normal. This often occurs in diabetic acidosis of moderate severity.

This condition of over-compensation implies an alteration in respiratory control, so that over-ventilation occurs and the blood becomes alkaline, or, what is a different way of expressing the same thing, the excitability of the respiratory centre is increased, so that it reacts to a lower concentration of hydrogen-ions than usual. The variation in the excitability of the respiratory centre has been denied by Haldane, but there is evidence that it occurs normally. Straub [1] has shown that the alveolar CO_2 is distinctly higher during sleep in the middle of the night than it is in the day-time, which suggests that the respiratory centre, like the heat regulating centre, has a regular diurnal periodicity.

Under ordinary circumstances the respiratory centre is extremely sensitive to small additions of acid to the blood, and maintains the normal reaction of the blood by a fall in the alveolar CO_2. This fall and the consequent diminution in the CO_2 combined in the blood, the so-called alkali reserve, is one of the most important mechanisms the body possesses for preventing the rise in H ion concentration of the blood.

It is well known that the urine contains monosodium and disodium phosphates, although in the blood they are chiefly present in the red corpuscles. Acid is got rid of through the kidney by the conversion of the alkaline disodium phosphate into the acid monosodium phosphate, and by this process the hydrogen ion concentration of the urine is increased, though to nothing like the same extent as if the unaltered acid had been excreted in the free state. The phosphates act as "buffers," which damp down the effect of the addition of acid.

The third mechanism is in the formation of ammonia and its excretion combined with acid.

ALTITUDE AND EXERCISE.

One of the earliest investigations on acidosis in human beings was carried out by Barcroft [2] on the effect of altitude.

Ward [3] had shown previously by investigations on himself that on the top of Monte Rosa his alveolar CO_2 was lowered, and this effect persisted for many days after his return from the ascent. The explanation offered was that an acidosis was present, which required increased pulmonary ventilation. The beneficial effect of this was the fact that the oxygen pressure in the lungs was thereby increased; it was a mode of adaptation making it possible to exist in a rarefied atmosphere.

The actual acidosis was proved by Barcroft by means of the blood dissociation curve, described in Lecture II. He further showed by measuring the alveolar CO_2 that the acidosis was a compensated acidosis.

It has been already stated that the acidosis at high altitudes may be looked upon as a process of acclimatisation to enable the organism to live in a rarefied atmosphere. A good deal of attention has been paid to the nature of this acidosis

Ryffel showed it was not due to lactic acid. Hasselbalch [4] found in various people a sudden diminution in the ammonia excretion and an unusually alkaline urine as the immediate effect of reducing pressure in an airtight chamber. His explanation is that the acidosis is not due to the formation of a new acid, but that it is a relative acidosis due to deficiency of bases, brought about by the diminution in production of the endogenous base ammonia. This discovery provides a new outlook on the subject. Under conditions when an acidosis is favourable to the body, such as may occur in oxygen want, it may be deliberately brought about by diminishing the production of ammonia and making the urine more alkaline.

In the last lecture it was shown that in muscular exercise not only was there an acidosis, but the acidosis was uncompensated.

Barcroft has shown that the uncompensation becomes greater if the exercise is taken at an altitude. This acidosis has been shown by Ryffel to be due to the formation of lactic acid. Thus, it is a different type from that which the effect of altitude produces when the body is at rest.

PREGNANCY AND ECLAMPSIA.

The possibility that the normal process of pregnancy is associated with an acidosis was suggested independently by Hasselbalch and by Leimdorfer, Novak, and Porges. They found that the alveolar CO_2 was lowered.

The Viennese observers, as a result of work on 15 cases, claimed that the diminution in the alveolar CO_2 was one of the earliest signs of pregnancy.

A series of observations by Hasselbalch and Gammeltoft [5] on a case showed a distinct fall in the alveolar CO_2 on the first occasion when menstruation ceased, and the alveolar CO_2 fell gradually to 30 mm. just before the birth of the child.

The problem as to whether the fall in alveolar CO_2 was really due to an acidosis was settled by measuring the hydrogen ion concentration of the blood taken shortly before and after child-birth. In five cases the mean alveolar CO_2 before birth was 32·3 mm., and the mean value after birth was 38·1, a rise of nearly 6 mm.

The ph of two samples of blood taken before and after child-birth was determined, and at the corresponding alveolar CO_2 pressures the mean values were 7·43 and 7·44. This means that during pregnancy there is a fully compensated acidosis.

Hasselbalch and Gammeltoft observed a few cases of eclampsia.

The alveolar CO_2 was not measured. In two cases which were not very severe the fixed acidity was not abnormally increased; with 40 mm. CO_2 the values of ph were 7·38 and 7·36; the corresponding mean value for the five normal pregnancies was 7·39. In the two severe cases the values were 7·19 and 7·23, values so acid that the authors doubt whether the alveolar CO_2 would have been reduced sufficiently to compensate. Unless this had been the case the acidosis would have been uncompensated. Thus the cases resembled the condition in uræmia, to be described later.

RELATION BETWEEN AMMONIA EXCRETION AND ACIDITY OF URINE.

The relation between the ammonia excretion and the acidity of the urine has been recently investigated by Hasselbalch. [6]

As a general rule he found that an acid urine was accompanied by an increased ammonia excretion, and vice-versa. There is an obvious difficulty with regard to the ammonia excretion, and that is that the amount of ammonia formed depends, to a large extent, on the protein metabolism. He excluded this factor by using the ratio between the ammonia nitrogen and the total nitrogen expressed as a percentage.

If the ph of samples of urine passed at different times during the day on a mixed diet are measured the acidity is always diminished 3–4 hours after a meal, and increases again immediately after the meal. The maximum carbohydrate metabolism occurs 3–4 hours after a meal, and this diminishes the acidity. The latter has nothing to do with the reaction of the gastric juice.

The ammonia ratio always increases as the ph diminishes (i.e., as the acidity increases), and if the corresponding values for these two factors are plotted against one another, the points all lie on a rectangular hyperbola. The mean value for the ph of the urine is 5·8, and the corresponding ammonia ratio, "the reduced ammonia ratio," for normal people lies between 2·2 per cent. and 5·3 per cent.

This relationship is not altered by taking large quantities of water, salt, or dilute HCl, and is independent of diet. It is constant for the individual, but there are slight seasonal variations. In pregnancy, after severe muscular work, in fever, and in diabetic acidosis, the reduced ammonia ratio is increased and the ammonia figures corresponding to other ph's are correspondingly increased, the points still forming a hyperbola the position of which has been altered.

The increased formation of ammonia may be due to a specific formation of ammonia from protein, and this power of formation may well vary in different people. The object of the formation is obvious: it spares the alkali reserve of the blood, it prevents the unnecessary excretion of phosphates—the only other way in which acid can be removed from the blood.

ANÆSTHESIA AND SHOCK.

Emphasis has been laid on the fact that acidosis is accompanied by increased pulmonary ventilation, and conversely any case of hyperpnœa would suggest the possibility of an acidosis being present. It is remarkable in how many different conditions this has been proved to be the case.

In anæsthesia, particularly when open ether is used, the respiration is stimulated, and there is a fall in the alveolar CO_2. However, Morriss [7] has shown that under these conditions there is a diminution of the alkali reserve of the plasma, which indicates that some fixed acid is present in excess.

Yandell Henderson's well-known theory of shock attributed the condition to acapnia—a loss of CO_2.

* Lectures I. and II. were published in THE LANCET of June 22nd (p. 883) and 29th (p. 895), 1918.

Recent experiments of his[8] were carried out as follows. An anæsthetic like morphia was chosen which did not produce acapnia on its own account. The shock was produced by opening the body and handling the animal's intestines; a rapid fall in the alkali reserve was noticed, coinciding with the hyperpnœa. This would suggest that the acapnia was a secondary effect of the acidosis in this type of shock.

In other cases the hyperpnœa is presumably primary, such as the hyperpnœa associated with pain, but even in this condition a fall in the alkali reserve was noticed, and Henderson suggests that this acidosis is a secondary phenomenon to counteract the acapnia produced by the hyperpnœa. If no acid were produced the deep breathing would wash out the CO_2, and the individual might become asphyxiated owing to the removal of the CO_2, the normal stimulus to respiration.

Surgical shock can be produced in many different ways. Cannon has found that there is an acidosis present; but there is no proof that the acidosis is the cause of shock. It may be a compensatory mechanism to guard against acapnia, as Henderson has suggested; or a more likely explanation is that through failure in the circulation acid products are formed due to deficient oxidation, and these produce the acidosis, which is therefore the result of the shock and not its cause.

HEART DISEASE AND URÆMIA.

One of the most striking examples of dyspnœa is afforded by conditions of failing heart, whether it is the heart itself which is primarily at fault, as in simple valvular disease, or whether there is a renal element added to it, which forms a complex usually described as cardio-renal disease.

The first detailed investigation on this subject was carried out by Lewis, Ryffel, Wolf, Cotton, and Barcroft.[9] The subject is complicated because the separation of cases of this kind into different clinical groups is difficult.

The main conclusions of the paper, which Barcroft and Lewis[10] tried to confirm in a later paper, was that in cardiac failure from simple valvular disease there was no acidosis present, but that the dyspnœa was due to excess of CO_2 circulating in the blood. A further point was their refusal to define the meaning of the term uræmia, which they looked upon as too vague a term to be of any value.

Uræmia.

However, the term uræmia can be applied to, and should be restricted to, a very definite type of case in which there is retention of urinary products, and this retention can easily be determined by measuring the percentage of urea in the blood. There is evidence that urea is in itself poisonous, giving rise to drowsiness and coma associated with muscular twitchings.

Uræmia is roughly of two clinical types.

The commonest type is the case with fibrosis in the kidney and a high B.P., and during the attack the urea in the blood may reach a value of ten times the normal—i.e., 3 parts per 1000. If the patient recovers the urea falls, but owing to the damaged kidney it always remains higher than normal. The picture is the same whether the condition arises in the course of Bright's disease or whether it is due to sepsis in the urinary tract.

The second type is the uræmia of acute nephritis, and there may be here some other intoxication also present, due presumably to the acute infective process in the kidney. Though there is some retention of urea in acute nephritis, it is nothing like so great as in the fibrosed kidney,† and the probable explanation is that the body has accustomed itself to a large dose of urea in the blood in the latter condition.

The value of K by Barcroft's method was determined by Poulton and Ryffel[11] in four cases of uræmia in which the blood urea was about 10 times the normal concentration.

The alveolar CO_2 was low; there was an acidosis, and at the same time values for K suggested the hydrogen ion concentration was increased. Schlayer and Straub[12] had already observed that the alveolar CO_2 was diminished in uræmia, and had suggested there was an acidosis, but had not given any proof of it.

In order to get over the objection that the value for K may be affected by other factors than hydrogen ion concentration in pathological conditions, Donegan, Parsons, and Poulton‡ have investigated three other uræmic cases, measuring the hydrogen ion concentration of the blood directly.

In one obviously mild case, a man (urea in blood 0·46 per 1000, alveolar CO_2 of 31 mm., i.e., slightly reduced), with no perceptible hyperpnœa while sitting up in bed, there was a slight fully compensated acidosis. The ph at the alveolar CO_2 pressure was 7·40—a normal figure.

In a second man the urea in the blood was 0·54 per 1000, i.e., slightly raised, the alveolar CO_2 was 34 mm., and the ph was 7·39—again a slight compensated acidosis. The patient was walking about and feeling quite fit.

In a case of advanced uræmia, with the patient very dyspnœic and unconscious just before death, both the value for K (0·000055) and for ph (6·92) showed actual acidity. As far as I know, this is the most acid case that has ever been recorded. The urea in the blood was 4·0 per 1000.

The conclusion to be drawn is that in uræmia, when the dyspnœa at rest is marked, there is an uncompensated acidosis.

† However, Dr. Ryffel informs me that in two children with nephritis (ages 1 and 4) he has found quite high values for the blood urea.

‡ Not yet published.

Simple Cardiac Cases.

The remarkable feature about the dyspnœa of valvular disease of the heart is that in the milder cases, while the patient is quiet, the breathlessness is absent, but as soon as any exertion is taken the dyspnœa becomes obvious.

Peabody,[13] following Siebeck, explains this condition by the lowered vital capacity of the patient. This is determined by a spirometer. The patient inspires as deeply as possible and the total air consisting of a full inspiration and a full expiration is measured in the spirometer. In heart cases with failing compensation, much lower values are obtained than in healthy people, and the vital capacity becomes normal as the case improved. Dyspnœa on exertion will be due to the fact that in healthy people the pulmonary ventilation is increased without effort, but when the movements of the chest are restricted, as in heart failure, increased pulmonary ventilation will be difficult. This is probably only one factor in the dyspnœa.

Barcroft and Lewis[9 10] showed by means of the blood dissociation curve that in the mild type of case there was no acidosis. Peters,[14] later, came to the same conclusion, by determining the alkali reserve of the blood by Van Slyke's method.

Barcroft and Lewis argue from their results that in all cases of simple cardiac dyspnœa associated with valvular disease there is no acidosis.

But this is too sweeping a statement, because on analysing their cases it is found that it is only in the milder cases that the absence of acidosis is noted. This is shown by the following remarks from the two papers.[9 10]

Case 13 "was convalescent when the examination was made." Case 14 "had improved to some extent when the special observations were made." Case 15 "was convalescent." Case 7, "there was no distress, breath could be held 15 seconds." Case 8, "breath could be held 20 seconds." Case 9, "respirations were 25 per minute, but not distressed."

On the other hand, some of the simple cardiac cases did show a marked acidosis when the dyspnœa was severe, and, although Barcroft and Lewis considered that there was a renal element present, there was little evidence of this.

The following are examples:—

Case 2: Mitral stenosis, auricular fibrillation. "The breathing is very laboured and rapid; there is absolutely no reserve. P.M., kidneys show little change apart from congestion."

Case 5: Aortic disease and aneurysm; Cheyne-Stokes breathing. "Distress was considerable. P.M., kidneys congested, surface smooth, and capsules stripped easily."

Case 6: Aortic disease. "Breathing laboured, 40 per minute. P.M., kidneys congested, little or no fibrosis, epithelium swollen and granular."

The absence of any renal element was shown by the fact that the urea in the blood was not raised, and further microscopic examination did not show any extensive glomerular destruction. The albuminuria may be attributed to the renal congestion, which was always prominent in the case.

The conclusion to be drawn is that cardiac dyspnœa, if mild in degree—i.e., in the earlier stages of failure of compensation—is not associated with an acidosis, but that in serious cases an uncompensated acidosis occurs—i.e., the hydrogen ion concentration of the blood is increased.

This statement is borne out by a case of my own. T. H., a young man, was admitted on Jan. 9th, 1915, with rheumatic mitral stenosis and cardiac failure. The failure had been threatening for some months previously; his breathing was greatly distressed. He was relieved to some extent by venesection. Red cells 6,700,000 per c.mm., Hb 108 per cent., alveolar CO_2 23 mm. The blood dissociation curve at a pressure of 22·7 mm. CO_2 gave a K of ·000136. This case showed, a day or two before death, a severe uncompensated acidosis.

Cardio-renal Cases.

The remaining cases described by Lewis and Barcroft were not characterised by any obvious valvular lesion, and they were not cases of rheumatic heart disease.

They are perhaps usually described as cardio-renal cases. They all showed an uncompensated acidosis when the dyspnœa was severe. In only one case was the urea in the blood considerably raised above normal, when it was 1·07 parts per 1000. These patients were very prone to attacks of Cheyne-Stokes breathing. Six of the cases died and post-mortem examinations were made. In all these there was some evidence of myocardial degeneration, and all of them showed atheroma of the coronary arteries. In only two cases was there any extensive destruction of Malpighian corpuscles, and in one of these the blood urea was 0·4 per 1000 during life—i.e. slightly raised; in the other case the blood urea was not determined, but to judge from the appearance of the kidney it would have been high.

Hence in the majority of these cases there was not the same rise in the blood urea that was present in Poulton and Ryffel's cases, and so uræmia could not be said to be present.

The most characteristic point in the post mortems was the evidence of long-continued cardiac failure, the organs, particularly the liver, showing congestion and being enlarged. This, coupled with the myocardial changes, suggest that these cases are primarily failure of the cardiac muscle, and there is no reason to differentiate the nature of the uncompensated acidosis in these cases from the uncompensated acidosis present in the later stages of rheumatic and valvular heart disease. Doubtless in all cases of pronounced heart failure there are secondary changes in renal function.

Hale White, Ryffel, Poulton, Johnson, and Chisolm[15] investigated in considerable detail a case belonging to the same clinical group, but in which the Cheyne-Stokes breathing was extremely marked and lasted for weeks.

In this condition there is a considerable variation in the composition of the alveolar air at different periods in the respiratory cycle, a was first described by Pitt, Pembrey, and Allen.[16] Just at the end of the apnœic period the CO_2 pressure is highest, while the oxygen pressure is lowest; at the end of the dyspnœic period the condition is reversed. The result is that the respiratory centre is, at the end of the apnœa, supplied with blood containing CO_2 at 30 mm. pressure and at the beginning of the apnœa the CO_2 pressure in the blood has fallen to 16 mm.

Two determinations of K were made. At 16 mm. CO_2 K was 0·000261, which is a normal value, and at 30 mm. K was 0·000157, a value much more acid than normal. Hence, when the respiratory centre was being supplied with abnormally acid blood respiration started, whereas when the acidity was reduced to normal respiration stopped. The conclusion follows that in this case of Cheyne Stokes respiration the respiratory centre had a diminished excitability, because it only reacted to a more acid blood than normal and ceased acting when the hydrogen ion concentration was normal.

The urea in the blood was about three times the normal—0·75 per 1000. The lactic acid in the blood was not increased.

Post-mortem examination showed a nutmeg liver; the kidneys showed arterio-sclerotic changes, but the glomeruli were normal. The dorsal nucleus of the vagus showed advanced chromatolysis and atrophy of the cells; this is interesting, as this nucleus is regarded as the respiratory centre, and the patient had Cheyne-Stokes respiration. However, Johnson has found similar changes in all cases where there has been a terminal dyspnœa of some days' duration; so the significance is doubtful.

Two Types of Case.

A summary of these conditions is as follows. There are two distinct types of case—the uræmic with the high blood urea and the case showing simple cardiac insufficiency. The uræmic case tends to show acidosis in quite an early stage, and this is compensated to start with. In the final stages the acidosis is uncompensated, and extremely acid values may be found. In the later stages of simple cardiac failure there is an uncompensated acidosis. The cardio-renal case is usually a mixture of both these types. There is often obvious cardiac failure and the blood urea is raised to some extent. In the cardio-renal case there is often another independent condition—viz., the liability to Cheyne-Stokes respiration. This is due to a diminished excitability of the respiratory centre, which is probably due to sclerosis of the arteries supplying the centre, so that there is some failure in the supply of blood to the centre.

Nature of the Acidosis.

What is the nature of the acidosis?

It certainly is not lactic acid, and so far no other acid has been found. If it is permissible to speculate, I would point to the analogy of the acidosis observed at high altitudes, which is brought about by a diminished production of ammonia and has the object of providing the body with a larger supply of oxygen by greater ventilation of the lungs. It may very well be that a similar state of things occurs in severe cardiac dyspnœa. There is a call for more oxygen, and an artificial acidosis is created to supply the demand.

Cause of Uncompensation in Later Stages.

Why does this acidosis become uncompensated in the later stages?

It may be that lack of oxygen renders the respiratory centre less sensitive to CO_2, and so the hydrogen ion concentration increases, or the acidosis may become so great that it is impossible to excrete the CO_2 sufficiently quickly to keep pace with it. This second explanation is difficult, because in diabetic coma the alveolar CO_2 falls much lower than in cardiac dyspnœa, and yet the acidosis still remains compensated.

There is yet a third possible explanation.

Hooker, Wilson and Connett[17] have shown by animal experiment that CO_2 has a specifically greater stimulating effect on respiration than other acids—e.g., HCl. For a given H ion concentration the pulmonary ventilation was greater if the acid was CO_2 than if it was HCl.

In uræmic acidosis there is a diminution in the CO_2 and an increase in fixed acid. Hence the mixture will be less stimulating, and a higher H ion concentration will be required. It follows that an increasing acidosis will become more and more uncompensated. Diabetic acidosis apparently provides a difficulty, because even in severe stages the acidosis remains compensated. But it will be remembered that there is evidence that the aceto-acetic ion is itself a specific stimulant to respiration, and if its action is equal to the CO_2 it will make no difference if there is an increase of aceto-acetic acid and a decrease in CO_2. The stimulating action will remain the same, and however great the acidosis it will still remain compensated.

The specific stimulating action of CO_2 may provide the explanation of the great difference found in pulmonary ventilation in the most serious cases of dyspnœa, and the pulmonary ventilation in muscular work.

It is rare to find a higher pulmonary ventilation in disease than 20 litres per minute. The normal at rest in bed is about 6 litres. In muscular work enormous values of 60 or 80 litres per minute are obtained. It may be the specific stimulating action of CO_2 that admits of these huge ventilations taking place in muscular work.

ACIDOSIS IN OTHER DISEASES: GAS GANGRENE.

Acidosis has been described in various other diseases.

In septic febrile states Fridericia and Olsen[18] showed that the alveolar CO_2 was diminished. They inferred that an acidosis was present; but there is no proof without measurement of the alkali reserve.

Rogers[19] has described an acidosis in the uræmia of cholera, which is to be expected.

Barcroft and Lewis[19] showed the presence of acidosis in pneumonia, in a case of pneumothorax and exophthalmic goitre with distressed breathing, and in a case of paroxysmal breathlessness.

Wright and Fleming[20] have published results indicating the existence of an acidosis in gas-gangrene patients and advocating injections of sodium bicarbonate as a therapeutic measure.

Joffe and Poulton § have investigated the subject by observations on puppies infected with *Vibrion septique*. Oxyhæmoglobin dissociation curves at a constant pressure of CO_2 (37 mm.) were determined before and after the infection. No acidosis was found in the blood when the animal was constitutionally severely affected, but there was some definite acidosis in the blood taken from one animal immediately after death.

Wright used two methods:

He titrated the serum of gas-gangrene patients with standard acid, and he measured the hydrogen ion concentration of the serum by Marriotte's method after the CO_2 had been shaken out of it. Both methods give a measure of the fixed acids of the blood, which is increased in acidosis. Neither of the methods gives the hydrogen ion concentration of arterial blood—i.e., the blood at the alveolar CO_2 pressure.

There is no doubt about the acidosis Wright and Fleming found in their patients, and in addition many of them showed the hyperpnœa that would be expected. The main problem is to determine its importance, and in this question the knowledge of the effect of sodium-bicarbonate injections will be of value.

Wright used solutions of 500 c.cm. containing 5 per cent. sodium bicarbonate. In many cases the immediate effect of the solution was all that could be desired; the patient, although cold and pulseless, revived. An operation could often be performed, but death occurred in the majority of cases some hours later, very often in spite of a second injection of sodium bicarbonate. The authors themselves are not by any means enthusiastic about the treatment.

There is one other piece of evidence on this subject:

That is from Bull's recent work[21] on the preparation of the toxin from the bacillus of Welch, which he used in preparing his antitoxic serum. The acidity produced by the growth of the organism bears no relation whatever to the virulence of the culture.

These views bear out Joffe and Poulton's results, which indicated that the acidosis was a terminal result of the infection, and was not probably of much significance. It is impossible to help feeling that equally good results would have been obtained by Wright and Fleming if they had given intravenous injections of some neutral salt instead of sodium bicarbonate. Similarly it might be suggested that the equally brilliant results obtained occasionally in diabetic coma would also have followed a saline injection. In fact, Hilton Fagge published one such case. At the same time it must be admitted that when an acidosis due to production of acid has been proved the most rational method to adopt, if intravenous injection is assured, is to add some alkali to the fluid.

CONCLUSION.

And now the time for these lectures is drawing to a close. The attempt has been made to explain acidosis in two ways. It is either the result of increased production of acid, when the body uses the means at its disposal to compensate for its presence, and so prevent the rise in hydrogen ion concentration of the blood; or acidosis is of itself of benefit to the organism and is deliberately produced by the organism by modifying the action of the kidneys and liver—i.e., the formation of ammonia and the excretion of alkali.

These two types of acidosis will be similar to one another in the fall of the alveolar CO_2 and of the alkali reserve of the blood. They will differ from one another in the character of the urine. In one case the ammonia and the acidity will be increased, and in the other both will be diminished. Acidosis may be expected whenever the ventilation of the lungs is increased, and it is difficult to believe its existence except to a minute extent when there is no altered respiration. It is a very common condition and seems often to occur as a terminal phenomenon just before death. This was shown by Whitney, who found a blood acidosis in most cases after death, and particularly in those cases which had suffered from some infection.

Acidosis has been invoked as an important factor in certain diseases—scurvy, skin diseases, rickets. In the last-named condition it has been gravely suggested that the acidosis dissolves the lime salts from the bones. This would obviously be impossible without a rise in hydrogen ion concentration in the tissue fluid surrounding the bones. In

§ Not yet published.

none of these conditions is there trustworthy evidence that an acidosis exists; in fact, from the absence of respiratory symptoms its presence is extremely unlikely.

The last 10 years have made a great difference in our knowledge of the subject, but even now it is hardly out of its infancy. Workers of many nations have contributed to the advance. I do not think that we in this country need be ashamed of the share we have had in it. There are three names to whom before all others the modern conception of acidosis is due. They are Hasselbalch, of Copenhagen, and Haldane and Barcroft, of the Oxford and Cambridge schools.

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THE

ABSENCE OF THE *BACILLUS INFLUENZÆ* IN THE EXUDATE FROM THE UPPER AIR-PASSAGES IN THE PRESENT EPIDEMIC.[1]

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Is the present widely spread epidemic one of influenza or is it something new?

In recent years influenza has been only endemic, hence there has been little opportunity to study its causative organism by modern laboratory methods. The last great epidemic began about 1889, and lasted until about 1892. It rapidly spread over the civilised world. The present epidemic is also widely spread. Several camps have experienced it. A few weeks ago the —— area began to have cases. It rapidly spread through bodies of men. One reserve battalion had about 8 per cent. of its men develop the symptoms during 36 hours. Another reserve had 300 cases in four days. One camp reported an average of 40 cases per day for 12 days. Up to the present in the areas covered by this laboratory there have been about 1000 cases.

Symptoms.

Clinically the disease simulates influenza. It is an acute febrile infectious condition of three or four days' duration. The most striking symptoms are: Sudden onset with chills, severe headache with pain in cervical, dorsal, and lumbar regions, also pain in limbs and general malaise. The face is somewhat flushed and herpes labialis is to be noticed in a few cases. The fever soon attains its maximum, which varies from 99° to 102°. Several cases were observed in which the maximum temperature was 103° to 104°. Usually the highest point is reached on the second day, then follows an abrupt crisis, and on the fourth day the man feels practically normal. Many cases develop a cough, harsh in nature, with a thick sputum, scanty in amount and constant in appearance. It is not the greenish sputum of influenza proper, but is of a white mucoid nature. The urine is somewhat scanty, the appetite poor, and the bowels are constipated.

It will be noted: (1) That the pyrexia is of shorter duration; (2) that the total course of the disease is shorter; (3) that the gastro-intestinal symptoms are slighter than in the form of influenza due to the *Bacillus influenzæ*, commonly called Pfeiffer's bacillus. It is also noteworthy that convalescence is rapid and that as yet we have noted no cases of relapse, recurrence, or of complications. It must be remembered that the cases under our observation were young healthy soldiers in prime physical condition.

[1] A paper read before the —— Area Medical Society on July 2nd, 1918.

Owing to the rapidity of the spread we had no doubt that the causative organism was carried in the upper air-passages and that the infection was passed on by direct personal contact, drinking utensils, &c. This laboratory undertook an investigation of the epidemic.

Results of Laboratory Investigation.

The following examinations were carried out in 20 cases: (1) Urinary examinations; (2) leucocyte counts; (3) leucocyte differential counts; (4) blood cultures; (5) bacteriological examinations from naso-pharynx, throat, and sputum. The following are the results.

Urine.—Somewhat scanty and typically febrile, with a fair diminution of the chlorides; otherwise normal.

Blood counts.—Contrary to our expectation, we found that there is very little leucocytosis, the highest being 13,000 per c.mm., the average being 8000 per c.mm. The highest polymorphonuclear proportion was 60 per cent., the lowest 35 per cent., the average 47·5 per cent. We found that there was present a proportional lymphocytosis, the highest being 60 per cent., the lowest 32 per cent., the average 43·6 per cent. The blood picture is one of very little, if any, leucocytosis, with a decided increase in the relative number of small lymphocytes.

Blood cultures.—These all proved sterile.

Bacteriological examinations.—These were very interesting. We observed in all the cases studied that direct smears from the naso-pharynx, throat, and sputum contained among the organisms present one which was in outstanding predominance. It was a very small Gram-positive diplococcus, distinctly flattened on its apposing sides. Some of these smears contained no other organisms. In no smear examined were we able to discover the *Bacillus influenzæ*.

Cultures were made in these 20 cases from the two locations mentioned and from the sputum. Legumin serum agar plates were used. All the plates showed among other colonies one sort which was exceedingly abundant. In fact, in a few naso-pharyngeal plates it was in pure culture. In all the plates this colony was present vastly in excess of any other. It is a small, transparent, granular colony, strikingly like that of streptococcus. In each plate it proved to be composed of the same organism that we had noted in the preliminary direct smears. From no plates were we able to obtain colonies of *Bacillus influenzæ*.

It may be contended that this is due to the fact that we did not use media containing whole blood. It has been our experience that *Bacillus influenzæ* grows abundantly on legumin serum agar. We frequently obtain it when making routine bacteriological examinations from the naso-pharynx.

This diplococcus, we find, grows with reluctance on ordinary media. It prefers those containing serum. Hæmoglobin also accelerates its growth. It grows abundantly on Löffler's blood serum, legumin serum agar, blood agar, and in bouillon containing a little blood. On blood agar plates there is no hæmolysis, but in blood bouillon the erythrocytes appear broken up. The organism does not split either dextrose, lævulose, maltose, lactose, saccharose, or mannite. It has a slight tendency to anaerobic growth, and in fluid media containing blood a distinct tendency to chain formation.

When inoculated intraperitoneally it proved non-pathogenic to mice. The temperature of some was raised slightly for 24 hours. They showed a slight but distinct roughening of the hair. These reactions, however, might very well be due to the introduction of foreign protein. Further animal inoculation is being undertaken.

It will be noted that we found this organism in universal predominance and that we were able to cultivate it in the laboratory, thus fulfilling Koch's first two postulates. His final postulate we have not as yet, however, fulfilled.

Conclusion.

In conclusion, we wish to point out that although this epidemic has been called influenza for the want of a better name, yet in our opinion it cannot properly be considered such for the following reasons:—

1. The clinical course, though similar to that of influenza, is of very short duration, and there is, so far as we have observed, an absence of relapses, recurrence, or complications.
2. The present epidemic is not characterised by a sharp leucocytosis and polynucleosis, but rather by a very slight leucocytosis with a proportional lymphocytosis of the small mononuclear variety.
3. The organism of influenza—viz., *Bacillus influenzæ*—was in all cases absent and there was present with no exception a Gram-positive diplococcus.

Of course, it has long been recognised that attacks of so-called influenza are often due to organisms other than the *Bacillus influenzæ*. Many have been indicated. The purpose of our work was to determine the causative organism of the present epidemic. We consider this to be the above-mentioned diplococcus.

ON SOME UNUSUAL FORMS OF EPIDEMIC DISEASE.[1]

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GENERAL REPORT BY DR. A. K. CHALMERS.

DURING May several incidents combined to direct attention to the occurrence of certain forms of illness associated in some instances with severe nervous symptoms and a high rate of mortality. These were isolated in their occurrence, but almost contemporaneous with certain other cases which were definitely grouped in places of employment and in residential institutions. Some of these were probably influenzal in character, while others assumed the clinical features of the Abercromby Street School outbreak of 1888.

Coincident with these occurrences the number of deaths registered in the first fortnight of May rose to 886 in place of 663 in the preceding fortnight and the rate to 20 in place of 15 per 1000. The largest increase in the grouped causes of death was ascribed to cerebral hæmorrhage and respiratory disease and the chief incidence was at ages under 25.

At this period the press was reporting cases of botulism (a form of food poisoning), and three cases admitted to the fever hospitals under other names (typhus and cerebro-spinal fever), together with one seen by Dr. Picken in consultation, presented some of the features elsewhere ascribed to this affection, but without any association with food, as a likely explanation of the illness.

Results of Investigations.

In view of these circumstances Dr. Picken conducted an inquiry into the isolated cases, and Dr. MacLean into the grouped industrial and institutional cases. These latter mostly occurred in Lanarkshire, but had relationship with certain antecedent cases in Glasgow.

In the inquiries beyond Glasgow he was associated with the public health staff of the county.

From both reports (which are appended) it seems likely that we are dealing with at least two types of affection of the nervous system apart from influenza.

In the cases investigated by Dr. Picken nervous symptoms were a predominant feature. Sometimes they took the form of rigidity of certain groups of muscles, chiefly of the arms or legs. In some the rigidity was followed by paralysis; in others paralysis occurred without any antecedent rigidity. In two cases the paralysis was facial and produced the mask-like expression associated with botulism, in others the paralysis more obviously affected the limbs as in ordinary infantile paralysis. In a few the onset was sudden, but in the majority the symptoms developed gradually but rapidly. Altogether 11 cases in this group have been recognised[2] and 5 died within 5, 6, 8, 11, and 24 days respectively.

In Dr. MacLean's inquiry the majority of the cases occurred among groups of workers in industrial establishments. All these cases were of a mild type, characterised by sudden onset, severe headache, prostration, and rapid recovery, usually within 2–4 days. This group contained 420 persons and the symptoms suggested influenza.

But there were further groups occurring in institutions beyond Glasgow which receive inmates from a working boys' home in Oak-street where 16 cases with symptoms similar to those of the factory-workers occurred. The institutional cases, however, were not all equally mild, and eight deaths are known to have occurred among them.

Nature of Infection: Preventive Measures.

Excluding the influenza element, we would seem to have to deal with a form of affection which attacks the central nervous system, alternately the brain or cord, and falls within the group of affections for which the name Heine-Medin (a combination of the names of two observers of outbreaks last century) has been adopted. Of these the form best known is where the cord is the chief seat of the disease (infantile paralysis or poliomyelitis), of which the outbreak in New York in 1916 is probably the most recent on a large scale. It is possible, as Dr. Picken suggests, that the form simulating "botulism" is an aberrant form of this, chiefly affecting the brain, and indeed in some parts of France where it has been recently present it has been called "lethargic encephalitis" to distinguish it from the more commonly recognised affection of the cord and as possibly due to a separate cause. In any case it would appear to be an affection of the grey matter of the brain as distinct from disease of the corresponding portion of the cord.

The precise methods of spread are somewhat obscure. The occurrence of isolated cases has suggested the agency of insects, and the stable fly has come under suspicion.

With regard to preventive measures, it would seem obvious that the best defence of the population against the spread of the disease lies in a rigid attention to the details of personal and domestic cleanliness, including vigorous action against vermin and insect pests of all sorts. The disease tends to increase during warm weather, and court and stair cleansing and the frequent removal of stable litter should be rigorously enforced.

In order, also, to bring the attendant conditions of each case under review there would be advantage in including both forms of the disease within the Notification Act. Poliomyelitis has been notifiable in England since 1912, but the resolution should include the aberrant brain form known as polio- or lethargic encephalitis.

[1] Report submitted to the Glasgow Committee on Health, June 26th, 1918.

[2] Subsequent information adds to the number.

POLIO-ENCEPHALITIS AND AN EPIDEMIC DISEASE OF OBSCURE ORIGIN.

BY DR. R. M. F. PICKEN.

During recent months cases of a disease which was at first regarded as botulism, a form of food poisoning, but is now generally believed to be polio-encephalitis, an aberrant form of acute anterior poliomyelitis, were reported in various parts of England. The Department was alive to the possibility of the disease appearing in Glasgow, and at least two definite cases fall to be reported.

The First Case.

On Sunday, May 5th, Dr. Picken was asked to see a patient in Ibrox in consultation with a practitioner. This patient, a girl aged 19, first complained on April 18th of dizziness and shivering, associated with stiffness and pain in the arms and legs. She was able to continue at work until April 23rd, when the general symptoms became more severe and the doctor was called in. On April 26th she was confined to bed, and on the 27th sickness and vomiting occurred. Her temperature now became elevated, and on the 29th she was delirious and fell into a semi-comatose condition, in which state she remained at the date of examination.

When examined her appearance was notable, the most striking feature being the complete absence of expression on the face and of ability to move the facial muscles. The eyes were almost closed and apparently incapable of being further opened, and the mouth was hanging open, the muscles of the jaw being paralysed. She moved very little, but was able to respond to questions put to her by her relations. There appeared to be a slight degree of paralysis of the left arm and leg. There was marked constipation. The patient had difficulty in swallowing.

So far the symptoms corresponded generally with those of botulism, but the absence of paralysis of the muscles of the eyeball and an excessive moisture in the mouth in contrast to the dryness of the mouth in botulism indicated that the diagnosis might lie in a different direction. This patient was removed to the Royal Infirmary on May 6th, where she is making a gradual recovery. The symptoms, the gradual onset of the disease and its subsequent course, point to a diagnosis of polio-encephalitis.

The Second Case.

A man, aged 35 years, was admitted to Belvidere Hospital on May 6th as a case of typhus fever, and was reported as such to the committee at the meeting on May 8th. The course of his illness, however, and the post-mortem findings (he died on May 9th) indicate that this also was probably a case of polio-encephalitis. In this instance the onset of illness on May 1st, as reported by Dr. W. Archibald, was more sudden than in the case above reported. It commenced with headache, sickness, stupor, and delirium, the latter appearing early and persisting throughout the illness. In this case also, although it was somewhat difficult to establish, there was evidence of facial paralysis and the expressionless appearance of the face was particularly pronounced. Prior to death there was a definite paralysis of the upper eyelids. In other respects this patient presented features differing from the previous one. Paralysis of the muscles of the eye was present and there was a greater degree of stiffness of the muscles of the body, which in his case was a very marked feature. The skin was hypersensitive.

Post-mortem examination was made by Dr. R. M. Buchanan, who reported evidence of a generalised toxæmia, and in particular a condition of the brain and spinal cord which indicated an inflammatory condition of these organs.

In the former case there was definite history of the consumption of tinned foods, and especially of tinned salmon, but those articles of diet had been shared by the other members of the family, none of whom

took ill. In the second case there was no history of such dietary and there was again an absence of symptoms in the other members of the patient's family.

Other Cases.

In addition to the two cases described in detail, two patients admitted to Ruchill Hospital—one as a case of cerebro-spinal fever, on April 25th, who died on April 27th, and another also admitted as cerebro-spinal fever on May 18th, who died on May 20th—presented cerebral symptoms differing from those of cerebro-spinal fever or any other type of meningitis, and the post-mortem examinations carried out by Dr. Buchanan revealed conditions similar to those described above. These cases had also no association with similar illness in the other members of their families, and conform fairly closely with the descriptions of polio-encephalitis, although the onset of the disease was more than usually sudden.

There is reason to believe, therefore, that cases of this unusual disease have been occurring in Glasgow, and probably many of them have been regarded as suffering from some other more familiar disease, since three of the four cases mentioned came under our notice as the result of mistaken diagnosis.

Dr. Leonard Findlay, of the Royal Hospital for Sick Children, reports the occurrence of six recent cases of disease affecting the nervous system, three of which at least appear to have been typical poliomyelitis, while others agreed more or less closely in symptoms with the cases already described.

OUTBREAK OF AN ACUTE FEBRILE DISEASE IN THREE FACTORIES AND AN INDUSTRIAL SCHOOL IN GLASGOW.

BY DR. A. MACLEAN.

During the first week of May of this year an acute febrile disease with symptoms resembling those of influenza invaded three factories and one industrial home for boys in Glasgow. The three factories accounted for 420 cases, the industrial school for 16. The disease was of a very mild type, and was characterised by sudden onset, severe headache, prostration, occasionally extreme, and rapid recovery usually in 2–4 days. Less frequent symptoms were nausea, shivering, and, very rarely, sore-throat.

No deaths, to our knowledge, occurred, and in no instance do we know of a medical practitioner being consulted.

The significance of this mild outbreak revealed itself when it was brought to our notice that a similar outbreak, attacking some 280 persons, had appeared in two industrial schools, a public school, and a hosiery manufactory in the county of Lanark. The greater number of cases in the county presented the same symptoms as the Glasgow cases, but a few had pulmonary symptoms, and there were 8 deaths —7 from one industrial school and 1 from another. The Glasgow outbreak occurred fully a week before it appeared in the county, and it has been ascertained that a boy resident in the infected industrial home stayed at the Lanarkshire Orphanage from May 10th to 15th, the first case occurring there in the person of the boy who slept in the same dormitory. Further, there is constant communication between this Glasgow home and a Lanarkshire school, where there were 80 cases and 1 death.

Similar outbreaks have occurred at intervals in several industrial schools throughout the country.

In 1888 the late Dr. J. B. Russell made an exhaustive report on an outbreak which occurred in St. Mary's Roman Catholic Industrial School, Glasgow. The Scottish Office caused a report to be published of an outbreak in St. Joseph's Industrial School, Tranent, in 1911. Others have been reported as occurring in various industrial schools in England. This is the first occasion, however, in which factories or works have been invaded by the disease.

Reviewing the published reports of previous epidemics, the Lanarkshire cases, some of which have been seen by us, and the history of the Glasgow cases, it is evident that we are dealing with the same disease, of which the following is a broad description.

Nature of the disease.—It is an acute febrile disease resembling in its mild form influenza, and usually diagnosed as such. When associated in an epidemic with the severe and fatal cases, it is evident that we are dealing with a disease quite distinct from influenza. This is further borne out by the bacteriological findings.

Types and symptoms.—Three types of the disease may be recognised, all sometimes occurring in the same epidemic, but these types frequently merge into one another.

1. *The mild non-pulmonary type (usual type).*—The onset is sudden, headache and prostration being the chief symptoms. There is feverishness, the temperature varying from 99° to 103° F. The recovery is rapid, usually occurring on the second, third, or fourth day. Less frequent symptoms are nausea and vomiting. Sore-throat is a rare complaint.

2. *Malignant type.*—Onset is sudden, coma, varying occasionally with delirium, rapidly supervenes, and death takes place frequently in less than 24 hours.

3. *Pulmonary type.*—The symptoms are similar to those of the first type, but symptoms of pulmonary involvement, with breathlessness and sometimes cyanosis, are superadded. Congestion, œdema, or consolidation of the bases of one or both lungs may occur.

The absence of nervous symptoms—e.g., ptosis, Kernig's sign, strabismus, pupillary irregularity, &c.—is a noteworthy characteristic in this and previous epidemics.

Pathology.—The pathology of the disease has not been completely worked up. Generally speaking, there is congestion of the membranes of the brain, but no meningitis, congestion with œdema, and sometimes consolidation of the bases of the lung, congestion of the mucous membrane of the stomach and upper part of small intestine, enlargement of the solitary glands, Peyer's patches, and mesenteric glands, occasionally enlargement and congestion of the spleen. These post-mortem findings bear a certain resemblance to those of epidemic poliomyelitis, which is of significance, inasmuch as the clinical symptoms are not unlike those occurring in the non-paralytic, a fairly common type of this disease.

Bacteriology.—This has not been completely investigated. Two important points, however, have transpired. The bacillus of influenza is invariably absent. This is in accordance with the clinical picture of the disease. A Gram-negative diplococcus resembling the pneumococcus has frequently been obtained from the nose, throat, lungs, and membranes of the brain.

A CLINICAL STUDY OF CRANIOTABES.

BY EDMUND HUGHES, M.R.C.S. ENG., L.R.C.P. LOND.,
LIEUTENANT, R.A.M.C. (TEMP.).

IF the various modern accounts of craniotabes in infants are analysed and compared they will be found inexact and often discrepant. Further, it has not been possible to derive from them any clear conception of either the time-incidence of craniotabes or the manner of its development and retrogression. Without information of this sort, however, the physician who meets with a case is clinically sightless. He can have no intelligent grasp of the fact when observed, and can make no discriminating use of it. I therefore undertook a fresh inquiry into the subject. The following statements are based largely on a close study of 94 cases, extending over the past four years, and reinforced and controlled by much other material. The work having had to be put aside in an incomplete stage, it has seemed none the less worth while making a brief statement of some of the findings to date, together with certain argument based upon them.[1]

Some Peculiarities of Healthy Immature Skulls.

To avoid confusion with other cranial defects at the same age whose causation may be different,[2] I shall limit the term "craniotabes" to denote the process described in this paper. Certain peculiarities of healthy immature skulls must be understood, or they may be mistaken for craniotabes proper.

Thus, if the skull of a healthy fœtus aged, say, 4½ to 5 months be examined *in situ* while in the fresh state, moderate pressure on the flat cranial bones will be found to produce deformation along their borders. The depression thus caused is shallow, roughly parallel with the edge of the bone, having relatively smooth margins which merge insensibly into the more ossified parts. If the parietal be next removed and examined, it is found firmly ossified, except for a broad even margin all round. This margin, though already tough, is flexible, forming when bent a smooth curvation without "buckling." By the twenty-eighth to thirtieth week this margin has normally become inflexible, in the sense that moderate pressure upon it is insufficient to cause yielding, but results merely in a tilting inward of the whole bone. By full term, *a fortiori*, all such attempts at indentation are unsuccessful.

The only exceptions to this appear to be as follows. In a majority of infants born at term, and for a varying number of weeks afterwards, a slight yielding occurs on *firm* pressure on the tip of the postero-lateral angle of the parietal, usually also on the closely adjacent portion of the occipital; and at the site of the parietal foramina (i.e., from ¾–1¼ inches in front of the posterior fontanelle). A sagittal foramen may, of course, replace these foramina, and exists, according to Broca's figures, in about 1 in 4 skulls. When the sagittal foramen is large, it is associated with widening of the interparietal gap posteriorly and of the posterior fontanelle.

[1] A well-informed summary of the knowledge existing on the subject when the present inquiry was begun will be found in the text-book of Garrod, Batten, and Thursfield, 1913, Art. "Craniotabes."

[2] A curious case recorded by Ballantyne (Ante-natal Pathology, 1902, p. 337) reads like a greatly exaggerated instance of the fœtal form of craniotabes, with delayed re-ossification.

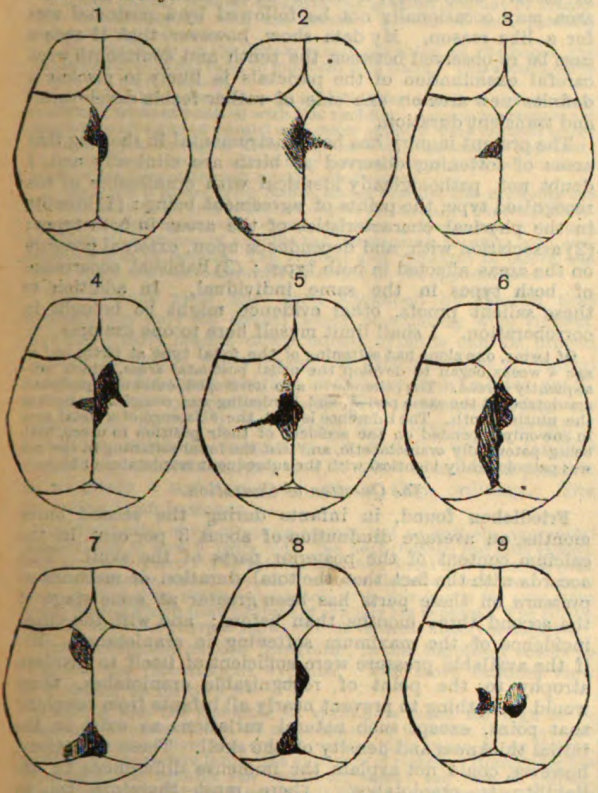
Out of a large number of skulls examined at viable ages, I have found but few which showed a remnant of the even marginal flexibility of the early fœtal bone. If present at all, it is limited to the extreme edges of the bones formed in membrane, and requires decidedly firm pressure to bring out.

The above normal sites of exception to the otherwise general firmness of these bones are readily distinguishable by their situation, their symmetry, and the degree of pressure required to disclose them.

Fœtal Craniotabes.

FIG. I.

The situations shown in Figs. I. and II. are approximate, not to scale, and transcribed from graphic records carefully made at time of observation. The amount of shading expresses relative degrees of loss of elasticity.



Among the population on which my observations have been made, an indefinite though probably no small number of infants born at or near term show true craniotabes at birth. Thus in 153 consecutive births I found craniotabes in 30, or about 1 in 5. This, which may be called "fœtal or primary" craniotabes, has the following characters and conditions: (1) it is asymmetrical, and elicited with slight to moderate pressure; (2) it is found only in vertex presentations; (3) it occurs nearly always in close relation with the sagittal suture[3]; (4) it is habitually followed, after a varying time, by craniotabes of the type recognised and described as such.

The situation of these areas of true fœtal craniotabes is best realised by means of illustrations. In Fig. I. are shown nine different representative sites, selected from observed instances. The amount of softening in craniotabes is conveniently expressed in terms of 4 degrees, which the palpating finger can distinctly recognise. The first degree implies that moderate (never forcible) pressure is required to elicit it. The third degree is that requiring very light pressure; the second degree being intermediate. These three degrees imply the capacity of the bone to recover its shape. In the fourth degree the bone has lost all resilience, and the area is membranous. In these fœtal cases all four degrees may be found in different examples, and even in different parts of the same individual bone. In respect of amount of elasticity, therefore, fœtal craniotabes strictly agrees with that of later ages.

The same agreement holds good with regard to irregularity and asymmetry. In some the sensation imparted to the finger is identical with that given by areas of later origin which are known to be rather slowly hardening, suggesting that some infants are born with remnants of areas formerly more extensive.[4]

After birth the fœtal area hardens or undergoes modification, according to its site. In many instances these patches, which often commence about 2 cm. behind the anterior fontanelle, lie between this and the region of the sagittal or parietal foramen, and so are no longer subject to pressure. A chance is then afforded of ascertaining the rate of healing of a craniotabetic area when suddenly and completely withdrawn from pressure. This, of course, will partly depend on its degree at birth. The shortest time my observations give for the area to become indistinguishable from the surrounding bone is 15 days. The commonest time was from four to five weeks. Some last considerably longer and are still detectible in the twelfth week. The hardening proceeds progressively and evenly, never in irregular patches.

Postnatal Craniotabes.

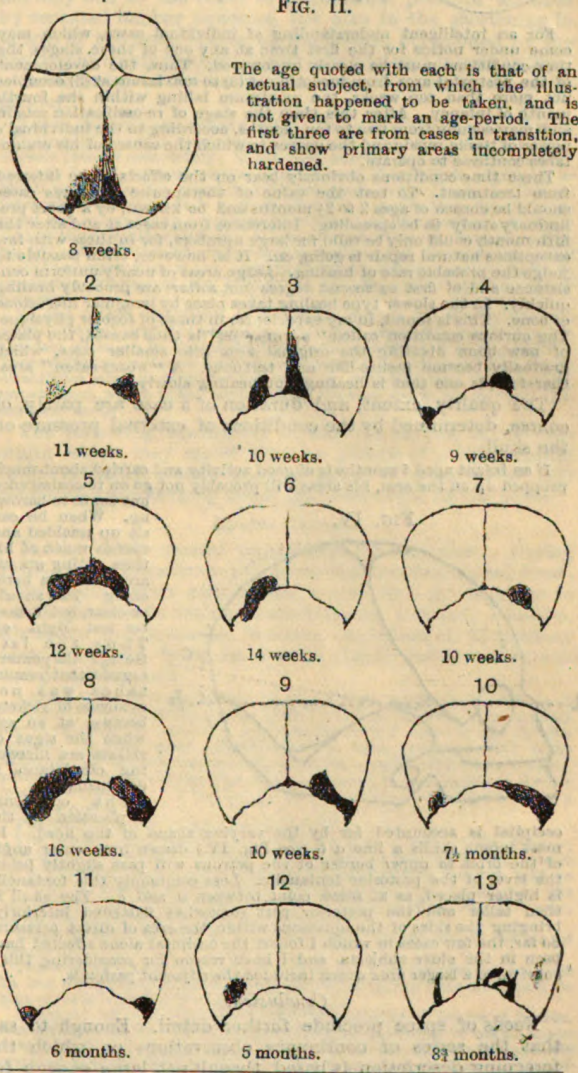
The "postnatal or secondary" area may first become evident towards the end of the first month of extra-uterine life.

It is thus not uncommon for fœtal and postnatal areas to be present on the same skull during the second month. My evidence indicates that the more advanced or extensive the fœtal areas the earlier and more widespread the formation of postnatal areas, and that the milder the former condition the slower and less complete the formation of the latter, though both these rules have exceptions. It will follow that, in the second case, there will be an interval of time during which no craniotabes is present. This circumstance, together with the difficulties of continuously observing some cases, prevents me from formulating the following rule without its qualification. It may, however, be truly posited that *craniotabes, according to its site, may be expected to be followed by, or to have been preceded by, craniotabes in other situations.*

In Fig. II are shown 13 common situations in which postnatal areas may be looked for.

FIG. II.

The age quoted with each is that of an actual subject, from which the illustration happened to be taken, and is not given to mark an age-period. The first three are from cases in transition, and show primary areas incompletely hardened.

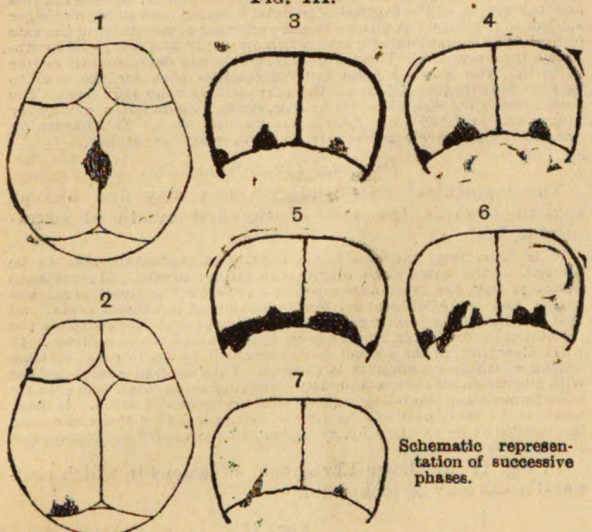


[3] Rarely, a marked softening of the postero-lateral angle of one or other parietal will be found along with vertex craniotabes in the new-born. The only case observed by me showing an exceptional site alone was the premature child of a woman who spent her seven months of pregnancy lying on her back or partly on her side through severe chronic arthritis. The child, who presented in the first position, showed a small discrete area on right parietal above midpoint of lambdoid suture. Large postnatal areas developed later on both parietals.

[4] The examination of the new-born for craniotabes should be repeated on the third or fourth day to allow time for œdema of the scalp to pass off. I have known this to mask smaller areas of softening.

Fig. III. is intended to show in schematic form the typical complete series of events in chronological order.

FIG. III.



Schematic representation of successive phases.

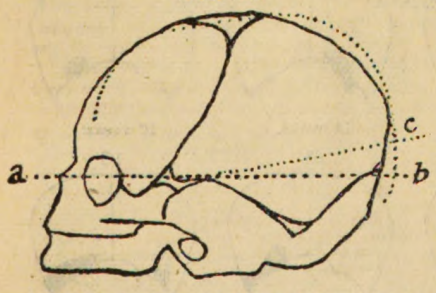
For an intelligent understanding of individual cases, which may come under notice for the first time at any one of these stages, the time-conditions must be clearly understood. Thus, the development of the postnatal area from inception at (2) to maximum at (5) occupies not more than ten weeks, the maximum falling within the fourth month of infancy. After this time the stage of re-ossification sets in and may occupy from two to ten months, according to the individual's power of tissue-repair and the degree to which the causes of his craniotabes continue to operate.

These time-conditions obviously bear on the effects to be inferred from treatment. To test the value of therapeutic measures cases should be chosen of ages 2 to 2½ months and be known, by a short preliminary study to be spreading. Inferences from cases at and after the fifth month could only be valid for large numbers, for in these with few exceptions natural repair is going on. It is, however, often possible to judge the probable rate of healing. Large areas of nearly uniform consistence and of first or second degree (not softer) are probably healing quickly. In the slower type healing takes place by irregular intrusions of bone. This is found, in my experience, in those of feebler physique. The curious condition called "worm-eaten" is thus caused, the plates of new bone dividing the original area into smaller ones, which gradually become fissure-like and tortuous. A "worm-eaten" area, therefore, is one that is healing, but healing slowly.

The quality, extent, and duration of a case are partly, of course, determined by the conditions of external pressure on the skull.

If an infant aged 4 months is of good activity and carried about much propped up on the arm, his areas will probably not go on to coalescence but begin to harden up. When he can sit up unaided and spends much of his time sitting up, his areas take on hardening. This should be clear, but it may be lost sight of. Thus the late George Carpenter[5] argued that craniotabes was not evidence of rickets, because at an age when the signs of rickets are increasing craniotabes is decreasing.

FIG. IV.



The occasional implication of the occipital is accounted for by the varying shape of the head. In most infant skulls a line *a b* (see Fig. IV.) drawn from outer angle of the orbit to upper border of the petrous will pass slightly below the level of the posterior fontanelle. Less commonly this fontanelle is higher placed, as at some point between *b* and *c*. The skull is then taller and the posterior part somewhat flattened inferiorly, bringing the sides of the squamous within the area of direct pressure. So far, the few cases in which I found the occipital alone affected have been in the older subjects, and I have reason for considering this a survival of a larger area which included the adjacent parietals.

Conclusions.

Needs of space preclude further detail. Enough to say that the series of continuous observations on which the foregoing description is based, though not large enough for exhaustive inferences, has been amply sufficient to establish a rule that when an infant is born with craniotabes he will continue to develop it anew in the situations described, and to show that the severities of primary and secondary areas are commonly in direct ratio.

On the other hand, parallel observations on slightly over 100 controls enable me to infer that infants (vertex presenting) born without craniotabes seldom show it postnatally. I have met with six exceptions among these. In all six the postnatal area was single, small, and of the first degree. One may hazard either that a small fœtal area had hardened by the time of birth, or, more rationally, that the combined causes of craniotabes were operating too feebly to produce it in utero. Conversely, it seems likely that a trivial fœtal area may occasionally not be followed by a postnatal area for a like reason. My data show, however, that if such a case be re-observed between the tenth and fourteenth week careful examination of the parietals is likely to disclose a definite new area on one side of rather feeble development and transient duration.

The present inquiry has been instrumental in showing that areas of softening observed at birth are clinically and, I doubt not, pathologically identical with craniotabes of the recognised type, the points of agreement being: (1) identity in the physical characteristics of the areas in both types; (2) association with, and dependence upon, external pressure on the areas affected in both types; (3) habitual occurrence of both types in the same individual. In addition to these salient proofs, other evidence might be brought in corroboration. I shall limit myself here to one example.

Of twins, one alone had softening of the fœtal type at birth, and at age 4 weeks began to develop the usual postnatal areas, which subsequently spread. The other twin also developed extensive postnatal craniotabes at the same period, and hardening was complete in both at the ninth month. The inference is that the existence of a fœtal area in one only depended on the accident of their position in utero, both being potentially craniotabetic, and that the fœtal softening in the one was pathologically identical with the subsequent craniotabes of both.

The Question of Causation.

Friedleben found, in infants during the second three months, an average diminution of about 3 per cent. in the calcium content of the posterior parts of the skull. This accords with the fact that the total duration of mechanical pressure on these parts has been greater at some stage of the second three months than before; and with the time-incidence of the maximum softening in craniotabes. But if the available pressure were sufficient of itself to produce atrophy to the point of recognisable craniotabes, there would be nothing to prevent nearly all infants from reaching that point, except such natural variations as exist in the initial thickness and density of the skull. These variations, however, could not explain the immense differences in the liability to craniotabes. There must therefore be an additional cause; and that this is pathological is shown by the affection being confined to a minority, who moreover are found to give evidence, sooner or later, of disease.

To account for this (organic) part of the causation, at least five hypotheses have been brought forward—i.e., that craniotabes is due to (1) rickets; (2) syphilis; (3) rickets combined with syphilis; (4) one or the other in different instances; (5) neither, but to some cause at present unrealised. Of these, the view numbered (4) is more easily disposed of than the others.

Concerning the forms of craniotabes under discussion, I have not, in over a decade of study of them, met with a case which departed so definitely from type as to fall outside the description already given. Upholders of the above view have the option of showing that this craniotabes consists of two distinct varieties wrongly classified under the same term, or else of falling into an error of theory very prevalent in medical reasoning by which it is carelessly assumed that the same event may have two or more different sets of causes.

The view numbered (5) rests on the undoubted fact that neither syphilis nor rickets can be demonstrated in every case; further, that both are sufficiently common among the town-bred to be regarded as adventitious accompaniments. These points are not easily met.

The absolute frequency of syphilis and rickets in the non-craniotabetic has never, to my knowledge, been worked out; nor have enough cases of craniotabes been followed up to show that they did or did not develop rickets or a syphilis previously latent. The absence of rickets is, one suspects, apt to be loosely affirmed, as it is a troublesome matter to follow up a considerable body of cases through the ages required for certainty on this point. Of 37 in which these conditions were observed I found obvious rickets in 35, in most of these moderately severe. There was also a significant ratio between the amount of craniotabes and the subsequent rickets. Of the two negatives, in one the areas of softening, primary and secondary, were trivial in extent and degree. In the other case the two previous children of that parentage had both been under my observation with rickets of some severity.

Regarding causation by syphilis: of the present 94, 40 were certainly syphilitic, 21 more were probables. In

[5] Carpenter: Brit. Jnl. Chil. Dis., March, 1908.

the remaining 33, evidence was either vague or absent.[6] Only 13 showed a severe infection. For this reason, clinical estimates of its proportion are apt to be fallacious unless examination is made in the early weeks, on repeated occasions, and knowledge is included of the parents or their previous children. On the hypothesis that syphilis is causal, however, these clinical deductions should prove correct:

1. In those severely tabetic, there should be evidence of syphilis, especially of cranial syphilis, co-existing or sequent. Of the present series, 38 had extensive softening, both sides being affected, with confluence of areas. Of these 6 showed severe syphilis, 13 mild forms, and in 19 syphilis was absent on all counts.

2. Where cranial syphilis co-exists, the greatest amount of craniotabes should coincide with the greatest activity of the syphilitic process in that instance.

3. On subsidence of the inflammatory condition of the bones, the craniotabes should be found to diminish *pari passu*. This should occur at least to a partial extent.

Craniotabes, however, in cranial syphilis I find to follow the pressure conditions, without relation with the syphilis. Among my records are cases where all signs of cranial and other syphilis were reduced under treatment; yet during or after their removal, craniotabes appeared. In a number of others, an existing postnatal area behaved during a course of mercury as though totally uninfluenced.

A boy, aged 9 weeks, with rather severe syphilis also involving the cranium, showed an area of second degree (postnatal). Vigorous treatment by inunctions was then carried out for four weeks, before the end of which all evidence of syphilis had disappeared, together with considerable gain in weight. The original area remained as before, and one of larger size had meanwhile developed on the opposite bone.

The curious view has been advanced by Marfan that syphilis can only be causal when co-existing with rickets. But this clearly breaks down unless syphilis can be proved present in nearly every case. It happens that a clinical diagnosis is far more weighty in infancy than in later years, as nearly all congenital cases give evidence within six months of birth. I can assert the absence of syphilis, therefore, without misgiving in certain whole families furnishing craniotabetics; and in a few it has been possible to maintain a scrutiny much closer than ordinary. The following is an instance:—

The first (male) child of young parents had an entirely uneventful infancy, and is now 8 years old. The next (female) had mild rickets, and is now 4 years. The third (male) had fœtal and extensive postnatal craniotabes, and is now, at 12 months, definitely rachitic. I have been in very close professional touch with this family for over eight years, during which time no trace of syphilis has appeared. The father, aged 29, shows no physical signs, and his venereal history is negative.

Such evidence as the foregoing, taken together, seems to rule out the causality of syphilis. The more rational view is, I think, as follows:—

Granting that the incidence of syphilis is much too high to be dismissed as adventitious, we may suppose it to favour the true cause in some manner now obscure. Assuming this cause to be rickets, syphilis will therefore favour the existence of rickets. Hochsinger has concluded that syphilis can hasten its onset; and this, if correct, would help to explain why pressure is likely to produce craniotabes in a syphilitic subject. But one is driven to grant that rickets not seldom exists during the period when the fœtal head comes to assume a more or less constant position in the lower uterine segment.

The following case may be cited as relevant to the present argument.

The first child (female) of apparently healthy young parents had fœtal, and at the second month postnatal, craniotabes, which underwent partial development. No syphilis, but well-marked rickets appeared in second year. During the first pregnancy the father joined the Army, and on a return on leave the mother conceived again. The next child (male), born 13½ months after the first, had fœtal followed by large postnatal areas, and at four weeks an extensive macular syphilide, rhinitis, slight hydrocephalus, &c. He responded well to treatment, though the craniotabes continued to spread, as in others. The fœtal area in the first child was moderate in size, involving the left parietal; in the second larger, involving both bones; and his postnatal areas were also larger.

This is offered as a possible illustration of syphilis in the rôle of accomplice. That the first child is a latent syphilitic is conceivable, but is not an impartial reading of the data.

In imagining a method by which syphilis might favour the cause, the added effect of plus intracranial tension seemed to merit inquiry. Gauging its degree by the fontanelles and amount of venous turgidity, I recorded 41 cases of cranial syphilis during the first four months, finding craniotabes in 9. In 16 the tension was relatively high, and 5 of these had craniotabes. Probably the effect of tension is negligible, as in many it cannot be shown to be increased.

While it is clear that mercury is without influence on craniotabes, the therapeutic test for rickets cannot easily be made on young infants, both through the dietetic limitations and the lack of a "specific" for this disease. Experiments, however, both dietetic and medicinal, had been begun on selected cases, which have had to be temporarily relinquished.

[6] Of 100 cases collected by Lees and Barlow (Trans. Path. Society, 1881) 47 were certainties, 40 more were probables.

THE NERVOUS SEQUELÆ OF CEREBRO-SPINAL FEVER.

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PRIOR to the introduction of repeated lumbar puncture and the intrathecal administration of specific anti-serum as routine measures in the treatment of cerebro-spinal fever many of the relatively few cases that recovered appear to have suffered from some permanent disability, either mental or physical.

The older writings on the subject abound with references to the frequency of infirmities met with in survivors from the disease. Some allowance, however, must be made for the fact that, owing to the absence of accurate diagnosis by an examination of the cerebro-spinal fluid obtained on lumbar puncture, polio-encephalitis and the so-called meningeal form of acute anterior poliomyelitis were often confused with meningitis; consequently many of the paralytic sequelæ of the former diseases were erroneously attributed to meningitis. Nevertheless, serious disabilities frequently followed cerebro-spinal fever, by reason, no doubt, of the compression to which the brain structures were subjected during the course of the disease by the increased tension of cerebro-spinal fluid unrelieved by lumbar puncture.

Contrary to popular supposition, it is an undoubted fact that in recent years serious sequelæ have been considerably less frequent than formerly. These improved results are not only due to the relief of intracranial pressure afforded by repeated lumbar puncture, but also to the shortening in length of the usual course of the disease occasioned by the use of antimeningococcal serum administered intrathecally.

In infants, as formerly, the sequelæ remain the most serious.

Batten, for instance, writing in 1915, states that in the endemic form affecting infants and occurring annually in London, only 15 per cent. of cases recover completely; 35 per cent. survive but exhibit some permanent defect—either mental impairment, hemiplegia, diplegia, or blindness, while the remaining 50 per cent. prove fatal. In infants internal hydrocephalus is a most frequent complication, its development and course being considerably modified by the anatomical condition of the infantile cranium; the intracranial pressure brought about by the accumulation of cerebro-spinal fluid in the ventricles not only leads to compression of the cerebral tissues, but also expends itself in producing bulging of the fontanelles and separation of the cranial sutures.

In the infant, therefore, the nervous structures of the cerebral cortex are subjected to a considerably more gradual pressure than is the case when, as in the adult, the cranial capacity is a fixed quantity. These facts may account for the occurrence in children of permanent disabilities such as diplegia, blindness of central origin, and mental impairment, which at the present time are observed in adults only with extreme rarity.

The following description of the conditions of nervous origin which may result from an attack of cerebro-spinal fever is based chiefly upon a study of a series of 120 recovered cases coming under the observation of the writer.

Mental Changes.

In the adult mental impairment is very rare. During 1915–17, of 120 patients recovered from cerebro-spinal fever, mainly adolescents and adults, I met with no instance in which permanent mental enfeeblement resulted. Bourke, Abraham, and Rowlands, however, state that of 77 military cases recovered from the disease (1915) feeblemindedness was present in two.

Among the minor psychical changes Netter mentions conditions of irritability and puerility, while other French authors describe marked loss of attention or memory, moroseness, morbid shyness and morbid egoism. During early convalescence I have observed that some patients may exhibit unevenness of temper, anger being easily evoked, while inability to concentrate the attention for any length of time is relatively frequent. Such changes rarely persist, but disappear after a variable period.

Puerility occurred in one case out of 120.

The patient, aged 23, had survived a severe attack of the disease; duration approximately 40 days. When first beginning to walk about he would attempt to carry out practically anything he was told to perform, no matter how absurd it might appear—e.g., walking on his hands and knees, lying under bed, &c. After a week or two, however, he recovered his normal mental equilibrium.

Three patients of the 120 recovered cases complained of defects of memory.

The first, seen three months after discharge from hospital, stated that he had occasional difficulty in remembering things that were told to him or orders it was his duty to carry out.

A second patient, four weeks after termination of course of illness, complained that he had forgotten the names of several of his intimate friends and also of places he had visited. When seen a year later his memory had greatly improved, but he considered that he could not remember facts as well as prior to his illness.

The third patient was employed in clerical duty at a military depôt; on returning to work he found that he had great difficulty in adding up columns of figures that previously he had managed with ease; no other psychical symptoms were complained of. Six months later his defect was still present.

Foster and Gaskell mention one recovered case in which there was complete loss of memory. As a concomitant paralysis of the right arm was present, however, the amnesia possibly owed its origin to a definite and localised cortical lesion. Six months later this patient's memory was almost completely restored, although some weakness of the arm persisted.

As regards permanent mental defects following the disease in infants, Looft estimated that 3·7 per cent. of 539 idiots owed their condition to an attack of meningitis. Netter, without doubt rightly, attributes a considerable number of such cases to insufficient serotherapy. Cases in which dementia results are often suffering from chronic hydrocephalus, which in some instances may persist for a considerable period. In all cases with dementia care should be taken to exclude hydrocephalus, even though apparent recovery from meningitis has occurred, before the patient leaves hospital.

Sensory Symptoms.

Headache.—Patients may continue to complain of headache for some time after convalescence is established and Kernig's sign is definitely absent.

In the majority of cases the headache entirely disappears after a few months; in others, however, it persists for longer. Of the 120 recovered cases already mentioned only 8 continued to suffer from headache three months after becoming convalescent; a few stated that the symptom only occurred after exertion, and in one case it was merely nocturnal.

Persistent headache of a severe nature may be due to a certain degree of hydrocephalus, which later may give rise to serious symptoms and even produce a fatal result.

Pain in the back.—Pain, weakness, and stiffness in the back are almost invariable complaints during the early stages of convalescence; in consequence, an awkward gait may persist for some weeks.

The majority of patients cease to experience backache about 3–4 months after termination of course of illness. Several, however, may complain of weakness in the back for many months after recovery; in some the symptom is only noticed on stooping, while in others pain is present in damp weather. Hyperæsthesia of the spine may occasionally persist well into convalescence.

That the pain and weakness in the back are due to the effect of the disease itself rather than to that of lumbar puncture is shown by an observation by Foster and Gaskell. A certain case in which lumbar puncture was performed once only, owing to the presence of auricular fibrillation, recovered completely from meningitis after a course of about 40 days; the patient, however, exhibited the symptom of pain in the back to a greater degree than other cases on whom a dozen or more punctures had been performed.

Also, I have known cases recovering from an abortive attack of the disease who had had no more than one or two punctures complain of pain and weakness in the back for a longer period than patients who had passed through a severe illness, necessitating the performance of many lumbar punctures. In all recovered cases I have carried out an examination for possible lesions of the cauda equina resulting from the punctures; of upwards of 120 cases, however, in no single instance could the slightest lesion be demonstrated.

Pain in the limbs.—Pain in the legs, persisting for more than three months after recovery, is a comparatively rare sequel. Occasional pain was complained of in two only of the 120 cases, the leading question not being put. Only one patient volunteered the information that he experienced occasional pain in the arms.

Motor Defects.

Ocular muscles.—As lesions of the nerves supplying the muscles of the eyeball usually improve coincidently with recovery from meningitis, permanent strabismus as a sequel is most uncommon. When present it is usually the result of involvement of the sixth cranial nerve.

Of the 120 cases only 2 exhibited an ocular palsy persisting for longer than three months after recovery from the disease.

The first patient, who during the attack of cerebro-spinal fever had had complete paralysis of both external rectus muscles, exhibited when seen three months after his discharge from hospital, complete paralysis of the left external rectus, while some weakness still remained in that on the right.

The second patient, examined six months after recovery, showed some nystagmus and marked weakness of one external rectus muscle.

Bourke, Abraham, and Rowlands, of 77 cases recovering, met two with permanent strabismus.

As a rule, the pupils remain somewhat dilated for some weeks after establishment of convalescence, but eventually become normal. Persistent myosis or inequality in the size of the two pupils is extremely rare. Permanent nystagmus also is most infrequent.

Limb palsies.—Paralysis of limbs, developing during the course of the disease, may persist for several months after recovery from meningitis. Monoplegias due to the involvement of spinal nerve roots almost always disappear eventually, although a considerable time may elapse before function is fully restored. As an example the following case may be mentioned:—

A child aged 6 years, suffering from cerebro-spinal fever, exhibited on the sixth day of illness considerable weakness of both arms. Three days later patient was unable to abduct either arm at the shoulder, the deltoid muscles being paralysed and flabby; paralysis of right biceps and triceps was also present, no degree of active flexion or extension being possible at the elbow. The supinator, biceps, and triceps jerks were unobtainable in both limbs, and hyperæsthesia was particularly marked in the right. By the fourteenth day there was a fair amount of wasting of affected muscles in right arm. Meningococci were present in cerebro-spinal fluid until ninth day of disease, and recovery from meningitis, as shown by the evacuation of a clear and sterile cerebro-spinal fluid, was not complete until the thirtieth day.

Fourteen days after recovery movement in the left arm had returned, but the right still showed paresis of the deltoid, biceps, and triceps. No response to faradism was obtained in these muscles, and with galvanism A.C.C. was greater than K.C.C. in the deltoid; in the biceps and triceps A.C.C. was about equal to K.C.C.

Full power was recovered in the affected arm about seven months after recovery from meningitis.

If a monoplegia or paralysis of a group of muscles persists without improvement, it is probably dependent upon definite changes in the anterior cornual cells.

Hemiplegia, occurring as a complication of cerebro-spinal fever, usually terminates in almost, if not quite, complete recovery.

For instance: In one case of the series, a boy aged 15 who ran a recrudescent course of over 80 days, hemiplegia developed about the fifty-first day of illness. By the termination of the course of meningitis (eightieth day), and about 30 days after appearance of hemiplegia, the paralysis of the arm had quite disappeared. Seven and a half months later, all that remained of the lower limb palsy was weakness of calf muscles and inability to flex or extend great toe; the other toes exhibited weak movement. Both patellar clonus and ankle clonus, previously present, had disappeared, but on the affected side, the knee-jerk and tendo Achillis jerk remained brisker than those in the opposite limb, and the plantar reflex was still extensor.

Cerebral hæmorrhage, occurring during the course of cerebro-spinal fever in middle-aged patients with pre-existing nephritis, may lead, if the patient recovers, to permanent hemiplegia.

Flaccid paraplegia, fortunately a very rare complication, may show some improvement but is usually permanent.

Some degree of weakness in the legs and unsteadiness of gait is frequent during the early stages of convalescence.

In a few instances, according to Sophian, exaggerated knee-jerks associated with a true ankle clonus and extensor plantar reflexes, may be elicited. I have frequently observed ataxia with a positive Romberg's sign and difficulty in walking; in many cases, exaggeration of the deep reflexes is also present. In no instance, however, in the absence of a definite upper neurone lesion has one found ataxia associated with either definite ankle clonus or a true extensor plantar reflex. Romberg's sign was not observed in any case in which a period of one month had elapsed from the time of the patient's beginning to walk.

One man, aged 30, was met with, who had had an attack of cerebro-spinal fever at Belfast eight years previously; for a considerable period following his recovery he had complained of weakness affecting the legs. When examined he stated that he still felt weak and "shaky" in the legs after violent exertion; he exhibited, however, no abnormal physical signs.

Peripheral neuritis.—This condition is a very rare complication of cerebro-spinal fever.

Of two cases seen in which definite neuritis affected the lower extremities, complete reaction to degeneration in the muscles supplied by the affected nerves developed in neither case. In one case the tendon reflexes were beginning to return, and sensation was nearly normal within three months of recovery from meningitis; the second patient, after a similar period, exhibited normal cutaneous sensation, but both the knee and ankle-jerks were still absent, and the vibration sense remained much diminished.

Muscular rigidity.—Rigidity of the cervical muscles persisting for any considerable period after recovery is extremely rare.

As a rule, neck rigidity is absent before or within a week or so of the cerebro-spinal fluid returning to normal. In the following case, however, actual head retraction persisted long after the course of meningitis, and even when the patient was up and about.

A youth, aged 19, was admitted to hospital acutely ill on the second day of a recrudescent attack of cerebro-spinal fever; four days earlier he had had an abortive attack elsewhere. On admission considerable head retraction was present. This symptom was still as marked on the twenty-fourth day of illness, by which time the cerebro-spinal fluid obtained on lumbar puncture was quite clear, sterile, and contained no more than the normal number of cells. At times occipital retraction had been so extreme as to cause difficulty in swallowing.

One month after the termination of the course, the patient having been up and about for over a week, there was still a tendency to head retraction, with inability to bring the head quite into the vertical position. Massage, &c., was then instituted and four weeks later there was some improvement; he remained, however, unable to flex the head beyond the perpendicular while standing in the erect position. Finally, it was not until three and a half further months had elapsed (five and a half months from termination of course of meningitis) that the patient was able to flex the head sufficiently for the chin to reach the chest.

Kernig's sign, in the majority of cases, persists for the first 5–14 days of convalescence.

In a few cases the sign may still be present for 20 or even 30 days following the evacuation of normal cerebro-spinal fluid and in the absence of all symptoms of hydrocephalus. Some rigidity of the hamstring muscles can occasionally be demonstrated 2–3 months after recovery.

Other Nervous Conditions.

Aphasia.—Persistent aphasia has been noted in rare instances. The only case of our series in which this complication occurred had fully recovered the faculty of speech before the termination of the course of the disease.

Epilepsy.—Sainton mentions epilepsy as a rare but occasional sequel of recovery from cerebro-spinal fever.

This observer mentions one case in which the crisis began with an aura of gastric origin—nausea and vomiting, followed by loss of consciousness and epileptic convulsions. The cerebro-spinal fluid between the crises was normal, but the fluid obtained immediately after the seizure showed a slight lymphocytosis. The general condition of the patient was good. Voisan reports a somewhat similar case.

Petit mal is also stated occasionally to occur.

Neurasthenia.—Considering the severity of the usual course of the disease process in cerebro-spinal fever, I have found the occurrence of true neurasthenia following recovery from the disease surprisingly uncommon.

It is contended by Dejerine and others that to constitute true neurasthenia, in addition to a state of neural fatigue, there must exist a condition of continued emotivity; the non-adaptation of a continuous emotive cause, to which is often added an obsessing preoccupation, produces a condition of neural exhaustion, and the sum-total of the phenomena resulting justifies a diagnosis of true neurasthenia.

The appearance of neurasthenia following recovery from cerebro-spinal fever, therefore, would depend to a large extent upon the temperament and inherent or acquired tendency to emotivity of the individual, as well as upon the severity of the disease. Chronic cases, it may be remarked, are more liable to become neurasthenic than those exhibiting a shorter course. Six patients only of the 120 cases recovered could definitely be said to show signs of true neurasthenia when examined 4–6 months after recovery from meningitis; of these six patients, two at least were neurasthenic prior to the attack of cerebro-spinal fever. Of the remainder the following case serves as an example.

The patient was examined six months after recovery from a severe attack of cerebro-spinal fever lasting approximately five weeks. He complained of frequent headache, soreness in the limbs, and of fatigue upon the slightest exertion; his appetite was poor and he slept badly.

Physical signs: The patient was thin and perspired freely during the examination although it was winter. The pupils were somewhat dilated, equal, and reacted sluggishly to light and accommodation. There was a well-marked tremor of the outstretched hands; the superficial reflexes were brisk and the knee- and ankle-jerks exaggerated. No ankle clonus was elicited and both plantar reflexes were flexor.

Two other patients exhibited a somewhat similar condition; one, in addition, complained of occasional loss of memory. Another recovered case, seen four months after his discharge from hospital, complained of sleeplessness but showed no other evidence of neurasthenia.

A slight tremor of the outstretched hands is frequently observed during the first few months following recovery from the disease.

One patient examined five months after recovery from meningitis closely simulated a case of disseminated sclerosis.

The man, aged 26, complained of occasional inability to use the left hand and also of frequent diplopia. On examination there was distinct rotatory nystagmus on lateral deviation of the eyes, together with weakness of the left external rectus muscle. The pupils were somewhat dilated but reacted normally to light and accommodation; the optic discs showed nothing abnormal. There was a coarse tremor of the outstretched hands, more marked on intention, together with some incoördination of the left arm. The left hand-grip was considerably weaker than that on the right; the left supinator, biceps and triceps jerks were brisker and of greater range than those on the opposite side. Both the knee and tendo Achillis jerks were brisk and exaggerated but equal on the two sides; ankle clonus, however, was absent and both plantar reflexes were definitely flexor. The abdominal and epigastric reflexes were also well marked and speech was normal.

The presence of the abdominal reflexes and a bilateral flexor plantar response alone serve to distinguish the above condition from disseminated sclerosis.

Foster and Gaskell mention a recovered case exhibiting exaggerated knee-jerks, volitional tremors, weakness of the bladder, and pallor of the optic discs.

Special Senses.

The eye.—Blindness may result from (1) damage to the tructures of the eyeball; (2) permanent changes in the nervous tissues associated with vision.

1. *Damage to structures of eyeball.*—Corneal ulceration may leave permanent opacities, and loss of vision is the usual sequel to iridocyclitis. This latter complication had occurred in one case of the 120; when examined three months after recovery from meningitis he was able only to distinguish light from darkness with the affected eye. Panophthalmitis is almost invariably followed by complete blindness in the affected eye.

A large vitreous hæmorrhage, associated with optic neuritis, occurred in one of our cases during the course of illness. When seen three months after recovery, the vitreous was practically clear and vision in the affected eye was 6/9.

2. *Permanent changes in the nervous structures.*—In adults, blindness of central origin is very rare; when present, it is usually due to optic atrophy and is permanent and incurable.

In infants suffering from the posterior basic type of the disease, blindness, according to Langmead, develops in about 30 per cent. of cases. Although at first the optic discs may exhibit no definite change, optic atrophy usually develops at a later stage. In most instances the blindness is due to changes in the visual centres situated in the cerebral cortex of the occipital region.

No instance of blindness of nervous origin occurred in the series of cases under review.

The ear.—Deafness is the most common of the serious sequelæ met with at the present day.

The disability is almost always bilateral and if persisting during convalescence, is usually permanent; some recovery, however, has been known to occur in a few instances after an interval of two or three months.

Below the age of 7 or 8 years permanent deafness usually leads to an associated mutism; even though speech has begun it gradually disappears. Statistics of the proportion of acquired deaf-mutes who owe their defect to cerebro-spinal meningitis are widely divergent, the number as estimated by different observers varying from 8 to 45 per cent. The condition appears less common in the posterior basic type of the disease than in the more ordinary types. There is little doubt, however, that permanent deafness resulting from cerebro-spinal fever is much less frequent now than formerly. The condition is probably brought about by atrophy of the auditory nerve and possibly some destruction of the cochlea.

Permanent and absolute deafness was present in 2 cases only of the 120 recovered from cerebro-spinal fever. Partial deafness (20 per cent.) of central origin resulted in one other case.

Vaso-motor and Secretory Disturbances.

In the majority of cases a well-marked tache cérébrale can usually be elicited for many weeks, or even months, following the disease.

Profuse and easily elicited perspiration, apart from a condition of neurasthenia, was present in some cases of the series up till two or three months after recovery from meningitis.

The Reflexes in Recovered Cases.

The following observations are the result of a study of 120 cases recovered from the disease and seen at various periods from two months to one year after recovery. One case of hemiplegia is excluded.

Knee-jerks.—In five cases only were the knee-jerks found absent, in spite of the employment of the usual methods of reinforcement.

Of these five cases, in two patients their absence was dependent upon the presence of definite peripheral neuritis, the tendo Achillis jerks also being absent, together with loss of both epicritic and protopathic sensibility over certain areas of the lower limbs. In two other cases the tendo Achillis jerks also were not elicited, although there was no definite evidenc of neuritis. The last case exhibited absent patellar reflexes, but the tendo Achillis jerks were brisk.

In 10 cases the response to tapping the ligamentum patellæ was very slight.

In 30 cases the knee-jerks were distinctly brisk and exaggerated, but in no instance was this condition associated with either true ankle clonus or a definite extensor plantar reflex.

In the remaining 75 cases the knee-jerks could be described as moderate.

Marked inequality in the reflexes of the two sides was noted in three instances only, and was unassociated with any other physical signs.

Tendo Achillis jerks.—This tendon reflex is usually proportional to that obtained at the knee.

In one case only, mentioned above, were the tendo Achillis jerks elicited in the absence of the patellar reflexes. In two instances the tendo Achillis jerks were brisk, but the knee-jerks excessively slight.

Inequality of the ankle-jerks on the respective sides was observed in two cases, one of which also exhibited a corresponding inequality in the knee-jerks.

In no instance was true ankle clonus obtained. Three cases showed what might be described as unilateral pseudo-ankle clonus, unassociated with any signs of an upper neurone lesion.

Plantar reflexes.—In all cases plantar stimulation yielded a flexor response.

Abdominal reflexes.—It would appear that cerebro-spinal fever may occasionally lead to permanent loss of the abdominal reflexes.

Failure to elicit these reflexes occurred in three cases; of these, no patient exhibited any other abnormal physical signs and in each they had been obtained in the earlier stages of the attack of cerebro-spinal fever.

In 14 cases the abdominal reflexes were only very slight, while in eight they were more than usually brisk. In all the remaining cases these superficial reflexes were moderate. Inequality was noticed in two cases only.

Summary.

A summary of the more serious sequelæ occurring in the series of 120 cases is as follows:—

Strabismus	2 cases.	Hemiplegia	1† case.
Blindness (peripheral) (one eye)	1 case.	Neurasthenia (true) ...	4 cases.
Monoplegia	1* ,,	Deafness (absolute)	2 ,,
		,, (partial)	1 case.

* Function fully restored about 7 months after recovery from meningitis.

† Recovery nearly complete as regards motor power 7½ months after onset.

From this table it will be seen that including neurasthenia 10 patients only of the 120 (8·3 per cent.) suffered from more or less permanent sequelæ.

Of the military cases recovering from the disease—94 in number—as far as I am aware it was necessary sooner or later to discharge as medically unfit for further Army service in any category whatever 11 cases only (11·7 per cent.).

Of these, one patient was neurasthenic prior to developing cerebro-spinal fever, and in addition had double otitis media of old standing; in the ordinary course of events he would have been discharged quite apart from the attack of cerebro-spinal fever. In four further cases discharge was also recommended on account of neurasthenia.

The presence of permanent deafness accounts for two others.

One patient each was invalided on account of one of the following disabilities: persistent strabismus, blindness (peripheral) of one eye, residual weakness of the foot remaining after hemiplegia, and lastly, in a patient aged 41, persistent pain in the lumbar region on exertion.

A NEW METHOD OF PREPARING GONOCOCCUS ANTIGEN,

AND A NEW TECHNIQUE FOR THE COMPLEMENT DEVIATION TEST.

BY DAVID THOMSON, M.B., CH.B. EDIN., D.P.H. CAMB.,
CAPTAIN, R.A.M.C.

THIS work was carried out in the laboratory of the Military Hospital, Rochester Row, London, S.W., under the direction of Lieutenant-Colonel L. W. Harrison, D.S.O., R.A.M.C.

Introduction.

The complement deviation test in gonorrhœa is destined to be of great importance. It is well known that it is extremely difficult to determine, by clinical and microscopic methods, when a person is definitely cured of this disease. This is especially true in the case of women, and it is a great responsibility for a physician to state that a given case is free from infection. The test will come to be of great value in this respect. It will prove a great source of help to the gynæcologist and will aid considerably in the differential diagnosis of many obscure cases of joint disease.

Researches which Led to Discovery of the New Method of Preparing the Gonococcus Antigen.

The gonococcus is a germ which autolyses or breaks up very readily. For this reason a vaccine of the organism does not keep well, but rapidly disintegrates and eventually becomes an autolysate. An investigation was carried out with a view to finding the cause of this autolysis, so that a more stable vaccine might be prepared. It was eventually ascertained that weak acids prevented autolysis, but that weak alkalies increased it. In consequence the vaccine is now made up in a weak acid solution by using 0·6 per cent. acid sodium phosphate instead of ordinary saline. In the course of this research it was found that the gonococcus was extremely soluble in alkali, so much so that if a profuse growth of the germ is shaken up with beads in an N/10 or N/20 solution of sodium hydrate, a clear solution is formed almost instantaneously. If sufficient acid be added to this alkaline solution to render it acid, a white precipitate is immediately formed, which is probably a precipitate of fatty acids. So it would appear that the gonococcus consists largely of a fatty substance, which is immediately saponified by the addition of an alkali. The meningococcus is similarly soluble in alkali, but apparently not quite so soluble as the gonococcus, and a faint milky tint is left in the solution. A strain of *Micrococcus catarrhalis*, on the other hand, was not soluble in alkali, so that a permanent opaque white emulsion remained after shaking up a growth of this organism in N/20 sodium hydrate. It would appear that this might be a useful method of distinguishing between these three allied species of organisms.

Method of Preparing the Gonococcus Antigen.

About this time Lieutenant-Colonel Harrison asked me to try to work up the complement deviation test for gonorrhœa. He had used the ordinary gonococcus vaccine as antigen with successful results in 1914. In consequence I employed at first our stock vaccine and found that it gave successful results when used in a strength of about 100 millions per c.cm. More concentrated vaccines were too anticomplementary for use. It then occurred to me that an antigen prepared by dissolving the gonococci in alkali and then rendered neutral might be suitable, and indeed it proved to be superior to the vaccine itself, being less anticomplementary and at the same time more powerful as an antigen in the blood test.

I make up this dissolved antigen in the following manner:—

(1) Prepare a standard emulsion of gonococci, such that 1 c.cm. contains 1000 millions per c.cm., and place this in a sealed test-tube about 1 inch in diameter.

(2) Shake up a profuse growth of gonococci (24 hours' incubation) in a test-tube containing beads and about 6 c.cm. of saline.

(3) Add one-half of this concentrated emulsion to a test-tube (A) of the same diameter as that which contains the standard and add the other half to a similar test-tube (B).

(4) Dilute the emulsion in tube (A) until it exactly matches the standard containing 1000 millions per c.cm.

(5) To the other tube (B) add a few c.cm. of N/10 sodium hydrate to dissolve the gonococci; a clear alkaline solution will be immediately obtained. Now add N/10 hydrochloric gradually until it is just neutral or very faintly alkaline to litmus. We now have a nearly neutral solution of gonococci. Add to this 0·85 per cent. saline containing 0·5 per cent. carbolic acid until the volume is exactly the same as that in tube (A), prepared as in (4) to match the standard. This gives us a solution containing 1000 millions of dissolved gonococci per c.cm. This should be stored in the ice chest as the stock antigen. It appears to keep well, and it does not become septic because of the weak carbolic it contains.

(6) For use this antigen should be diluted 10 times with 0·85 per cent. saline so as to bring it to a strength corresponding to 100 millions per c.cm. When used in the blood test it will be found that this antigen will absorb, as a rule, much less than one minimum hæmolytic dose of complement.

Antigens of many strains of gonococci have been prepared as above and are now being used in this research. So far I have tested the sera of 30 cases with 12 separate antigens, as well as with a mixed antigen composed of all the 12 strains together. This has shown clearly that a compound antigen is better than the antigen prepared from a single strain. A single antigen may only give a very weakly positive test with a given serum, while the single antigen of a different strain will give a strongly positive test; a compound antigen, however, gives a good positive where a single antigen may only give a very indefinite positive. It was also considered advisable to use a meningococcus antigen simultaneously with the gonococcus strains in my experiments, and a culture of this organism was kindly given by Major T. Hine, R.A.M.C. So far my experiments have shown that the meningococcus antigen almost invariably gives a weakly positive result with a strongly positive gonococcal serum; but a weakly positive serum gives a negative result with the meningococcus antigen. This shows that the meningococcus is a very closely allied organism.

Parke, Davis and Co.'s compound gonococcus antigen was tested against a compound gonococcus antigen prepared by the new method described above. The latter proved to be superior in two respects. It was less anticomplementary and more powerful antigenically, and sera which gave a weak positive with Parke, Davis and Co.'s antigen gave a strong positive with that prepared by the new method. It would appear therefore that a definite advance in the preparation of the antigen has been achieved.

The New Technique Employed in Carrying Out the Blood Test.

For this new and highly satisfactory technique I am indebted to Lieutenant-Colonel Harrison. He advised me at the commencement of my experiments to use a well-diluted serum and to allow for thorough fixation of the complement by placing the tubes in the ice-chest overnight previous to the addition of the sensitised cells, according to the method devised by Dr. Griffith, of the Local Government Board Bacteriological Laboratory, as a result of his researches on the Wassermann test (unpublished).

(1) *Inactivation of the serum.*—The serum to be tested is inactivated by heating to 55° C. for ten minutes in a water bath before dilution.

(2) *Standardisation of the complement.*—The complement should be titrated against the stock antigen diluted 1 in 10 with 0·85 per cent. saline as used in the test. To 12 Wassermann tubes add 0·1 c.cm. of guinea-pig serum (complement) diluted as follows:—

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	1/100	1/110	1/120

To each add 0·1 c.cm. of the diluted antigen (1 in 10) and 0·1 c.cm. of saline. Shake the tubes and place the tray in the ice-chest for one hour. Then put tray in water bath at 37° C. for half an hour. Add to each tube 0·1 c.cm. of fully sensitised sheep's corpuscles (3 per cent. suspension). Replace tray in water bath at 37° C. and take the readings after 15 minutes. The highest dilution of complement which produces complete hæmolysis should be taken as one minimum hæmolytic dose.

(3) *The Test.*—Three tubes, A, B, and C, are employed.

(*a*) To A and B add 0·1 c.cm. (at a dilution of 1 in 20) of the inactivated serum to be tested. To C add 0·1 c.cm. of normal saline.

(*b*) To A add complement 0·1 c.cm. containing 3 min.* hæmolytic doses.
" B " " " " 2 " " "
" C " " " " 2 " " "
* Minimum.

(*c*) To A, B, and C add 0·1 c.cm. compound antigen (diluted 1 in 10). Tube C acts as the control.

(*d*) Place the tubes in the ice-chest overnight and next morning add to each 0·1 c.cm. of a 3 per cent. emulsion of fully sensitised corpuscles. Then place the tubes in the water bath at 37° C. and take the reading after 15 minutes. The control tube C should show complete hæmolysis.

Hæmolysis in A and B indicates a negative reaction. No hæmolysis in A and B indicates a strong positive. No hæmolysis in B alone indicates a weak positive.

N.B.—An antigen control is preferable to a serum control, since the antigen absorbs a considerable amount of complement during the long period of fixation in the ice-chest. It is not practicable to use the long fixation method in the process of standardising the complement, since the complement deteriorates from day to day. As a rule, it is hardly necessary to use a serum control, since the serum is diluted 1 in 20. With a serum, however, which has stood for several days and may be septic an additional serum control would be advisable.

The results obtained have been exceedingly gratifying, and this is due, no doubt, to the superiority of the antigen as well as to the superiority of the long method of complement fixation in the ice-chest. The sera of patients whose gonorrhœal discharge only commenced one week previously have all given a positive test—some weak, some strong.

The test also indicates the presence of the disease long after the disappearance of the gonococci, according to the microscopic and cultural tests. A case which had had no discharge for a month gave a strong positive test, and he relapsed shortly afterwards.

In a series of 20 cases in the hospital 19 gave positive tests and one was negative. The negative case had shown no gonococci microscopically during the previous three months, and was evidently free from the disease. All normal sera so far have given negative results.

I wish to thank Dr. A. Allport for his assistance in supplying me with cases and the histories thereof from his clinic at the hospital. I am especially indebted to Lieutenant-Colonel Harrison for giving me the full credit of this work, since the success obtained has been so largely due to technique which he advised.

References.—Harrison, L. W. (1914): "Complement Deviation in the Diagnosis of Gonococcal Infections," Jour. Roy. Army Med. Corps, February, vol. xxii., No. 2. Thomson, D. (1918): "Researches on the Cause of Autolysis in the Gonococcus, with Special Reference to the Preparation of Gonococcal Vaccine." Journ. Path. and Bact. (in the press).

A QUICK METHOD OF DIAGNOSING THE TYPE OF MENINGOCOCCUS IN CASES OF CEREBRO-SPINAL FEVER.

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IN the effective treatment of cerebro-spinal fever early recognition of the type of the infecting meningococcus is of the utmost importance in order that the corresponding specific curative serum may be given as soon as possible.

Under the most favourable circumstances 48 hours must elapse before the meningococcus can be grown from the cerebro-spinal fluid or naso-pharynx of the case and its correct type diagnosed by agglutination, and not infrequently 72 hours pass before the infecting meningococcus is classed.

An attempt was made in the first place to shorten this period by substituting a precipitin for the agglutination reaction; it failed dismally. Finding that in case of the four univalent agglutinating sera prepared from the rabbit and sent out from the Central Laboratory for identifying types of the meningococcus the results given by complement-fixation were practically identical with those obtained by agglutination, the writers next proceeded to apply the complement-fixation test to serum taken from patients at an early stage of cerebro-spinal fever, using the four standard type cocci as antigens in each instance. The results obtained in 16 successive cases of cerebro-spinal fever were as shown in the table given below.

It will be seen that in each of the 16 cases except (*b*) the results were not clean-cut. Nevertheless, the indication obtained by this method was proved right in all of the cases in which the type of the coccus could subsequently be verified by agglutination of the culture isolated from the cerebro-spinal fluid or naso-pharynx of the patient. Contrary to the experience of some other workers, it was found with one exception that there were too few antibodies in the patient's sera to produce agglutination with the four type emulsions.

Serum Control, 1 : 50, negative in each case.

No. of case.	Day of disease.	Dilutions of serum.												Type of coccus isolated from C.S. fluid or naso-pharynx.
		Type I.			Type II.			Type III.			Type IV.			
		1 : 50	1 : 100	1 : 200	1 : 50	1 : 100	1 : 200	1 : 50	1 : 100	1 : 200	1 : 50	1 : 100	1 : 200	
a.	60	††	–		†††	†††		†	†		†	–		II.
b.	14	–	–		–	–		†††	†		–	–		III.
c.	5	†††	†††	††	–	–	–	†††	†††	(†)	–	–	–	I.
d.	27? 41?	†††	††	†	††	††	(†)	††	††	(†)	††	††		I.
		†††	†	†	††	†	–	††	††	†	†	–	–	
e.	5	†	–	–	†††	†	–	†††	††	–	††	–	–	III.
	9	††	†	†	†††	††	†	†††	†††	†††	††	†	†	
f.	30	†	–		††	†		(†)	–		(†)	–		II.
g.	35		†	–		††	–		††	–		††	(†)	II.
h.	3	(†)	(†)	–	†	†	–	–	–	–	†	(†)	–	
	5	†	(†)	(†)	†††	††	(†)	†	†	–	††	†	(†)	
	28	(†)	–	–	††	†	–	††	–	–	–	–	–	
i.	4?	†	–	–	††	††	–	†	–	–	††	†	–	
j.	4?	††	†	†	†††	††	††	††	†	†	†††	††	††	IV.
k.			††	†		†	–		†	–		(†)	–	
l.	6	†††	†††	†††	†	†	–	†††	†††	†	†	–	–	I.
m.	7	†††	†	†	††	(†)	–	††	(†)	–	††	(†)	–	I.
n.	10	†††	†††	†††	†	(†)	–	†††	†††	†††	††	†	–	I.
o.	4	††	(†)	–	†††	†	–	††	(†)	–	††	†	–	II.
p.	5	†††	†††	††	†††	†	–	†††	†	–	†††	††	–	I.

†††, Complete complement fixation (absence of hæmolysis).
–, Negative fixation (hæmolysis complete).

Controls of normal serum from several sources were carried out in each instance and gave uniformly negative results. Serum from four syphilitic and eight gonococcal cases also gave either negative results or very slight complement fixation, and then only at a dilution of serum of 1 : 50. A sample of serum from a case (1) which subsequently was regarded to be one of tuberculous meningitis gave a positive result. The explanation of this is not yet clear. The earliest day on which a positive result was obtained was the third, but the history may have been incorrect, and this point wants verifying. The case indicated as "h" in the table shows the difference in antibody content of three specimens of blood collected on the third, fifth, and twenty-eighth days of the disease respectively.

Technique.—Two different antigens have been made use of so far. At first suspensions of the stock cocci were used in a strength of 200 million organisms per c.cm., this strength being chosen because an emulsion of 400 million per c.cm. was found to be slightly anticomplementary. Later, at the suggestion of Captain Thomson, of the Military Hospital, Rochester Row, who has been studying the test in relation to gonococcus infection, an antigen was made by dissolving the cocci in N/20 NaOH and bringing the solution back almost to the neutral point by the addition of N/20 HCl. This antigen is used in a dilution equivalent to 100 million cocci per c.cm. It is found to be a much more sensitive antigen than the stock suspension, though less specific with a serum rich in antibodies.

The patient's serum is tested in dilutions of 1 : 50, 1 : 100, and 1 : 200. It is found to be advisable to use all three dilutions for each test, as the readings are not sufficiently clean-cut for a single dilution only to be used. A sheep hæmolytic system is used and complement is obtained from the ear of a guinea-pig.

In the titration of the complement the following method is followed:—

Increasing doses of a 1 : 10 solution of complement—viz., 0·15 c.cm., 0·2 c.cm., 0·25 c.cm., &c.—are added to tubes already containing antigen and 1 : 50 normal human serum in the proportions subsequently used in the actual test. These are incubated in the 37° C. water-bath for half an hour before the hæmolytic couple is added. The exact amount of complement required to bring about complete hæmolysis under these conditions is then used in the test proper. A control is put up of the serum of the patient without the antigen and a further control of the antigens only.

THE Johannesburg Municipal Council has appointed Dr. A. J. Milne acting medical officer of health, during the absence of Dr. C. Porter, at a salary at the rate of £2000 per annum.

A NOTE ON

THE LOSS OF COMPLEMENTING POWER IN KEPT SERUM.

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THE laws governing the disappearance of complement from sera are of the utmost importance in the elucidation of the problem of complement-fixation in the various "lytic" and other phenomena. Owing to the difficulties in the determination of even the simplest instance of the loss of complementing power—i.e., in kept normal serum—the literature only contains vague and contradictory statements, such as:—

Complement "disappeared spontaneously if the serum was kept for a few days" (Emery [1]); "Alexines are of the most unstable nature" (Ehrlich and Morgenroth [2]); "Rapidly, often within 24 hours, loses its strength when kept at room temperature" (Muir and Ritchie [3]); at 10° C. serum possesses only half its original strength at the end of 24 hours (Noguchi and Bronfenbrenner [4]); whilst Massol and Grysez,[5] without indicating their methods of investigation, give some determinations showing that the complementing powers of sera decrease rapidly at the commencement, becoming inactive by about the sixteenth day.

We have therefore endeavoured to determine the rate of loss of complementing power in kept normal serum in order to ascertain whether it is a regular phenomenon obeying definite physico-chemical laws. To this end we have elaborated a technique whereby the hæmolytic complement content of a kept serum can be ascertained with some exactitude from day to day.

The chief difficulty in such an investigation is in the preparation of standard suspensions of red corpuscles, which can be kept for the purpose of the determinations. This we have overcome by using sheep cells washed and stored in the manner described by Rous and Turner,[6] since we find that the susceptibility of such cells to hæmolysin, although somewhat increased during the first 48 hours, subsequently appears to remain nearly constant for a greater length of time than that covered by our experiments. We therefore allowed at least 48 hours to elapse before using the cells, and in this way obtained a preparation suitable for the investigation. The preserved sheep cells were washed free of Rous and Turner's fluid with sterile normal saline and suspended in the latter in such strength that the hæmoglobin liberated by distilled water and treated with CO was exactly twice the strength of that in the standard tube of a Haldane-Gowers hæmoglobinometer. This method allows of accurate standardisation of the test corpuscular suspension day after day when made from the same batch of preserved blood, the suspension of red corpuscles of this particular density being termed the "standard corpuscular suspension."

Complement was obtained from guinea-pigs with aseptic precautions. The blood after collection was allowed to clot and the separated serum centrifuged to free it from corpuscles. This serum was stored at the desired temperature, the amount necessary for each determination being withdrawn with a sterile pipette and immediately titrated. Each of the sera A, B, and C was obtained from a single healthy adult animal.

The immune body was a rabbit anti-sheep cell serum of high titre which was always used in the same dilution, so that three hæmolytic doses were present in each of the titration tubes.

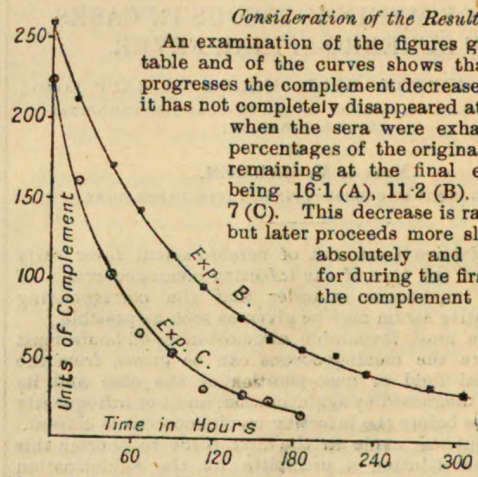
Titration of Complement.

The complement-containing serum was so diluted as to cause standard hæmolysis in an amount between 1 c.cm. and 0·1 c.cm. of the dilution. Of this dilution 1·0, 0·8, 0·6, 0·5, 0·4, 0·35, 0·3, 0·25, 0·2, 0·17, 0·13, 0·1 c.cm. were measured into small test-tubes of similar diameter which already contained sufficient saline to make the total volume in each tube 1 c.cm. As a control another tube containing 1 c.cm. of saline was prepared. To each was added 1·5 c.cm. of a mixture of two parts of standard corpuscular suspension and one part of diluted immune body. The tubes were shaken, placed in a water-bath at 37° C. for two hours, then removed, shaken, and allowed to settle in the ice-chest till the following day, when the amount of serum required to produce standard hæmolysis was noted. Standard hæmolysis is equivalent to the hæmolysis of 60 per cent. of the added corpuscles. It was determined by comparing the colour in a similar tube containing 0·6 c.cm. of the standard corpuscular suspension hæmolysed and made up to 2·5 c.cm. with distilled water with the colours obtained in the titration tubes. It was thus found possible to make a very accurate estimation of the position of standard hæmolysis in the series by inspection. The strength of complement found in each specimen of serum is expressed in arbitrary units by multiplying the reciprocal figure of the actual amount of diluted serum giving standard hæmolysis by the number of times the serum was diluted.

The Experiments.

The experiments consisted in submitting complement as soon as it had been obtained free of cells (i.e., 21·5 hours after the collection of the guinea-pigs' blood) to temperatures of 9° C. in the case of sera A and B and 20° C. in the case of serum C, light being excluded. The temperatures were maintained as nearly constant as practicable until the removal of samples for titration had exhausted the specimens. The times at which the samples were taken and the number of units of complement found at the different intervals is recorded in the table for all three sera, whilst graphs of the results in the cases of sera B and C are also given. The duration of the experiments was, for A, 211 hours; for B, 305·5 hours; and for C, 186 hours.

Time in hours.	Exp. A. Temp. = 9° C.		Exp. B. Temp. = 9° C.		Exp. C. Temp. = 20° C.	
	Obs.	Calc. (n = 0·3).	Obs.	Calc. (n = 0·3).	Obs.	Calc. (n = 0·3).
0	279	278·8	258	258·8	222	222·3
19	228	225·5	214	214·4	161	155·1
44	174	173·9	171	170·0	102	101·8
66	140·5	140·5	143	140·3	65·5	73·1
90	113·1	113·0	115·3	115·1	52·6	52·7
114·5	79·8	91·7	95·2	95·2	31·5	38·9
143	72·9	73·1	76·9	77·3	28·2	28·2
162·5	62·3	63·1	62·5	67·5	24·2	23·0
186	53·3	53·3	57·5	57·7	15·0	18·3
211	45·5	44·9	52·6	49·3	—	—
234	—	—	42·9	42·9	—	—
282·5	—	—	33·3	32·5	—	—
305·5	—	—	28·7	28·7	—	—



Consideration of the Results.

An examination of the figures given in the table and of the curves shows that as time progresses the complement decreases, but that it has not completely disappeared at the times when the sera were exhausted, the percentages of the original strengths remaining at the final estimations being 16·1 (A), 11·2 (B), and about 7 (C). This decrease is rapid at first but later proceeds more slowly, both absolutely and relatively: for during the first 50 hours the complement falls from 279 units to 164 (A), from 258 to 151 (B), and from 222 to 93 (C)—i.e., a loss of 41 per cent. (A), 41·5 per cent. (B), and 58 per cent. (C), whilst during the same length of time between the 136th and 186th hours the fall in complement is from 77 units to 53·3 (A), from 83 to 57·5 (B), and from 30 to 18 (C), drops of 30·5 per cent. (A), 30·5 per cent. (B), and 40 per cent. (C).

These figures also prove that the loss is more rapid at the higher temperature, since Sera A and B were kept at 9° C. and C at 20° C., a point which is further emphasised by comparing the lengths of time required for a loss of 75 per cent. of the original strengths—i.e., 85 hours at 20° C. (C), 150 hours (A), and 169 hours (B) at 9° C, the loss at 20° C. taking about half the time which is required to produce the same change at 9° C.

The curves of loss of complementing power in the case of each serum are very regular throughout the ranges covered by the experiments (i.e., 1 to 1/6, 1 to 1/9, and 1 to 1/12), and the results are capable of being expressed by the formula $\frac{dx}{dt} \cdot \frac{1}{x^{n+1}} = K$, as can be seen in the table, where appear the figures calculated for each experiment from this formula after the graphic method given by Madsen.[7]

In this differential equation x is the amount of complement remaining after the lapse of t hours, n and K being constants.

Remarkable similarity is to be noticed between the results obtained experimentally and those calculated. In Experiment A, conducted at 9° C., there is only one point of marked deviation—namely, that at 114·5 hours, which seems to be due to some accidental experimental error. In Experiment B, also at 9° C., no error of such magnitude is present, the correspondence between observed and calculated results in both cases being highly satisfactory. Experiment C presents only moderate agreement between the calculated and the observed figures, but nevertheless is sufficient to indicate that the same formula may also hold good at 20° C., as will readily be seen by inspection of the table and the curve, in which the observed points and the theoretical curve are shown.

Conclusions.

1. A satisfactory method of estimating decreases in the complementing powers of sera over considerable periods of time has been devised.

2. Whilst kept normal guinea-pig serum loses its complementing power more rapidly in the early stages than the later, and at 20° C. than at 9° C., yet it retains its activity for a considerably longer time than has generally been conceded.

3. The loss of complementing power of such serum is perfectly regular and can be expressed by the formula— $\frac{dx}{dt} \cdot \frac{1}{x^{n+1}} = K$, at 9° C., and apparently also at 20° C.

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KALA-AZAR IN MALTA: TWO CASES TREATED BY INTRAVENOUS INJECTION OF TARTAR EMETIC.

BY H. I. WINIFRED KERR, M.B., CH.B. GLASG.,
ATTACHED R.A.M.C.

ALTHOUGH the occurrence of the infantile variety of kala-azar in Malta is well known to medical men practising in the island, it was believed until recently that the adult variety did not occur. Lately several cases have been described among military patients in which the disease developed in Malta. One such has been described by Lieutenants Brodie and Yorke,[1] and Captain G. R. Ward has contributed to THE LANCET[2] a short note on two cases in which the disease developed after the return of the patients to England.

In the present paper two further cases are recorded. One patient came direct from England to Malta and had never been further East; the other patient had been invalided from Gallipoli with amœbic dysentery more than a year before he developed kala-azar, having been in "convalescent employ" in Malta. However, the cases acquire far greater interest and importance in that treatment by intravenous injection of tartar emetic, recently introduced by Sir Leonard Rogers,[3] was conspicuously successful, recovery being to all appearance complete and permanent. In Case 1 diagnosis was reached at an early stage, and the response to treatment was much more rapid than in Case 2, where patient was ill several months before treatment was initiated.

The recognition of kala-azar presents no special difficulty when one is on the lookout for it. In the early stages the diagnosis rests upon general weakness and wasting, with raised temperature, sweating, conspicuous splenic enlargement, and pronounced leucopenia, this consisting of a marked relative diminution of polymorphonuclears and relative increase of mononuclear cells. The characteristic temperature chart, with its double daily rise, does not become conspicuous until rather later. For confirmation of the diagnosis splenic or hepatic puncture is necessary. Relying upon the signs mentioned above the diagnosis of yet a third case in one of the military hospitals was made within a few days of the patient first reporting sick.

[1] R.A.M.C. Journal, January, 1917.
[2] THE LANCET, 1916, ii., 16.
[3] THE LANCET, 1916, ii., 782.

It is obvious that the treatment by tartar emetic should be resorted to in such cases as soon as the disease is recognised, for the cases here recorded tend to confirm its great value in a disease regarded hitherto as of specially evil prognosis.

CASE 1.—Sister B. Admitted Sick Sisters' Hospital Jan. 23rd, 1917. Age 29 years. Service 1 7/12 years. Had never been further east than Malta. Patient arrived on island in July, 1915; enjoyed good health till November, 1916, when she began to feel tired and more weary than usual. Slight cough in January, 1917; on Jan. 23rd T. 100·8° F. She reported sick. Nothing abnormal detected in heart or lungs. Abdomen moved freely; on left side was a mass, some doubt whether it was enlarged spleen or kidney. Urine acid; sp. gr. 1008; trace of albumin; a few granular and hyaline casts, no tubercle bacilli. She ran high T., which began to show indication of two rises in 24 hours from Feb. 12th; occasional rigor. Blood negative to Widal's reaction; no malarial parasites found. Diminution of both red and white cells; hæmoglobin fell from 52 to 30 per cent. Amenorrhœa for two months; no diarrhœa.

On findings of blood picture, the leucopenia, marked anæmia, suggestive temperature, with mass in left side, now undoubtedly an enlarged spleen, splenic puncture was advised; Leishman-Donovan bodies recovered. In neither case could these parasites be recovered from peripheral circulation, nor from serum of blisters.

On March 1st intravenous injections of 2 per cent. solution of antimony tartrate were commenced, and continued in increasing doses at four days' intervals, beginning with 4 c.cm. The first injection (2/3 gr.) was well borne; no marked reaction. By March 21st blood picture had improved; T. only slightly raised; patient had menstruated first time for three months. Spleen, which had been below umbilicus, had not altered much hitherto, but by March 24th lower border was ½ inch above anterior iliac spine. About April T., which had been normal, rose to 100°; an injection given at once checked relapse. After first six injections intervals between had been gradually increased and had evidently become too long.

By May 31st spleen was only four fingers' breadth below costal margin; left kidney again palpable, low and enlarged. By June 5th spleen was not palpable and remained so without further treatment. Regaining weight; no rise of T. Patient was subsequently returned home as a "walking case" and has now, we understand, resumed duty in a military hospital in England.

CASE 2.—Corporal C. Admitted Military Hospital, Imtarfa, Feb. 18th, 1917. Age 28. Service: 3 1/12 years. Foreign service: Egypt, September, 1914–August, 1915; Gallipoli, August, 1915–Oct. 28th, 1915; Malta, Nov. 3rd, 1915. Patient's health good during year in Egypt, and in Gallipoli till invalided with amœbic dysentery in October, 1915. On recovery stool examined at Camp Hospital; found to be carrier of *E. histolytica*. He was treated from May till July, 1916, at Imtarfa Hospital, being discharged back to Camp Hospital on July 9th, 1916. There he became a "convalescent employed" on orderly-room staff. There were plenty of fleas about, and a dog attached to the orderly-room slept frequently on his bed and had special attention as it was then suffering from "distemper."

About end of 1916 patient began to feel very tired; was getting thinner. In January, although taking quinine, 10 gr. daily, T. rose. In beginning of February he was having 20 grains daily; T. not controlled. Eventually he was sent into hospital again as case of P.U.O. Nothing abnormal in heart or lungs. In abdomen tumour below left costal margin, about hand's breadth downward. It was not tender; apt to vary in position Patient markedly emaciated; a curious greyish complexion. Carefully charting, it was noticed that T. rose twice in 24 hours, often as high as 104° or 105°. No symptoms of dysentery; stool reports negative. Quinine given intramuscularly; no effect on T. Blood did not agglutinate dysenteries, typhoid, paratyphoid bacilli, nor *Micrococcus melitensis*. No malarial parasites found in films taken; marked leucopenia and anæmia. These, with spiking of temperature and enlarged spleen, led to suggestion of splenic puncture. On account of extreme debility hepatic puncture was resorted to and *L. donovani* recovered.

On March 7th treatment by tartar emetic in 2 per cent. solution (normal saline) was commenced with 4 c.cm. intravenously, increased by 2 c.cm. and given every three days, till 10 c.cm. were reached. Marked general reaction each time. Reactions, with patient's debility and nervous condition, induced one to try ¼ gr. of morphine and 1/60 gr. of strychnine hypodermically, 20 minutes before injection. This had a good effect, quieting general reaction of coughing, retching, and hysteria, and abolishing entirely rigor which used to come on about two hours after injection. The 10 c.cm. dose had to be given within at least 60 to 90 seconds, or coughing and retching would begin, and it became impossible to keep needle directly in vein. Tartar emetic causes an intense inflammation should any escape, followed by cold abscess. Two of these occurred, but cleared up with treatment. There is less reaction when solution is heated to blood heat.

By March 26th patient was being given 10 c.cm. doses of tartar emetic, 2 per cent. solution; condition critical. T. still rose to 104° twice daily; P. 120. Heart sounds fairly good; no dilatation or murmurs. His condition got steadily worse. He suffered greatly from night sweats. As condition was desperate, drug was pushed to its limit, and on March 31st 12 c.cm. of solution were given, followed by 10 c.cm. every other day until April 16th, when T. rose once only to 101°. General condition much improved. T. did not rise again, and as his arms were very sore and suitable veins were not obtainable elsewhere a week's respite was allowed, during which time T. did not rise. Veins showed signs of inflammation and leakage at previous punctures where the solution had been given. 10 c.cm. and then 6 c.cm. were given at intervals of a week, but T. rose again with a smaller dose, with drowsiness and lack of appetite. On May 27th he was given 10 c.cm. and then 9 c.cm. of solution at interval of three days. This controlled relapse and two more doses completed this treatment. The spleen by July 11th was only just palpable below costal margin.

During treatment patient suffered from no skin eruptions nor rashes, no gastric disturbances, no diarrhœa, and no ophthalmic symptoms. He was transferred to England as a "walking case," and writes that he has now taken up former occupation. Except for the melancholy and depression, the antimony had no toxic effects, though given in such large and frequent doses; also no return of dysentery. Altogether he had 424 cg. of tartar emetic; 246 cg. of tartar emetic being used in Case 1.

Unless the period of incubation of kala-azar be longer than one year, we may safely conclude that in both cases the disease was contracted in Malta, and probably from the bites of insects. In Case 1 there was ample opportunity of being bitten by fleas and bugs, as the patient worked during the time that barracks were being converted into hospitals, and also during the height of the Gallipoli campaign, when patients were arriving direct from the firing line. In Case 2 one would specially incriminate the dog, with its fleas, though the parasite was never recovered from its peripheral blood. Both these cases occurred about the same time, at the beginning of the year 1917, but in different parts of the island.

I am deeply grateful to Dr. May Thorne, attached R.A.M.C., to whose kindness I am indebted for her notes on Case 1; also to Dr. E. J. Dalyell, attached R.A.M.C., who was responsible for the practical treatment of the case. I have to thank most of all Colonel Sir A. Garrod, F.R.S., but for whose aid these notes would be as yet unwritten; and also Colonel G. B. Price, officer commanding Military Hospital, Imtarfa, for kind permission to publish them.

Reviews and Notices of Books.

An Enquiry into the Analytical Mechanism of the Internal Ear. By Sir THOMAS WRIGHTSON, Memb. Inst. C.E. With an Appendix on the Anatomy of the Parts Concerned by ARTHUR KEITH, M.D., F.R.S. London: Macmillan and Co., Ltd. 1918. Pp. 254 + 9. Price 12*s.* 6*d.*

SINCE 1863, the year in which Helmholz published his classic on the physiology of hearing, much work has been done on the finer anatomy of the cochlea, but hitherto no corresponding advance has been recorded with regard to the physiology of hearing. There has been an increasing rejection of the Helmholz theory, especially among those with large clinical experience of the disorders of hearing, but no valid new theory of the mechanism of hearing has been proposed. The heart of the difficulty has been the question of the resolution in consciousness of compounded vibrations into their constituents. Helmholz saw no method by which this was possible, except his postulate of sympathetic vibration in the cochlea. As a physiological means for this he found no structure but the fibres of the basilar membrane, and in spite of the obvious difficulties he was content to accept it and build on this foundation. The foundation was unsatisfactory, and the theory of hearing has remained hampered by this moribund faith. We are now in a position to welcome a distinct and better theory. Sir Thomas Wrightson has been able to bring an almost life-long study of aerial wave-form into combination with an engineer's survey of the cochlea viewed as a machine. Professor Keith, in his luminous appendix, has clarified the anatomical considerations and strengthened the position of the theory by a consideration of the comparative anatomy of the cochlea.

In the consideration of the Wrightson theory the first point to be grasped is the real nature of the sound wave. The ordinary graph of a simple tone is a simple "zig-zag" wave-line, and, as Professor Keith acknowledges in his own case, has generally been misinterpreted as implying a stimulus in hearing of two phases, at the top and bottom of the alternating curve. This error has led to much difficulty. The "wave" is really a pressure variation passing from a zero position to a maximum, reversing direction, passing through zero, continuing to a minimum, reversing once more, and returning to zero. There are thus in the cycle not two but four positions of definite change and so of stimulus, at the maximum and minimum and at the crossing of the zero lines, at each of which points the direction of change is reversed. Now when two simple tones are sounded together their respective wave-forms are combined into a graph which varies in outline with the phase position in which the two curves happen to overlie each other, and at first, in even so simple a case, the result is indecipherable. By means of an ingenious machine which he calls an "ohmograph" Sir Thomas Wrightson has recorded a very large number of such compound curves of varying complexity, and has applied the four-stimulus theory to their analysis. In the result he has been able to show that while the resultant curves lose all obvious relation to the elementary curves which are plotted beside them by the machine, they are still capable of analysis, and show the survival of the changes of direction of their constituents. In other words, the compound wave may still be regarded as the simultaneous occurrence of the original rhythms, and if we grant a preferential consciousness for rhythmically repeated auditory stimuli all we need demand in the cochlea is an apparatus capable of yielding a stimulus at every change of direction in the pressure wave, simple or compound, as it arrives at the ear.

Turning now to the more directly physiological part of the inquiry, both authors accept the usual interpretation of the tympanic structures in its broad outlines. Two points need mention: the footplate of the stapes acts not as a piston, but as a hinged plate moving round its antero-inferior border, and the intrinsic muscles form an opposed pair, the tensor tympani pushing in the footplate while the stapedius pulls it out. The mean position is thus one of extreme instability, capable of being affected by the smallest pressures in either direction within a limit determined by the tension of the muscles. An important accessory resistance, not noticed by either author, is afforded by the radial fibres of the membrana tympani. The pressure variations of the sound wave thus arrive in all their complexity and fineness and are transmitted without change of period. At this point they pass from an elastic compressible medium to an incompressible one, and their physical character undergoes a corresponding change, and becomes a movement of direct translation of the perilymph. This perilymph pulse passes from the footplate of the stapes to the membrane of the round window, and in its passage evokes the essential stimulus. The elucidation of the nature and mechanism of this stimulus is the central point of the theory.

In relation to this problem Professor Keith in his appendix reviews the history of our knowledge of the structures of the scala media of the cochlea. The inadequacies of the Helmholz theory of resonators provided by the fibres of the striate zone of the basilar membrane are reviewed once more. The question is what are the physical happenings in the cochlea under the passage of a single pulse of sound. Clearly a displacement wave commences at the footplate during the compression phase and passes to the secondary membrane, subsequently reversing and bringing the footplate of the stapes back to its mean position, the volume displacement of the secondary membrane being equal to that of the footplate. But by what path is the volume movement transmitted? Neglecting the lax and easily displaced membrane of Reissner, the cochlea may be considered as two adjoining passages, closed as to one pair of ends by the footplate and the secondary membrane respectively, and communicating at their other ends by the narrow vent of the helicotrema. The party wall between the two passages is formed in part by the rigid bony shelf of the lamina spiralis ossea, in part by the basilar membrane. The latter again falls into two subdivisions, an inner elastic arcuate zone and an outer firmer striate zone. Standing on and practically limited to the arcuate zone is the organ of Corti, overhung by and in contact with the tectorial membrane. The aperture of the helicotrema is small and remote from both the moving diaphragms in the two windows; and the fluid friction involved in the passage of waves through the whole length of the double passage and the throttle hole of the helicotrema would probably damp out all but the strongest vibrations. On the other hand, the displacement will pass readily and directly from the upper to the lower passage across the membrana basilaris, displacing it correspondingly according to the phase of the pulse. The finer structure of the membrana basilaris is shown by Professor Keith to be admirably adapted for such elastic displacements. Accepting this, what happens in the organ of Corti? This has been elucidated by both authors, but with fine analysis by Professor Keith using scale models. It is shown that owing to the form and structure of the basilar membrane and to the arrangement of the rods of Corti and the supporting fibres of Deiters, the upward and downward swing of the membrane is transformed into a lateral movement of the surface of the organ of Corti. From this surface project the hairs of the sensory hair-cells, passing into the under surface of the relatively fixed tectorial membrane. The hair-cells with their supports thus move laterally under the tectorial membrane with each pulse of the sound wave, the hairs are deflected in correspondence with these movements, and undergo a change

in direction of the process of deflection at each of the four "stimulation points" of the complete cycle of a simple sound wave, and at each of the corresponding multiple points of a compounded sound curve.

In summary, the authors have discovered a mechanism which is capable of registering every complexity of the compounded wave and of passing it on to the sensorium in accurate record as nerve impulses. The final process of the appreciation of these impulses as simple or compounded and harmonised notes is of course central. In this beautiful theory we have at last an intelligible account of the genesis and nature of the peripheral stimulus concerned in the sense of hearing. It is, moreover, of special interest that the nature of the stimulus in the cochlea is essentially the same as that in the primitive mixed vibrational and positional organs of such creatures as the crustacea, and as that of the sister tracts in the vestibule and semicircular canals. We rejoice that we can claim so important a theory as British.

A Manual of Bacteriology, Clinical and Applied. By R. TANNER HEWLETT, M.D., F.R.C.P., &c., Professor of Bacteriology in the University of London, Director of the Bacteriological Department, King's College, London. Sixth edition, with 31 plates and 69 figures in the text. London: J. and A. Churchill. 1918. Pp. 769. Price 14*s.* net.

THIS manual is intended to provide such information in bacteriology as is required by the medical student, the practitioner, and the medical officer of health, and as it has now reached its sixth edition proof is not wanting that it has served its purpose. The difficulty in deciding how much of the large amount of work which is being produced at the present time is of permanent value has made the re-editing a task of considerable complexity. War problems have largely determined the direction of medical research, and the chapter on anaerobic organisms, which have been found so closely related to war injuries, has received certain additions. To some these additions may appear disappointingly small, though both Weinberg's and Fleming's researches are included. We may suggest, however, to the author that if the new methods he has incorporated really denote an improvement in technique older methods might have been deleted for them and more stress laid upon the advantages of the new. Bacteriology is making rapid strides forward, and a time must come for the bold remodelling of a popular text-book, along with the abandoning of older and less exact methods of technique. The responsibility of the teacher in this respect is especially great now that the reading of a text-book so largely takes the place of attendance on systematic lectures.

In view of the interest excited by "epidemic stupor" the section on *B. botulinus* will probably be enlarged in a subsequent edition. The production of anaerobic conditions of culture by the use of palladium black finds a place in the chapter on methods, and this chapter has received several other important additions. Epidemic cerebro-spinal fever has furnished another war problem, and the chapter on this subject has been rewritten, while there has also been considerable alteration in the section dealing with the typhoid-colon group of organisms, together with a greatly extended table of the fermentation reactions of this group. The Oxford standard method of agglutination also naturally now finds a place. There are a number of other alterations and additions, including Chalmers's classification and nomenclature of the streptothrix infections and fuller details of the Wassermann reaction in the section on syphilis. New figures and plates have been introduced where required. The book is well produced, and leaves little to be desired in its method of presentation.

Laboratory Studies in Tropical Medicine. By C. W. DANIELS, M.B. Camb., F.R.C.P. Lond.; and H. B. NEWHAM, M.D. Dub., D.T.M. & H. Camb. Fourth edition, thoroughly revised. London: John Bale, Sons, and Danielsson. 1918. Pp. 560. Price 21*s.* net.

Dr. C. W. Daniels in his preface to the first edition of these studies stated the object of the work to be to assist practitioners in the tropics in the application of simple laboratory methods to the practice of medicine. The book therefore ranged over a large variety of loosely-bound-together subjects, including, amongst others, post-mortem examinations, parasites found in the blood and tissues and their life-history, fæces, intestinal parasites, bacteriology, measurements, and statistics. Advances in tropical medicine have been rapid and the book has been revised in the third and again in the present edition with the assistance of Dr. H. B. Newham, director of the London School of Tropical Medicine. The authors express the hope that it may be of service to the many practitioners now meeting tropical disease for the first time in the various theatres of war.

But while it contains much useful information and is lavishly illustrated, the book should not be considered in the light of a complete guide to laboratory practice. It fails to be so by attempting to deal with too many subjects, much space being consumed in elementary teaching, such as the method of making a platinum loop, familiarity with which might be assumed in the class of reader to whom address is made. While sections on protozoology, helminthology, entomology, hæmatology, mycology, pathology, water analysis, and a variety of other miscellaneous subjects are included, to mycology, a difficult subject and one unfamiliar to the non-expert, less than five pages are devoted. Those who require to investigate a case of bacillary dysentery, paratyphoid, or plague will find little or no help in the book. Information about the cholera organism is limited to the fact that it is motile and liquefies gelatine. The description of amœbic and other protozoal cysts in fæces is incomplete and devoid of figures, while a scheme of life cycle of *A. coli* is included which cannot be said to be yet established. Misleading statements also are present: e.g., on p. 69 we find it stated that "Maurer's bodies" stain blue with Romanowsky's stain, and that lymphocytes contain no azure granules; on p. 201 (Fig. 84), in the transverse section of the proboscis of *Glossina palpalis*, some of the parts shown are in the right position, others are upside down.

In making these criticisms we do not imply that a book which has reached a fourth edition is not filling a useful place, but we suggest that a careful revision would tend to greatly increase its value.

Treatment of Gonorrhœa. By N. P. L. LUMB, Temp. Capt., R.A.M.C. London: H. K. Lewis and Co., Ltd. 1918. Pp. 120. Price 4*s.* 6*d.*

THIS book is written with a view to helping those in charge of venereal clinics whose previous knowledge of up-to-date methods may have been limited. The book satisfies the need for which it was written; it is of a convenient size, and the necessary information is compactly condensed and is commendably devoid of theoretical considerations.

The methods of diagnosis and treatment not only of gonorrhœa, but also of its local and generalised complications, are gone into. All the modern methods of diagnosis and treatment are described in detail and the reason for their use explained. There is rather a tendency in the book to suggest that vaccine-therapy is of primary importance, which may or may not be the view of the author, but to some it will appear that this importance is a little unduly emphasised. Valuable enough as vaccines may be, although this is debatable, it is a little unwise even to suggest to the mind of those who are not familiar with their use that they play a prominent part in the treatment of localised gonococcal infection. To lay too much stress on their use and omit the other forms of treatment is a perilous error. The book deserves to be well received by those for whom it is written; it is full of practical counsel.

A History of Departed Things. By Mrs. HENRY HEAD. London: Kegan Paul, Trench, Trübner, and Co., Ltd. 1918. Pp. viii. + 242. Price 3*s.* 6*d.* net.

THIS record of a woman's thoughts and experiences, expressed in letters, will appeal to medical readers on many grounds. The heroine, the daughter of an Oxford professor, is twice married, and both husbands are members of the medical profession. The glimpses into Harley-street life and into the work of country medical practice are truthful and attractive. The heroine is a living, loving, much troubled woman, and her story a psychological study of temperament and disposition. In selecting the epistolary form of presentation Mrs. Head has taken grave risk, but the result justifies the experiment, as her work will bring refreshment to harassed and tired minds.

JOURNALS.

The Journal of Physiology. Edited by J. N. LANGLEY, D.Sc., F.R.S. Vol. LII., No. 1. Cambridge: University Press. 1918. Pp. 1–74. Price 7*s.*—The Guanidin Content of Muscle in Tetania Parathyreopriva, by Pearl S. Henderson. The symptoms of tetania parathyreopriva have correlated with the action of guanidin on the spinal cord, while an increase of guanidin in blood and urine has also been observed. The author finds that there is a fall in the total and in the free guanidin of muscle and a rise in the creatin. The fall in the total guanidin is far in excess of the nitrogen in free guanidin and creatin, and must indicate either a liberation of guanidin from the muscle or a failure in the power of the muscle to take up guanidin formed elsewhere, either of which may be correlated with the increase in the blood and urine.—The Velocity Factor in Cardiac Work, by C. Lovatt Evans. The energy expended in imparting velocity to the blood is very considerable, both under experimental conditions in animals and in the human heart during exercise.—Observations on the Atrophy of Denervated Muscle, by J. N. Langley and M. Hashimoto. This elaborate research extends to over 50 pages, and deals with so many aspects of the question that in the space at our disposal we can only refer to a few of the authors' conclusions. After describing the two methods—bilateral and unilateral denervation—in animals to determine to what extent a given treatment retards the atrophy of denervated muscle, the authors describe their results in bilateral denervation and the effects of some forms of treatment, such as ionisation with calcium and potassium salt, Ringer's fluid, rhythmic flexion, and extension and massage. In unilateral denervation the rate of atrophy, absolute and relative, in different muscles, is discussed. The normal difference in weight of the muscles of the two sides usually varies within rather narrow limits. The chief difficulty in experiments on the leg of the rabbit is that of preventing trophic changes in the foot and skin of the leg. Reviewing the effect of the various forms of treatment tried by them, the authors think "there is only one which gives any hope of considerably reducing the rate of atrophy—viz., ionisation with a potassium salt, and that is slender." The impression they got from the present and past experiments is "that none of the methods of treatment of denervated muscle now in use—passage of galvanic current, production of contraction, passive movements and massage—can have more than a slight effect of delaying muscle atrophy." On the Creatin Content of Skeletal Muscle in Degeneration following Denervation, by E. P. Cathcart, P. S. Henderson, and D. Noël Paton. Most of the experiments were made on cats, a piece of one sciatic nerve being removed to prevent regeneration. Up to the eleventh day there seems to be no distinctive change in the creatin content of muscle. After the fifteenth day, when the reaction of degeneration is well established, there is a steady and progressive decrease in the creatin content. The results point to the association of creatin with the sarcostyle element of the fibre.

The American Review of Tuberculosis. Baltimore: National Association for the Study and Prevention of Tuberculosis. Price 35 cents.—The April issue contains three papers on Artificial Pneumothorax. Dr. W. B. Kendall and Dr. C. C. Alexander, with an experience of 131 cases, report favourably on this treatment. They reserve it, as a rule, for severe or moderately severe cases, but in one early case they resorted to this measure to check a troublesome cough that had been refractory to other treatment.—Dr. Saling Simon and Dr. Samuel Swezey record a case of Pulmonary Abscess treated with artificial pneumothorax. The beneficial results were dramatically rapid and permanent.—In a paper on Pleural Shock Dr. J. B. McKnight, Dr. H. F. Gammons, and Dr. W. M. Knowles give an account of the one case of pleural shock observed by them in a series of 65 cases and about 800 punctures of the chest. It has been their practice to inject cocaine in every case, but not to give a preliminary injection of morphine. Their patient was a nervous young man, who had already been given several injections of air. At one operation the manometer showed no oscillation, and the operator was therefore about to withdraw the needle when the patient suddenly sat up without warning. Then he sank back unconscious, frothing at the mouth, breathing stertorously, and exhibiting tonic contractions of the whole body. For two days there was complete loss of vision. The authors regard the ocular symptoms as indicative of hysterical amblyopia, and they assume that the case was one of pleural shock, not embolism, because no gas had been introduced through the exploring needle. They do not mention the possibility that the needle may have wounded a blood-vessel into which inspired air may have been sucked. Their treatment included an injection of gr. ¼ of morphine, which proved useful.—In a paper on elementary conceptions of tuberculosis Dr. A. K. Krause pleads for systematic supervision in after years of children who have successfully run the gauntlet of infection in infancy, but who, if left to themselves, will swell the ranks of the adult consumptives.

New Inventions.

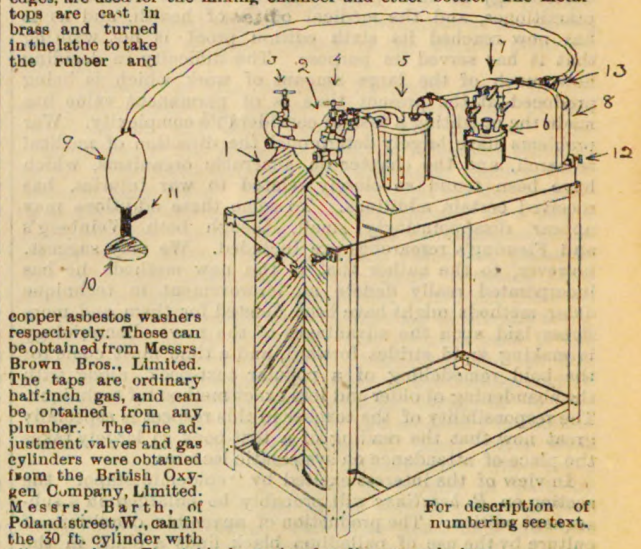
A COMBINED GAS-OXYGEN, GAS-OXYGEN-ETHER AND WARMED-ETHER APPARATUS.

THE success obtained by Gwathmey by the administration of gas oxygen suggested the construction of this apparatus.

It consists of an enamelled iron table, supporting at one end in a suitable casing a vertical 350 gal. cylinder of nitrous oxide (marked 1 in figure) and a 30 ft. one of oxygen (2). On the table is fixed a glass mixing chamber for the gases (5), with visible feed, an ether bottle (6) through which the gases can be directed at will, and a jacketed worm (8) for warming, if such is desired. To each cylinder a fine adjustment valve (3, 4) is attached. These regulate the flow of nitrous oxide and oxygen respectively through the glass cylinder of water. The oxygen tube has three and the nitrous oxide five visible lateral holes; thus from the number of holes bubbling the proportion of the two gases can be seen. The gases pass either directly to the breathing bag (9), if desired through a worm (tap marked 13) immersed in hot water, for warming, or may be directed through a water-jacketed bottle containing ether by means of tap (7). The table is of convenient height, so that the anæsthetist can be seated at the patient's head, holding the face-piece (10) in one hand, and having the other hand free to regulate the control taps.

The water and ether bottles are supported on a rubber cushion. The metal tops are attached in the same way as the lid of an acetylene generator, fly-nuts screwing down on studs fixed to the stand and passing through the cover, making by means of rubber and copper asbestos rings gas-tight joints. The transmitting pipes are also held in rubber-cushioned attachments. Originally a thermos flask was employed for warming the gases, but as this did not allow of a good sized coil a metal container was substituted (8). A tap is fitted (12), so that the water can be quickly run out when cool and fresh hot water added. A screw-cap permits the addition of ether to the ether chamber.

Wide-mouth glass bottles (80 oz. and 20 oz.), cut down with ground edges, are used for the mixing chamber and ether bottle. The metal tops are cast in brass and turned in the lathe to take the rubber and copper asbestos washers respectively. These can be obtained from Messrs. Brown Bros., Limited. The taps are ordinary half-inch gas, and can be obtained from any plumber. The fine adjustment valves and gas cylinders were obtained from the British Oxygen Company, Limited. Messrs. Barth, of Poland street, W., can fill the 30 ft. cylinder with nitrous oxide. The table is made of ordinary angle iron.



For description of numbering see text.

For warm and intratracheal ether a No. 2 Fletcher blow-pipe bellows is attached to the nitrous oxide pipe. If desired, a pressure gauge can be screwed to the ether chamber. Oxygen can be administered at the same time

The technique is as follows:—A preliminary narcotic of morphia 1/12 gr. and atropine 1/100 gr. is given 20 to 30 minutes before. The valves are regulated so that four nitrous oxide holes and one oxygen hole are bubbling. The breathing bag is lightly filled with this mixture. A Bellamy Gardner mouth-prop is introduced and a well-fitting face-piece applied. The Colman gas valve (11) is turned to valves and the bag kept moderately distended. After about 10 respirations re-breathing can be commenced, turning to valves at every 7 to 10 respirations. The proportion of nitrous oxide to oxygen is usually kept at 4 to 1, the colour of the patient being the guide for additional oxygen. Cyanosis should not be permitted.

To deepen the anæsthesia the ether taps can be opened; this need be but for a few respirations. During the division of nerves or bone cutting it is advisable also to pass the gases through the ether. Re-breathing to a certain extent is good for the patient. Practically about one third of the volume of each respiration should be of freshly added gas mixture. With less there is a liability (in long cases anyway) to post-operation headache and nausea.

The advantage of nitrous oxide and oxygen, with re-breathing and ether, when necessary, has been demonstrated by Gwathmey, Page, Flemming, and Boyle. For nerve resections, amputations of the breast, removal of sequestra, varicose veins, it seems ideal. Where perfect relaxation is needed, as in gall-bladder operations, orthopædic wrenchings, appendicectomies, hysterectomies, it is not so suitable, though it can be given for this purpose.

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THE LANCET.

LONDON: SATURDAY, JULY 13, 1918.

Modern Views on Diabetes.

DIABETES has long been known to be characterised by the excretion of glucose, and the usual treatment of the disease has been by the elimination of carbohydrate from the diet. Nevertheless, patients still excrete sugar, and we shall be excused if we enumerate, for the sake of clearness, the views which are generally accepted on this matter. The source of the sugar has been traced to protein. Protein consists of some 18 amino-acids; some of these, such as glycocoll, alanine, glutamic acid, are converted into glucose not only in experimental animals (depancreatised, phloridzinised), but also in diabetic patients. Others are not convertible into glucose. Another origin of carbohydrate is fat; such a transformation occurs in hibernating animals and has been found to take place in some diabetics; it is not of outstanding importance. The glucose excretion is not the only symptom of diabetes. In severer cases the acetone bodies, acetone, aceto-acetic acid and β-oxybutyric acid, are produced and excreted. Acetone is a decomposition product of aceto-acetic acid and is not the primary product. Aceto-acetic acid and β-oxybutyric acid are interconvertible in the body, but the main conversion in the body is that of aceto-acetic acid into β-oxybutyric acid by the process of reduction. The liver is the organ which is mainly, if not entirely, concerned in this mechanism. Aceto-acetic acid is the primary product; β-oxybutyric acid is the safeguard. The production of acid was formerly attributed to be the cause of diabetic coma, hence the treatment with sodium carbonate, which was not really effective. Acidosis is not the cause of coma, but the toxic action of aceto-acetic acid. The term ketosis, as aceto-acetic acid is a ketonic acid, is suggested to distinguish this action from acidosis. The fat of the food has been proved to be the source of the aceto-acetic acid, but it may also arise from protein. Though aceto-acetic acid can theoretically be derived from carbohydrate, this source may be excluded. To sum up—the glycosuria arises from the carbohydrate and the protein of the diet, ketosis from the fat, and, to a small extent, from the protein. The diabetic may be described as an individual who utilises sugar too slowly; in the absence of carbohydrate more protein and fat are catabolised than normally and more aceto-acetic acid is produced; this acid is difficult to catabolise and is reduced to oxybutyric acid; the oxybutyric acid is excreted instead of being oxidised in the normal way. The work on which many of these categorical statements are based was done by HURTLEY.

Diabetes is therefore a general disorder of the metabolism; the patient cannot properly utilise carbohydrate, he produces carbohydrate from protein, and, further, he produces aceto-acetic acid from fat. It would follow that the rational treatment of diabetes is to curtail the amount of all kinds of foodstuffs to the lowest possible limit, so as to reduce the quantity of the excretory products. This is the modern treatment of the disease as described by Dr. E. P. POULTON in the Goulstonian lectures.[1] It has met with a considerable amount of success. Fatal cases in Guy's Hospital have been reduced from 23 per cent. in the ten years before 1916 to 7·7 per cent. since 1916, owing to the adoption of treatment by fasting. Similar results have been recorded in other hospitals. By the fasting treatment carbohydrate disappears from the urine, and there is less aceto-acetic acid. By careful addition of carbohydrate to the diet it is possible easily to determine the carbohydrate tolerance of the patient. He may be able to assimilate, say, 50 g. of carbohydrate, but not 100 g.; as soon as this is determined he is given the right amount in his diet. Similarly, the protein and the fat are adjusted. On these small diets the patient does not receive the caloric value of food which is considered necessary to maintain life. By careful treatment he may be made to take from 1500 to 2000 calories, the lowest limit for the normal individual. A considerably reduced amount of food has been shown to be capable of maintaining life without loss of efficiency.

Success has thus followed the application of the results of biochemical research, but the research on diabetes is not yet finished. It has depended on the chemistry of the proteins and the fats. Proteins have always been regarded as a source of both good and evil to mankind. The diabetic produces sugar from protein; yeast produces fusel oil; bacteria produce toxins. Proteins are indispensable for nutrition; there is no life without the amino-acid tryptophane; growth is dependent upon lysine; arginine and histidine are also essential to life, and they may be precursors of uric acid. In considering the protein moiety of the diet its quality is the most important factor. No two proteins are alike in their composition, just as outwardly eggs are not like meat; they are wrongly reckoned as alternatives in judging food values. Obscure points in other diseases have been cleared up by a knowledge of proteins, especially diseases of deranged metabolism. The biochemistry of fats, which is now in its beginning, is sure to throw more light upon normal metabolism and upon disease. The actual stages of oxidation of fat in the body are unknown, though much experimental work has been done. Minute biochemical research in the future will clear up this ignorance and abolish the numerous useless and unnecessary theories which impede progress rather than advance knowledge, since they simulate and are mistaken for facts.

[1] See THE LANCET, June 22nd and 29th, 1918, pp. 863 and 895 respectively, and the opening columns of the present issue.

The Medical Treatment of Elementary School Children.

THE Committee stage of Mr. HERBERT FISHER'S Education Bill was completed in the House of Commons on Wednesday, July 3rd. The Bill is in effect as much a Health Bill as an Education Bill, and when passed into law will very largely extend the health functions of the local education authorities. Some little time ago attention was drawn in these columns to the unfortunate omission in recent legislative enactments to provide for the care of crippled children, and the view was expressed that the urgency for provision for such children need only be brought to the notice of Mr. FISHER in order to secure the insertion in the Bill of a clause relating to them. It is gratifying to note that a new clause extending the provisions of the Education (Defective and Epileptic Children) Act, 1914, so as to apply to physically defective and to epileptic children was moved by Major HILLS and readily accepted by Mr. HERBERT LEWIS on behalf of Mr. FISHER.

An important discussion also took place upon the medical treatment of school children. The Education (Administrative Provisions) Act, 1907, placed upon all local education authorities the duty of providing for the medical inspection of children in the elementary schools, but, while empowering the authorities to provide medical treatment for those children needing it, imposed upon them no obligations in the latter respect. Mr. ROWNTREE proposed to include in the present Bill a clause making it obligatory upon the local authorities to provide treatment. Mr. FISHER, however, was in the first place indisposed to accept the new clause on the ground that the Board felt that they should leave the progress and development of medical treatment to voluntary action. He claimed that the progress already made justified that attitude. In support he quoted figures which showed that while in 1908 there were 55 local education authorities making arrangements for medical treatment, the number doing so in 1916 had risen to 216. A further consideration affecting the attitude of the Board was the difficulty of defining the particular ailments to be treated. Considerable pressure was in the course of the debate exercised upon the President of the Board to alter his decision, and eventually he undertook, in view of the large body of opinion in favour of Mr. ROWNTREE'S clause, to review the position and see whether he could bring forward on the report stage proposals which were watertight and administratively possible. As Mr. FISHER suggested, the exact definition of the limits within which the local education authorities must provide treatment will be no easy task. The remedial activities hitherto voluntarily undertaken to any extent have included refraction work, dental treatment, X ray treatment of ringworm, operations on tonsils and adenoids, and nursing treatment of the somewhat indefinite class of complaints which have been termed "minor ailments." Not all authorities undertaking treatment, of course, have covered the whole ground; there are, for instance, only 35 which provide operative treatment for tonsils and adenoids. Dental treatment, owing to the quite inadequate facilities which at present everywhere exist, will no doubt first claim the attention of the Board. Refraction work, owing to the importance of visual defect as an educational bar, will probably present no difficulty, as the Board have already indicated that refraction is to be looked upon as an extension of medical inspection rather than as treatment. Operations for tonsils and adenoids and X ray treatment for ringworm, however, will not be easy to decide upon.

The difficult question here arises as to parental responsibility. If the education authority must provide, must the parents also submit? The public treatment of minor ailments presents its own special difficulties owing to the possibility of encroachment upon the domain of private practice —a very important consideration and one which has already made itself heard in the discussions on the Bill in connexion with the extension to adolescents of the provisions for remedial care already enjoyed by the elementary school children. It will be seen, therefore, that the whole problem teems with difficulties, and Mr. FISHER'S hesitation in regard to it is readily understood. The results of his promised survey of the question will be awaited with some interest.

A National Scheme of Industrial Medical Research.

SIGHT should not be lost of a sentence in the final report (Cd. 9065. Price 2*s*.) on Industrial Health and Efficiency of the Health of Munition Workers Committee over which Sir GEORGE NEWMAN presides. In the Committee's view, the sentence runs, it is necessary to make arrangements without delay for a national scheme of industrial medical research, and to accord fuller recognition to the importance of industrial hygiene. It is now more than a century since the Health and Morals of Apprentices Act was passed, and the Committee disclaim the suggestion that the ideas embodied in their report are new and untried or in any way their own invention. A great national emergency gave them an opportunity of applying in a thorough way to munition work the knowledge of industrial hygiene of a century and of thus entering into other men's labours. But the report goes on to say that while the Committee fully recognise the debt owing to the great hygienic workers of the nineteenth century it remains true that up to 1914 little attention had been paid by employers and others responsible for industry to the steadily accumulating evidence of the influence of occupation upon health, and little effort had been made scientifically to investigate its causes. This neglect must now cease. The munition worker is a type of all workers, and the principles of the Committee's report concern all forms of industrial labour. There is imperative need for a firmer and more comprehensive grasp of the whole problem of health and physique in relation to industry. And to this grasp a national scheme of industrial medical research, combining all such powers as those granted in the Silicosis Bill just passed by the House of Commons, is an essential preliminary.

Annotations.

"Ne quid nimis."

THE PREVAILING PANDEMIC.

THE clinical features of the infectious febrile complaint which has invaded this country are sufficiently well known, and the following brief accounts by our Paris and Belfast correspondents suggest that they are dealing with the same malady.

Paris.—A widespread epidemic of *grippe* in a mild form is at present invading Paris and a large part of France. It is probably an extension of the epidemic which has recently attacked the whole population of Spain, from the highest to the lowest. The cases are very numerous, but none so far of a grave nature. Complaint is made of headache, pain in the back, naso-pharyngeal catarrh which is persistent but rarely invades the lower respiratory tract. The temperature is moderately raised, dropping at the end of two days. The resulting indisposition, which seems to be spreading to the troops at the front, fortunately lasts at most a few days.

Belfast.—An extremely widespread epidemic of what is called "influenza" is prevalent in Belfast and surrounding districts. The number of deaths in Belfast for the week ending June 29th was 341, and of these 92 were from "pneumonia" and 75 from "other diseases of the respiratory system." It began apparently in the military barracks at first, but soon spread to munition works, mills, &c., and thence all over the city and surrounding areas. The symptoms are mainly high temperature with a sudden onset, congested eyes, sore-throat, and headache, with muscular pains, and in uncomplicated cases the duration of the fever is about three days. Occasionally there are sickness and bronchial catarrh, but pneumonia is not common. It resembles influenza in its sudden onset and its widespread epidemic character, but differs from former visitations of that disease in comparative absence of chest complications and post-febrile depression. The locus of the disease seems to lie in the throat, at the junction of pharynx and larynx. Bacteriological examination so far has shown the presence of diplococci, streptococci, and pneumococci, but no specific organism. It is being recommended to close the primary schools—a measure as little likely to be effective as shutting down the banks, mills, munition works, and cinemas. The epidemic seems very like the Spanish one recently reported.

The paper by Captain T. R. Little, Captain C. J. Garofalo, and Captain P. A. Williams, of the Canadian Army Medical Corps, which appears in another part of our present issue, is the first serious contribution which we have seen to the bacteriological study of the pandemic. These authors deal with about 1000 cases occurring in several camps served by their mobile laboratory. After setting out three points in which the clinical symptoms differed from those generally ascribed to Pfeiffer's bacillus, the statement is made that in all the cases studied one organism predominated in direct smears taken from naso-pharynx, throat, and sputum. This was a small Gram-positive diplococcus, flattened on its opposing surfaces. It was found to grow freely on legumin serum-agar plates, forming small transparent granular colonies closely resembling those of streptococcus. No colonies of *B. influenzæ* were discovered. The authors are now working to establish Koch's third postulate in relation to the organism. It is noteworthy that Dr. A. MacLean, who contributes to this present issue a memorandum on an outbreak of an acute febrile disease in certain Glasgow factories, has also found a diplococcus, in this case Gram-negative, in association with it. The disease, of which he dealt with 436 cases, was of a very mild type, characterised by sudden onset with severe headache and prostration, followed by rapid recovery in 2–4 days. No death was recorded, but a similar outbreak was brought to his notice in the county of Lanark, in which 8 deaths occurred in 280 cases. Acting under Dr. A. K. Chalmers, medical officer of health for Glasgow, Dr. MacLean is studying further the bacteriology of the outbreak. We commend both these series of investigations to the attention of bacteriologists in general. The loose application of the term "influenza" to a febrile infection in which Pfeiffer's bacillus cannot be demonstrated is, to say the least, unfortunate and we have always deprecated its use, suggesting as an alternative the term "catarrhal fever."[1] Mild though the present form of the malady is in a vast majority of cases, its death-rate has not been insignificant, and its epidemiology is a matter of very pressing importance.

ECGONINE AND ITS DERIVATIVES.

THE Home Secretary has given notice that the definition of "cocaine" in Defence of the Realm Regulation 40 B (which regulates dealings in cocaine and opium) and in the Proclamation prohibiting the importation of cocaine has been further amended so as to include ecgonine, its salts and derivatives. The definition now reads as follows:—

"Cocaine includes ecgonine and any substance, whether preparation, admixture, extract or otherwise, containing 0·1 per cent. (one part in a thousand) or more of cocaine or ecgonine or of any salt or derivative thereof."

Ecgonine is the parent of cocaine, which is benzoyl-ecgonine methyl ester. There are many other derivatives of ecgonine in the leaves of *Erythroxylon coca*, from all of which ecgonine can be separated. Cocaine is obtained economically from ecgonine by a synthetic process, using methyl alcohol and benzoyl chloride. Ecgonine is the essential pharmacological group of the alkaloid.

THE DEVELOPMENT OF THE MEDICAL PROFESSION: THE CAVENDISH LECTURE.

Major-General Sir Bertrand Dawson, in delivering the Cavendish lecture this year before the West London Medico-Chirurgical Society, found that the subject which he had selected could not be intelligibly expounded within the compass of one lecture, with the result that on Thursday evening he continued at the Royal Society of Medicine his Utopian picture of the future of the medical profession in this country. At the West London Hospital, where he had a large audience, he made the following point in an incontrovertible manner—that the growth of knowledge had rendered medical effort, whether for treatment or prevention, a combination of energies. No man any longer can pretend to have particular equipment or special knowledge by which he can do the best possible for all patients in all circumstances. There must in every case be some point where the special knowledge not possessed by any particular doctor might have been useful, and we shall all endorse Sir Bertrand Dawson's plea for the development of "team-work" in medical practice. The need for adequate medical service has outstepped its provision not only for the masses but for the well-to-do, added Sir Bertrand Dawson, who prophesied that the unsuitability of the home for the treatment of the sick would soon become generally recognised when larger institutional organisation would follow as a sequel. Reconstruction of medical practice on these principles, with the general practitioner the central pillar of erection, implies that the general practitioner must have opportunities for observation, advanced education, and prosecution of research which he is now totally without, but, as the Cavendish lecturer acutely pointed out, he requires, if he is to get any advantage out of such improvement in his professional life, adequate repose and adequate

[1] THE LANCET, 1910, ii., 1289.

remuneration. The medical service which Sir Bertrand Dawson outlined would have the local hospitals and clinics as their centre, and the staff of the central hospital would provide the consultants and specialists for the local hospitals, and would be a whole-time or part-time service according to the nature of the work. He dwelt upon the complications of working such an organisation alongside of the National Insurance Act, whose administration of medical benefits is directed towards the treatment of disease rather than its prevention. In the sequel, a second part of the Cavendish lecture delivered on Thursday night, the lecturer supplied the arguments to show that the officiate of the Ministry of Health should be in its essential characters medical, and the profession at a critical time in its career will be grateful to him for an outspoken pronouncement.

ANTINEURITIC AND ANTISCORBUTIC FACTORS IN FOOD.

Two interesting papers on the obscure but important constituents of foods known respectively as antineuritic and antiscorbutic substances appear in the June number of the *Bio-Chemical Journal*. The first is by Mr. J. C. Drummond, which embodies a study of the water-soluble accessory growth-promoting substance and its influence upon the nutrition and nitrogen metabolism of the rat. In this research, carried out in the Cancer Hospital Research Institute, London, the author found that the only apparent deviation from normal health in rats fed upon an artificial diet deficient in the water-soluble accessory substance was the appearance of creatinuria accompanied by a slow wasting of the skeletal muscles. The food consumption of rats fed upon the deficient diet is low, being probably reduced to that amount sufficient to supply the calorific requirements of maintenance. An increased food consumption is brought about by the addition of flavouring agents such as meat extract to the diet, but it is interesting to add that unless this agent contains the water-soluble substance no growth results. This observation seems to supply a criterion as to the value of meat extracts in the dietary, and those deficient in the accessory substance might have to be ruled out as possessing any dietetic value. The addition to the inadequate diet of water-soluble substance causes a greatly increased food intake, immediately followed by growth, the amount of growth being, within certain limits, proportional to the amount of accessory substance added provided that the diet is adequate in other respects. The experiments bear evidence that the length of time an animal is able to maintain itself upon a diet deficient in the water-soluble substance without suffering a serious loss of body-weight is directly proportional to the age at which the restriction is imposed. During the research it was found that actively growing animal tissues (embryos, tumours) do not contain appreciable amounts of the "water-soluble B" and pituitary gland, thyroid, thymus, testicle, and ovarian tissues showed a deficiency in this substance. The results are of interest, although the cause of the fatal decline which inevitably follows a deficiency of the water-soluble substance has not been determined. It may be noted, however, that symptoms of nerve disorder preceded death in three cases. In the second paper Arthur Harden and Sylvester S. Zilva deal with the differential behaviour of the antineuritic and antiscorbutic factors towards adsorbents. This research was undertaken in the Biochemical Department of the Lister Institute. The authors have confirmed the fact that fuller's earth absorbs almost quantitatively the antineuritic factor out of autolysed yeast. Dialysed iron does the same thing, but neither fuller's earth nor dialysed iron affects appreciably the antiscorbutic potency of orange juice, so that in a fluid containing autolysed yeast and orange juice the antineuritic factor is removed, while the antiscorbutic activity remains unimpaired. These observations are of interest in showing that there is nothing in common, apparently, between these antineuritic and antiscorbutic substances respectively so far as regards their behaviour with adsorbents. It is early yet to lay down what physiological significance these observations possess.

INCIDENCE OF INFECTIOUS DISEASE IN 1917.

Sir Arthur Newsholme's report to the Local Government Board on the local incidence of notifiable infectious disease has recently been published, the present being the seventh of the series.

Notifications in England and Wales during 1917.—Only 7 cases of small-pox were reported in the year, the average number in the preceding six years being 139. Typhus fever was reported in 4 cases only, against an average of 30. Of scarlet fever 48,817 cases were notified, or fewer by 26,905 than in the preceding year. Of diphtheria 43,315 cases, or 8392 fewer; of enteric fever 4601 cases, or 963 fewer; and of puerperal fever 1345 cases, or 651 fewer. The only diseases known to have shown increased prevalence in 1917 were cerebro-spinal fever and pulmonary tuberculosis, the reported cases of the former having increased to 1465, against an average of 1123 in the previous four years, and the cases of the latter having numbered 73,654, or more by 1175 than those notified in 1916. But this number includes duplicate notifications. The cases of measles notified under the Order of 1915, by medical men or by persons in charge of patients, exceeded half a million, but in this total German measles is included. In addition to the foregoing there were notified in England and Wales 13,325 cases of erysipelas, 357 of poliomyelitis, 8 of plague, and 6716 of ophthalmia neonatorum.

Seasonal incidence.—With respect to the seasonal incidence of scarlet fever, diphtheria, enteric fever, cerebro-spinal fever, poliomyelitis, and measles particulars are given in a table—the actual average weekly attacks being shown at the foot of each column. The proportion of the notifications to this average is given for each week, any special seasonal excess of 30 per cent. being indicated by heavy type.

Cases of sickness among sailors and soldiers.—Under a recent Act local medical officers of health now receive notification of all cases of infectious disease arising in barracks, camps, &c., in the occupation of H.M. Forces. The number thus reported in 1917 include 1244 of scarlet fever, 1296 of diphtheria, 177 of enteric fever, 442 of erysipelas, 2 of small-pox, 1023 of cerebro-spinal fever, 2210 of pulmonary tuberculosis, and 122 of other forms of tuberculosis.

In proportion as it becomes possible to compare the behaviour of infection in a longer series of years the value of these reports will obviously increase.

THE TREATMENT OF SCIATICA BY LUMBAR ANÆSTHESIA.

THE strenuous life of troops in the trenches and the exceptional climatic conditions of damp and cold have been productive of a large number of severe and refractory cases of sciatica and allied conditions in the military hospitals in Italy. In addition to these rheumatic cases there have been many others due to the direct action—contusion or wound of the nerve, or indirect action—neuritis following septic wounds, of projectiles. A large number of such cases have come under the notice of Dr. Claudio Mancini[1] at the military hospital at Spezia, who has obtained very encouraging results from treatment by lumbar anæsthesia, which may be summarised as follows.

[1] La Riforma Medica, June 1st, 1918.

Attempts have been made in the past to act directly on the sciatic nerve by injecting its trunk with anæsthetic solutions, thus Lange practised perineural infiltration with physiological solution, with the addition of tropococaine and stovaine at a temperature of 37°-38° C. Jaboulay proposed the injection of anæsthetic solution into the retro-rectal space in front of the coccyx with the idea of acting on the sacral sympathetic, and Cathelin and Sicard with the same intention made the injection into the epidural space. This latter method, however, is not easy of execution in fat subjects, and its action is uncertain and limited. Dr. Mancini's method proposes to obviate these inconveniences and carry the anæsthetic into contact with the roots of the injured nerves and their medullary connexions by lumbar puncture. For some years he used the ordinary mixture of novocaine and stovaine, but he now uses the former alone in doses of 12-15 cg. in a 5 per cent. solution. The injection is made in the third or fourth intervertebral lumbar space, and the duration of the anæsthesia varies from three-quarters of an hour to two hours. Note that novocaine undergoes changes by prolonged boiling or in old solutions, so that it is preferable to prepare the solution at the moment of use by dissolving the requisite quantity of novocaine in distilled water, previously sterilised and cooled, in a sterile test-tube, bringing it to the boil two or three times and rapidly cooling under a tap.

In traumatic cases which are susceptible to the anæsthetic action there must necessarily be an absence of anatomical lesions, such as cicatrices, adhesions, and compression. A prominent fact, however, was that in cases where spastic paralysis existed only to a small extent a permanent disappearance of pain and spasm followed the treatment. On the other hand, where the pain was merely symptomatic, as in incipient tabes, tuberculous coxitis, or Pott's disease, lumbar anæsthesia failed entirely.

THE PRIMARY CAUSE OF SHOCK.

IN an article published under this title in the *Medical Record* for June 2nd Dr. Fenton B. Turck has summarised his extensive observations on surgical shock, and has put forward a novel theory as to its causation. The starting point of the author's theory is his belief that injured tissue at once begins to undergo self-digestion, leading to the production of toxic albumins which when absorbed are deadly poisons. He finds that the stomach, intestines, and liver are the organs most severely affected by these "shock poisons," and that the nervous system is not primarily involved in shock. The possibility of producing immunity against shock forms a natural development of this conception, and the author holds that a high degree of immunity can be induced by injecting into an animal repeated and increasing doses of the homologous autolysed tissue. In the course of his experimental study of shock, Dr. Turck found that the intravenous injection of peptones brought about a condition of shock similar to that following on severe wounds or mechanical injury to the tissues; the same condition was produced by the injection of autolysed muscular tissue. In one series of experiments Dr. Turck shut off a limb by elastic ligatures from the general circulation and then mechanically injured the muscles peripheral to the ligature, thereby "liberating and disintegrating cells" and permitting autolysis to occur. After a variable interval the elastic ligature was removed and the free autolysed cells and their products were allowed to enter the general circulation; this procedure promptly caused severe symptoms of shock. Shock also occurred if the autolysed muscle tissue was transplanted into another animal or if the extract of such tissue was injected into another animal. Dr. Turck's work on the possibility of producing in man immunity against wound shock is still in progress, and obviously many difficulties have to be got over before the conclusions are accepted.

TECHNICAL RE-EDUCATION IN ITALY.[1]

BY PROFESSOR ETTORE LEVI (FLORENCE),

MEMBER OF THE EXECUTIVE COMMITTEE OF THE ITALIAN NATIONAL COMMISSION FOR THE ASSISTANCE AND PROTECTION OF THE DISABLED.

A LAW for the protection and assistance of men disabled in the war was adopted by the Italian Parliament in March, 1917, and upon it is based the whole complex work of the after-care and social assistance of the disabled man, whether incapacitated by wounds or illness.

The execution of this great undertaking was entrusted to a new organisation, known as the National Commission for the Protection and Assistance of the Disabled, composed of Members of Parliament, administrators, specialists, and disabled soldiers themselves, presided over by Professor Durante, Senator.

Organisation of Treatment.

The amalgamation of existing civil and military organisations was brought about of necessity, by the experience of the first year of war. For this experience showed that re-education, as a general measure, was doomed to failure if it were not preceded by adequate moral and physical preparation of the disabled man from the initial stages of his incapacity, and followed by a wise and kindly supervision during the critical period of his return to normal surroundings. Ideally, this pre-re-education—that is to say, the moral preparation of the patient—should be initiated at the very moment when he first realises that he will remain hampered for life by his physical disabilities.

In order to realise such an ideal we have attempted in Italy to concentrate without delay all the seriously disabled in two surgical first receiving centres, where they may live in an atmosphere favourable to their preparation for an active future. For this reason every patient, from whatever sector of our extended front he may come, is immediately conveyed to Mantua for the Northern front and Bari for the Eastern front, where he is ensured efficient treatment and intelligent moral preparation.

In order to carry out such preparation from the start—in field hospitals and hospital trains—the National Commission undertook the distribution of a pamphlet designed to popularise the law relating to the disabled, explaining to the patient and to all who may attend him—doctors, nurses, chaplains, and so on—what are the rights to which he is entitled and all that these imply: medical and surgical attendance, free provision of artificial limbs, maintenance for six months in a school of re-education, the laws relating to pensions and legal medical attendance, social relief and the securing of employment. This pamphlet has served the purpose of explaining to many discharged disabled soldiers the rights and privileges which were not at first made adequately clear to them.

From the first receiving hospitals in Mantua and Bari, the patients are distributed among the first-grade concentration hospitals of Turin, Milan, Genoa, Bologna, Florence, Rome, and Naples, and thus brought without delay into the neighbourhood of their families and of their normal environment. Surgical treatment is completed under healthy and agreeable surroundings, and the moral preparation, already initiated, carried on by the personnel of the local School of Re-education. As soon as the patient is able to sit up in bed he is encouraged to attempt light occupations, such as bead-work, cardboard-work, and toy-making. Thus his passive mentality is transformed into an active mentality, and he begins to feel the hope of a renewed possibility of work and to appreciate its necessity.

When his wounds are nearly healed he passes to the local concentration hospital of the second grade, where his physical and orthopædic treatment is completed. Mutilated limbs are adapted to artificial members, and crippled limbs are functionally restored as far as possible. The patient is no longer confined to bed and is encouraged to attend the existing schools. Here the illiterates, unfortunately numerous in Italy, are taught to read and write; or, having already mastered the rudiments of education, they may bring their knowledge to some degree of perfection. Small workshops are provided for the light manual work suitable

[1] Abstract of a Paper read at the Inter-Allied Conference on the After-care of Disabled Men.

to the great mass of disabled men who come from agricultural districts; these deal with wicker-work and basketry, coopering, clog-making, and the like. By these means even patients who refuse to spend six months in the schools of re-education are enabled to return to their homes with some notion of exercising their normal occupations. During this period they are furnished with temporary artificial limbs.

Schools of Re-education.

Then follows the third and last period of treatment. The physical treatment of the patient completed, after a month's leave he passes on to the School of Re-education already existing in each one of the above-mentioned cities. Re-education is, unfortunately, not compulsory in Italy, but the law makes it compulsory for every indigent patient to stay at least 15 days in the schools of re-education. He is, accordingly, made to realise the possibilities open to him and does not risk refusing such benefits owing to an incomplete appreciation of them. The return of those who repent of their refusal is thus made easy. Only in the School of Re-education itself do the disabled men receive their permanent artificial limbs. These are supplied by the special laboratory attached to each school under the direction of an orthopædic surgeon. Many schools also furnish gratuitously the necessary implements for the exercise of the trades and handicrafts taught there. This system has the object of centralising and retaining every patient for the longest possible time in the schools of re-education.

These schools were established in Italy through local initiative, and for this reason neither their administration nor their programmes have been perfected or coördinated. They are now, however, under the control of the National Commission, which will reinforce and organise them according to a general and uniform design, as follows:—

1. The great mass of disabled agricultural workers will be given some elementary scholastic knowledge.
2. They will be taught at least one of the easier trades which may be followed in any part of the country, and are known therefore as subsidiary to agriculture.
3. The more informed and intelligent agricultural labourer will receive instead a general and technical instruction which shall advance him according to his former occupation, teaching him the more highly specialised methods of agriculture and of stock-breeding. Such a programme will tend to check the artificial movement toward the cities and the pernicious pursuit of Government employment.
4. Disabled men who prefer non-agricultural work will find in the same centres of re-education both primary and secondary schools and workshops where they may be trained in the trade most adapted to their education, with special reference to local industries.

We in Italy are convinced that the resident system is greatly superior to the non-resident, and we have, therefore, put the former into more extensive practice, yet without such rigid enforcement as to prevent men availing themselves of every practical local training scheme carried out upon a different basis. We are equally convinced that the larger institutions present material advantages over the smaller. Up to the present time, however, the smaller institutions have perforce been more prevalent with us, since, during the early days of private initiative in Italy the local bodies, though zealous, were little controlled and lacking in means. The National Commission, now reviewing the entire situation with impartial judgment, intends to give the maximum of assistance to the more flourishing institutions, and inexorably to condemn the weaker and less successful. The work of supervision and control is carried out by continuous inspections, entrusted to committees chosen from among the members of the National Commission, and composed for the most part of a specialist in re-education, an administrator, and a disabled officer or soldier.

In this regard it is worthy of note that there exists in Italy a flourishing Association of Disabled Soldiers, numbering already some 20,000 members, and acting in strict accord with the military authorities and with the National Commission. Representatives of this society are members of the Council of the National Commission and of every local committee. They have also the right to control the methods of re-education prevailing in the various centres. The National Commission exercises its complex work of control through the medium of the local committees, which during the first period of the war spontaneously undertook the establishment of schools of re-education. The local distribution of these institutions is, however, unfortunate, being numerous in the north and scarce in the south. To obviate this grave inconvenience the National Commission is undertaking, at its own expense, to found a large institution at Bari, and another in Sardinia, and is intending also greatly to extend the already existing institution at Naples.

Other Details of the Scheme.

The National Commission is actively engaged in the preparation of a new and complete census of the disabled men who have already returned to their homes. The Commission will thus be enabled to supply, with the least possible delay, what has been lacking in the past. For only by means of an exact report of the physical, re-educative, and social circumstances of each individual is it possible to bring under fresh supervision those disabled men whose condition is still capable of improvement, to complete and perfect the application of artificial limbs, to attract to the schools of re-education those who have not already profited by them, and to secure employment for those who have or have not been re-educated.

The Commission is also organising a Special Committee for the Study of Prosthesis, endowed with ample powers and an extended programme. This committee will study, both from a practical and scientific standpoint, the subject of artificial limbs in general, and of those adapted for industrial purposes in particular.

For the treatment and re-education of the blind the same general scheme will serve. From Mantua and Bari they are rapidly centralised in the ophthalmic first concentration hospitals of Milan, Rome, Florence, Naples, and Catania. The same general plan is followed for the permanently deaf-mute, who will be taught lip-reading in special institutes.

The disabled of every grade receive free maintenance in the schools of re-education for a period of six months, which may be extended in the case of those who show themselves deserving. The financial requirements of the National Commission are determined year by year by the Ministry of the Interior, acting in collaboration with the Council of the National Commission. The finances of the schools of re-education, previously supported by private funds, will be taken over by the Commission, as is necessary or desirable. The Commission undertakes also to administer gifts or legacies made to the disabled.

Lastly, the National Commission has also the task of extending its protection and assistance to all service men incapacitated through illness. This is a work of immense proportions and of essentially medical character, which, however, must not be separated from re-education. For no patient, until he be restored to favourable physical condition, is capable either of re-education or of social usefulness. Special study is being given by the Commission to the grave problem of the tuberculous cases, with the close coöperation of the military and civil sanitary authorities. It is intended that tuberculous patients shall be taught, in special tuberculosis sanatoria, that régime of life which they must follow if they hope to be cured. While actively forwarding such antitubercular pre-education the Commission expects to have among such patients a steadily increasing percentage who may become candidates for a future technical re-education, under a special supervision which must never lose sight of the pathological origin of their disability.

The financial and industrial future of all disabled men in Italy is facilitated by the fact that the foresight of the law has undertaken to insure them against industrial accidents, and will also advance to them, with the guarantee of their pensions, sufficient loans to make possible the building of farmhouses or the purchase of cultivable lands. The concession of such benefits is under the strict control of the National Commission, which will, however, give it the widest possible application, so that in time a large proportion of our disabled agricultural workers will become proprietors of small farms which they may cultivate by their own labour.

Those who desire fuller information upon the subjects treated in the foregoing report may refer either personally to Professor Ettore Levi, Piazza Savonarola 11, Florence, Italy; or to Opera Nazionale per la Protezione ed Assistenza degli Invalida di Guerra, Palazzo Taverna, Via Monte Giordano, Rome, Italy.

DRIED MILK FOR INFANTS.

THE Local Government Board has issued for wide circulation the following résumé[1] of Dr. F. J. H. Coutts's report on Dried Milks, with Special Reference to their Use in Infant Feeding. The conclusions of the report are based on an average of 26 samples of full cream dried milk examined at the Government Laboratory, and the report refers in several places to the previous food reports, No. 15 and No. 20, dealing respectively with condensed milks and proprietary foods for infant feeding.

Dried milk or milk powder is a substance prepared from cows' milk by the abstraction of almost the whole of the water so as to leave practically nothing but the solids of the milk. The product may contain varying amounts of milk fat, according as it is made from full cream milk or from milk partially or completely skimmed. Dried milk made from full cream milk contains 26·62 per cent. of fat, 24·46 per cent. of protein, 36·98 per cent. of milk sugar, 6·12 per cent. of mineral matter, and 4·32 per cent. of water.

There are several processes for preparing dried milk, but two methods are most commonly employed: (*a*) by passing liquid milk over metal cylinders heated internally by steam or hot water; and (*b*) by spraying milk, after partial condensation, into heated air. The chief object is to obtain milk in a solid condition with as little change as possible in the milk constituents.

Dried milk is a light yellowish-white powder which, when carefully prepared from good fresh milk, keeps for several weeks or months if it is kept dry. On mixing with warm water in the proportion of 1 part by weight of the dry powder to 7 parts by weight of water (approximately one large teaspoonful of the dried milk to two tablespoonfuls of water) a liquid is obtained corresponding in composition to ordinary milk, but usually having a slight boiled taste and a tendency for a little solid matter to settle and for fat to rise to the top.

Dried milk as put on sale in this country comes usually under one of four classes: (1) Full cream; (2) three-quarter cream; (3) half cream; and (4) skimmed. Full cream dried milk for baby feeding is sometimes sold merely under this description, but certain firms supply it under special names or brands.

It is most important to emphasise that babies should, wherever possible, be fed solely on their mothers' milk.

If this is impossible it is best to feed partly on the breast and partly on the bottle. No other food can really replace breast milk. If, however, an infant must be hand-fed, cows' milk in some form or other is the most satisfactory substitute usually available.

Dried milk for feeding of infants.—Experience during the last 12 or 14 years shows that dried milk is one of the most satisfactory forms of cows' milk for use in the feeding of infants. It has been very largely employed in connexion with infant welfare centres in England, particularly in Leicester and in Sheffield, and experience in these towns, and also in many other places, shows that a very large proportion of babies can take dried milk very well, and that on this food they thrive and develop in a satisfactory manner. It has been found that babies digest dried milk well. Vomiting is less frequent with dried milk than with ordinary cows' milk.

Fresh, clean, pure, raw cows' milk is a very good food for a baby when mothers' milk is not available, but unfortunately the milk ordinarily sold in towns does not conform to this description, being often far from clean and containing large numbers of germs. Such milk, especially in summer, will not keep a day without becoming sour and is apt to cause digestive troubles in babies. Dried milk contains far fewer germs than ordinary town milk, and is less likely to contain the germs of infectious diseases. Also germs do not multiply in dried milk; they do in ordinary milk. Dried milk keeps well so long as it is kept dry. Only as much should be made up at a time as is required for one feed, and there need, therefore, be no waste. Pasteurised, sterilised, or boiled cows' milk are useful foods if properly prepared, but they have some disadvantages as compared with dried milk. In particular, they do not keep well, especially in summer.

Unsweetened full cream condensed milk is also useful for baby feeding, but when mixed with water in the proportions sometimes recommended it is too weak for the satisfactory nourishment of the baby. *Sweetened* condensed milk is often used for baby feeding. Dried milk has the advantage, when made up with the proper proportion of water, of containing the essential food elements in a proportion more suitable for the baby than when full cream sweetened condensed milk is used. The latter, if made up so as to give the right proportion of fat, has a very excessive amount of sugar. This is not good for the baby, who usually becomes fat and flabby, and is liable to suffer from diseases such as rickets, &c. These same risks attach to other infant foods containing excess of sugar.

So-called "malted" milks have in recent years been recommended for baby feeding. These, like sweetened condensed milks, contain much too low a proportion of fat as compared with the amount of sugar. They differ from sweetened condensed milk in the nature of the sugar. In condensed milk this is mainly cane sugar, in malted milk it is largely malt sugar derived from the malted cereal used in its preparation. The ordinary patent infants' foods, containing large quantities of practically unaltered starch, are worse than sweetened condensed milk or malted milk. They are not fit for use for a baby under seven months of age.

In view of the above considerations it is not surprising that at official infant welfare clinics dried milk is becoming used to an increasing extent as on the whole the most convenient and most suitable food when babies cannot get breast milk. In feeding babies on dried milk the *full cream variety* should alone be used, unless on the advice of a doctor. Commencing with 1 teaspoonful of dried milk in 3 tablespoonfuls of water in the first or second weeks of life, it can be rapidly increased to 1½ to 2 teaspoonfuls of dried milk in 4 to 5 tablespoonfuls of water by the end of the second month, and so on to 5 teaspoonfuls of dried milk in 10 tablespoonfuls of water at the age of 5 or 6 months.

Fears were at one time expressed that the use of dried milk for babies might result in scurvy or rickets. Prolonged experience at infant welfare centres has indicated no ground for these fears; but as an extra precaution to avoid the possibility of scurvy, and particularly if the use of dried milk is to be continued for a long time, a little fruit juice, such as orange or grape juice, may be given to the baby one or twice a week.

Dried milk is also a valuable food for nursing mothers.

In a very large number of towns dried milk for baby feeding is supplied from infant welfare centres, at which advice is also given as to the method of preparing and using the food. Where any difficulty is experienced in obtaining supplies of dried milk for infant feeding information can be obtained by application to the medical officer of health.

We have already referred briefly[2] to the report on dried milk for infants in which Dr. Coutts concluded that, while the method of drying by spraying milk into hot dry air yielded a powder which "reconstituted" better than the powder obtained by the roller process, yet in infant feeding there appeared to be no dietetic difference of importance between the two products.

[1] Copies of the résumé can be obtained from the Stationery Office or through any bookseller, price 1*d*. each. Copies of the report *in extenso* can also be obtained, price 2*s*.

[2] THE LANCET, April 6th, 1918, p. 509.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions and donations to the Fund have been received during the week ending July 6th:—

	£	s.	d.
Mr. H. J. Price	5	0	0
Dr. Arthur Whitfield ...	10	0	0
Dr. John Marshall... ...	1	1	0
Dr. Jas. W. Russell ...	5	0	0
Dr. Peter H. Abercrombie	5	5	0
Capt. J. Thomarson, R.A.M.C.	1	1	0
Dr. Judson Bury	3	3	0
Dr. A. Hugh Thompson	5	0	0
Dr. W. H. Davies (to be quarterly)	1	10	0
Dr. and Mrs. Major ...	2	2	0
Dr. J. W. Browne	1	1	0
Dr. C. H. Whiteford ...	2	2	0
Dr. T. P. Greenwood ...	0	5	0
Dr. W. Petrie Simpson	1	1	0
Dr. Arthur Court	1	1	0
Dr. S. M. Salaman... ...	1	0	0
Messrs. Balfour, Williamson and Co.*	10	0	0
Mr. Harry E. Walters†	5	5	0
Mr. T. B. F. Eminson ...	2	2	0
Major J. W. Hope, Australian M. Forces	1	1	0
Surg.-Gen. P. H. Benson, I.M.S. (retired)	1	1	0
Col. C. J. Jacomb-Hood, R.A.M.C. (T.)	1	1	0
Sir Herbert Roberts, M.P.‡	5	0	0
Mr. E. Spencer Evans (monthly)	0	10	0
Dr. Cameron Kidd	5	0	0
Dr. Alfred Cox (monthly)	1	1	0
Dr. Ernest Carter	2	0	0
Dr. E. B. Ffennell	1	1	0
Dr. Abraham Cohen ...	2	2	0
Dr. Robt. Hutchison ...	5	0	0
Mr. J. Herbert Parsons	5	5	0
Mr. J. H Bishop	1	1	0
Lord Egerton of Tatton	25	0	0
Dr. Geo. S. Middleton ...	5	5	0
Dr. W. H. Russell Fosbrook	2	2	0
Dr. Henry J. May	5	5	0
Prof. T. K. Monro	10	10	0
Dr. G. D. Thane	2	2	0
Mr. Wm. F. Rawson ...	1	1	0
Sir Wm. Osler	20	0	0
Dr. F. W. Penfold ...	5	0	0
Dr. David Riddell	10	0	0
Dr. J. Jordan Coleman	10	0	0
Dr. Austin O'Dowd ...	2	2	0
Dr. Prosser White ...	1	0	0
Mr. W. Minchin	2	2	0
Dr. J. R. R. Pollock ...	2	2	0
Dr. F. Muriel Morris ...	1	1	0
Messrs. Needhams, Ltd.	0	10	0
Dr. Florence Theobalds	1	1	0

* Per Sir Rickman Godlee. † Per Sir StClair Thomson. ‡ Per Sir Thomas Barlow.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

Correspondence.

"Audi alteram partem."

JURIES AND WAR-TIME CHANGES.

To the Editor of THE LANCET.

SIR,—The annotation on this subject in your issue of June 29th is a timely one because of the necessity of upholding the standard of liberty in this country. The coroner's court is in constitution and practice entirely democratic, and it appears strange that at a time when Democracy (spelt with a very large D) is more and more obtaining power and influence in legislation it should be quite content to deliver up without a murmur its most ancient and honourable court. The removal of liberty from the citizens of this country is in the air, and the interference with the coroner's court is one of the many signs of what is in store for us.

I agree substantially with Dr. Waldo's reluctance to sit without a jury as coroner, and it appears to me that the only change which is in any way desirable is that the coroner should have the power to hold inquests without a jury when he thinks fit. There is no doubt that if any coroner seriously abused this discretion public opinion would very speedily correct him.

A recent decision in the High Court has made the legal position of proceedings in coroners' courts quite clear. The coroner's court is one of first instance, and its function is to determine how, when, and where a person has come to his or her death. It is work, therefore, principally concerned with medical evidence, and consequently legal knowledge is as unnecessary as common-sense and knowledge of disease or injuries are necessary. It has become the fashion to suppose that the passing of examinations for the position of barrister-at-law as well as a medical qualification are of importance for the holder of the coroner's office; there really is no ground for this fashion, the presumption being that a man who is a barrister-at-law and a registered medical practitioner has not been a success in either profession.

I am, Sir, yours faithfully,

Hatfield, July 1st, 1918. LOVELL DRAGE.

"SEXUAL PERVERSION."

To the Editor of THE LANCET.

SIR,—In your issue of June 22nd Dr. L. Weatherly writes of "Sexual Perversion," attributing it to several causes. Though I think all these are more or less open to criticism I will confine my remarks to that one only which he names "inherited perversion," for it plays the most prominent part among the five classes he enumerates, and the implications of this very indefinite term were made use of in the late libel action to which Dr. Weatherly refers.

Though Dr. Weatherly does not define what he means by "inherited perversion," or, indeed, by the word "perversion" itself, it may, I think, be assumed that he denotes by sexual perversion any manifestation of sexual excitement, desire for sexual contact, or actual sexual contact with a person of similar sex, or, in other words, homo-sexual tendencies in either sex. And when he attributes such tendencies to "inheritance," he probably regards them both as pathological, "inborn," and transmitted as such. There is, however, a large class of cases in early youth and adolescence in which, as is well known to many, if not most, medical men, such manifestations *exist*, but do not *persist* when rightly guided by experience and education in the widest sense of these words. That such cases are not uncommon is also known to many parents and teachers, and they are quite frequent in schools of all kinds. Dr. Weatherly, however, does not lay any stress on these youthful cases, though they far outnumber the adult cases to which he limits his comments. It is surely more correct to attribute these manifestations rather to a natural, unrecognised, undifferentiated, and unguided sexual instinct than to a naturally abnormal and necessarily perverted instinct. In a majority of such cases *right guidance* of these instincts, all too much neglected by those who have it in their power to give such guidance, would either prevent or readily correct such indulgences on the part of the young, who are really ignorant of the nature of the desires which move them. The young human must not only *learn* to walk and to speak, but he must also *learn* nearly all that concerns his conduct as a civilised human being. He has not so many instincts as many of the lower animals have, but he has very early to learn to control his promiscuous desire for food and his natural curiosity and his tendency to appropriate or destroy what is not his. His sexual instincts, developing later than these other instincts, nevertheless equally require guidance, but very often, perhaps most often, they are allowed to develop without any proper "direction," and thus he runs the risk of bearing the blame, or the disgrace, or the punishment which is meted out to those who transgress the social rules, whether wittingly or not, in this special sphere of conduct.

It is the young, not the adults, which matter most in any discussion of this subject. Misunderstanding here may lead, and has led, to disastrous results. In schools such misconduct is not, as a rule, warned against or prevented, but when a scandal is feared it is severely punished. But there is another evil possibility from the spread of the comprehensive doctrine of "inherited perversion," apart from its hypothetical nature. For it may lead to the provision of excuses to those who certainly cannot plead ignorance for conduct to which penal coercion may be more fitting.

I am, Sir, yours faithfully,

June 29th, 1918. H. BRYAN DONKIN.

METHODS OF GENERAL ANÆSTHESIA IN FACIAL SURGERY.

To the Editor of THE LANCET.

SIR,—I am glad that Captain T. Lovett has drawn attention in THE LANCET of June 22nd to the advantages of a preliminary opening of the air-tube in some of these cases, but I would point out that for such purposes laryngotomy is, as a rule, preferable to tracheotomy. As shown in articles by Dr. J. W. Bond and the late Sir Henry Butlin, by the former operation dangers of aspiration of blood from the wound and of opening up the deeper tissues are avoided—and it may be done very quickly and easily in the way therein described. If there is no need to keep the tube in after the operation the wound will speedily heal if the head is kept bent forward. It may be added that when chloroform is given from a Junker's tube held near the opening very little is needed, especially if care is taken to time the compressions of the ball to the inspirations.

I am, Sir, yours faithfully,

London, N.W., June 24th, 1918. J. D. MORTIMER.

To the Editor of THE LANCET.

SIR,—With reference to Captain T. Lovett's letter in THE LANCET of June 22nd, I should like to say that we have, in a few cases, employed preliminary laryngotomy, after induction of anæsthesia, as used by the late Sir Henry Butlin, consulting surgeon to St. Bartholomew's Hospital, and handed down through Mr. W. D. Harmer to Major Gillies, and I think that this method is preferable to tracheotomy. I quite agree that it is very useful when there is much oral sepsis, but we rarely employ it, and we have very few cases of pneumonia. This may be due to our healthy surroundings.

I am greatly indebted to Captain H. E. G. Boyle, R.A.M.C. (T.), for his kindness in demonstrating to me the technique of oil-ether administration, and also to Major Gillies, R.A.M.C., for his great patience and watchful help during operations.—I am, Sir, yours faithfully,

R. WADE, Captain, R.A.M.C.,

July 1st, 1918. Anæsthetist, The Queen's Hospital, Sidcup.

THE RISKS OF ALCOHOL INJECTION FOR TRIGEMINAL NEURALGIA.

To the Editor of THE LANCET.

SIR,—Professor Jonathan Hutchinson, in his lecture on the Operative Treatment of Trigeminal Neuralgia in to-day's issue of THE LANCET, mentions the eye complication only which may result from alcohol injection. I should like to record that I have seen two cases lately in which the middle ear has been badly and permanently disorganised owing apparently to the spirit entering the Eustachian tube.

I am, Sir, yours faithfully,

Savile-row, W., July 6th, 1918. ARTHUR H. CHEATLE.

SIMILAR TREATMENT FOR SIMILAR EMPLOY.

To the Editor of THE LANCET.

SIR,—The answer given by Mr. Forster to Sir Robert Newman in the House of Commons on July 2nd seems a little misleading. He said: "These women doctors serving for home duty only, on temporary engagement, are treated in the same way as civilian medical men similarly employed." Now, there are women doctors attached to military hospitals at home on a month's engagement who receive 24*s.* a day, as against £1 paid to the whole-time medical man. I know one of the latter, over military age, who has had 17 years' experience of X ray work, and during the first two years of the war was giving anæsthetics daily in a civil hospital. He was invited to take the post of combined anæsthetic and X ray specialist in a war hospital, and was offered £1 a day as a whole-time civilian. He took the appointment and, having agreed to that very moderate remuneration, did not consider it fitting to have a question on the subject asked in the House.

Many women doctors engaged by the War Office have only just qualified and have only a student's knowledge of practical work. Should they not therefore be content with earning 20 per cent. more than the civilian medical man of mature years who is giving patients the benefit of his long experience? I am, Sir, yours faithfully,

Keswick, July 7th, 1918. W. D. ANDERSON.

EPIDEMIC ENCEPHALITIS.

To the Editor of THE LANCET.

SIR,—May I ask for space to refer to one or two points raised by Dr. Kinnier Wilson's paper on this subject in your issue of to-day?

1. The organism found by von Wiesner in the Viennese cases is, I am told by high bacteriological authority, indistinguishable from Rosenow's diplococcus, which has been, during the last two years, so generally found associated with poliomyelitis in New York, and of which, it is believed, the Flexner bodies represent one stage. The same organism has been identified recently in London.

2. Dr. Breinl concludes, on the basis of experimental results, that the Australian disease and acute poliomyelitis represent the same affection.

3. Wickman and others have recorded epidemics of poliomyelitis in winter and spring.

4. Leslie Carr has drawn special attention to stupor, and Koplik to ophthalmoplegia, in the New York epidemic of 1916.

5. In America in 1916 it was generally found that the changes in the cerebro-spinal fluid stood in relation with the "type" of case dealt with.

6. Of the cases that I personally have seen in London recently, quite a large proportion (perhaps 30 per cent.) were "meningitic" in type in a series of over 120 that included seven of the "ordinary" spinal kind.

7. Variations in type—clinical, epidemiological, and in respect of age-incidence—are the *rule* and not the exception if a series of outbreaks and epidemics of poliomyelitis are considered.—I am, Sir, yours faithfully,

Harley-street, W., July 6th, 1918. F. G. CROOKSHANK.

INSURED PATIENTS AND EXPENSIVE DRUGS.

To the Editor of THE LANCET.

SIR,—The case of Mr. F. C. Fisher reported in THE LANCET of June 29th shows that the Insurance Commissioners interpret an obligation undertaken by themselves in a different spirit from that in which they interpret an obligation undertaken by others. They profess that the benefits reaped by insured persons include the supply of appliances, but a practical experience of the Act shows that "appliances" does not mean "all appliances." Trusses, elastic stockings, and nasal irrigators have to be paid for by the patients who need them. Then why is a promise to supply "drugs" taken to include "all drugs"? The defence would no doubt be that the funds will not allow of the supply of trusses, &c., which is quite in accordance with the astonishing principle which runs through the Insurance Act, of not making sure that the cloth and the coat to be cut out of it correspond. Precisely the same argument, with immensely greater force, applies to the individual doctor and the drugs which he supplies. I am, Sir, yours faithfully,

East Grinstead, July 3rd, 1918. F. C. POYNDER.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Died.

Capt. R. N. Wallace, R.A.M.C., qualified at Edinburgh in 1907 and had held appointments at the Bradford Royal Infirmary, at the Manchester Children's Hospital, and at the Edinburgh Royal Infirmary. Prior to the war he held a commission in the R.A.M.C.(T.F.), being attached to the 6th Battalion, Royal Scots, and gave up an active practice at Edinburgh to devote himself to military duties in connexion with the war. He died at Colchester Military Hospital from acute pneumonia.

Lieut.-Col. W. McCall, D.S.O., R.A.M.C., was educated at Anderson College and at the University, Glasgow, and qualified in 1892. He was in practice in Birmingham, and prior to the war was attached to the R.A.M.C. (T.F.), being in command of the 1st South Midland Ambulance. The award of the D.S.O. was recorded in THE LANCET of Jan. 12th this year, p. 78.

Capt. P. J. Monaghan, South African M.C., qualified M.R.C.S.Eng. and L.R.C.P. Lond. in 1911, and later went to South Africa, from whence he came over with the South African Contingent in the early days of the war.

Capt. J. Anderson, R.A.M.C.

Lieut. L. F. Jamieson, R.A.M.C.

Wounded.

Capt. E. S. Cuthbert, R.A.M.C.

Major G. G. Timpson, R.A.M.C., attached R.F.A.

Previously reported Missing, now reported Not Missing.

Capt. J. P. McVey, R.A.M.C., attached Norfolk Regt.

Previously reported Missing, now reported Prisoners in German Hands.

Capt. G. L. Jones, R.A.M.C., attached Scottish Rifles.
Capt. R. M. Coalbank, R.A.M.C., attached Lancs Fusiliers.
Capt. C. W. Fowler, M.C., R.A.M.C., attached R. Berks Regt.
Capt. P. H. Green, R.A.M.C.
Capt. H. S. Moore, R.A.M.C., attached Lincs Regiment.
Capt. A. G. Clark, M.C., R.A.M.C., attached S. Lancs Regt.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Major C. F. Clarke, Indian Cavalry, died of illness contracted on active service, only child of the late Dr. J. F. Clarke, of Mitcham, Surrey.

Lieut. E. C. Rennie, R.G.A., attached R.A.F., died of wounds, son of Dr. G. E. Rennie, of Point Piper, Sydney, N.S.W.

Second Lieut. W. W. Pollard, R.A.F., died in hospital, only son of Dr. W. H. Pollard, of Birmingham.

THE HONOURS LIST.

The following are the statements of service for which the decorations recorded in THE LANCET of Feb. 9th, 1918, p. 234, were conferred. All are members of the R.A.M.C. except where otherwise stated:—

Bar to the Distinguished Service Order.

Maj. (temp. Lieut.-Col.) ARTHUR CARR OSBURN, D.S.O.—For conspicuous gallantry and devotion to duty. On seeing the enemy approaching close to his dressing station, he carried out the evacuation of the wounded under heavy shell and rifle fire in the coolest and most gallant manner. Having cleared away all cases by ambulance train and cars, he re-established his dressing station further in rear. As officer commanding bearer divisions he constantly inspected his line of bearer-posts and forward dressing stations under heavy fire. The successful evacuation of the wounded from the divisional front was due to his careful organisation and fearless supervision under the most trying conditions. His was an example of gallantry, courage, and resource worthy of the highest praise.

Distinguished Service Order.

Temp. Capt. FERGUSON FITTON CARR-HARRIS.—For conspicuous gallantry and devotion to duty. Hearing that ten men of another battalion were lying wounded in front of the position, he volunteered on completion of the relief to go to their rescue. He was out for eight hours of the night, found nine of the men alive, took two of them back to headquarters, and organised the rescue of the remainder. He showed great coolness and self-sacrifice.

Major (temp. Lieut.-Col.) CHARLES ALGERNON STIDSTON.—For conspicuous gallantry and devotion to duty when his dressing station was very heavily shelled throughout a whole day and received several direct hits. It was impossible to remove the wounded, and throughout the day he moved about continuously, arranging for their safety, with utter disregard of danger. It was owing to his fearless example and splendid organisation that all the wounded were finally removed without further casualties.

Bar to the Military Cross.

Capt. CUTHBERT DELAVAL SHAFTO AGASSIZ, M.C.—For conspicuous gallantry and devotion to duty when in charge of a bearer-post. He remained working throughout an intense bombardment, in which some of his bearers were killed and wounded while loading ambulance cars. He was compelled to remove to dug-outs, and there persisted in his work until shelled out. Though driven back three times by machine-gun fire and gas shell barrages, he succeeded in reaching the aid-posts with his bearers, and removed all the wounded.

Temp. Capt. ARTHUR JOSEPH BLAKE, M.C.—For conspicuous gallantry and devotion to duty. He did splendid work in collecting and evacuating the wounded, working throughout in the open regardless of the heavy hostile fire. Later he did excellent work tending the wounded of several units, going out after dusk to bring in wounded men from in front of our line. During the withdrawal he took out a party and carried back seven stretcher cases for a distance of three miles, thereby preventing these men from falling into enemy hands. He has at all times carried out his duties with fearlessness and courage.

Capt. ERIC ALFRED CHARLES FAZAN, M.C.—For conspicuous gallantry and devotion to duty. During very heavy fighting his aid-post twice passed into the hands of the enemy. Although all communication with him by day was cut off for two days, he remained with his wounded, 235 of whom passed through his hands. It was due to his determination that every wounded man and all the personnel of his aid-post were safely removed.

Temp. Capt. JAMES WALLACE MACFARLANE, M.C.—For conspicuous gallantry and devotion to duty. During a heavy bombardment of a battery position he assisted another officer and a sergeant in putting out the flames in a gun-pit which had caught fire. By his prompt assistance the gun was saved from serious damage and the ammunition from destruction.

Capt. SAMUEL McJAUSLAND, M.C.—For conspicuous gallantry and devotion to duty. He was in charge of bearers evacuating the wounded at a village under heavy shell and machine-gun fire. When almost the whole village was in the hands of the enemy he continued to supervise the collection of wounded, and it was mainly due to him and his bearers that they were all so speedily removed. In an attack he performed splendid work by clearing wounded of his brigade under most difficult conditions.

Capt. JOSEPH STEPHEN WALLACE, M.C.—For conspicuous gallantry and devotion to duty. Whilst in charge of an advanced dressing station and bearer squads he frequently visited the regimental aid-posts in the line and skilfully arranged his bearer squads to the best advantage. He also personally conducted ambulance cars to very advanced positions, thus being able to get a very large number of cases removed to safety in a short time. His coolness and courage during the whole period were a splendid example to his men.

The Military Cross.

Capt. ROBERT VACY CLIFFORD ASH.—For conspicuous gallantry and devotion to duty. When the enemy attacked and almost surrounded his dressing station he remained at his post under intense machine-gun and shell fire, attending to the wounded with complete disregard of danger. He got all the wounded safely away, and was instrumental in saving the transport and a large part of the personnel of the field ambulance. He then volunteered to return at once to the firing line, where he did excellent work in a most exposed position. He set a magnificent example of courage and devotion to duty.

Capt. ARTHUR JOSEPH BEVERIDGE, Spec. Res.—For conspicuous gallantry and devotion to duty. His dressing station was heavily shelled during an engagement, but owing to his determination, courage, and initiative a large number of wounded were attended to and evacuated from the danger zone.

Capt. JOHN HOLLIDAY BLACKBURN.—For conspicuous gallantry and devotion to duty. When 80 stretcher cases as well as a number of walking cases were handed over by another division, and owing to heavy shelling it was impossible to move them during the day, he took forward an ambulance as close up to the position as possible and organised the evacuation of the wounded. He showed splendid determination and resource.

Temp. Capt. JOSEPH VICTOR COPE.—For conspicuous gallantry and devotion to duty. He was in charge of stretcher-bearers in an exposed position, which was subjected to intense fire. Though he was suffering from gas he remained at his post for two days, setting such a magnificent example to his men that the evacuation of the wounded went on throughout the bombardment. By his courage and devotion to duty he saved many lives.

Temp. Capt. DAVID McMURRAY DICKSON.—For conspicuous gallantry and devotion to duty in tending the wounded under heavy shell and machine-gun fire. He was continuously out during the day searching the battlefield for wounded. He showed courage of a high order on this and many other occasions.

Capt. (temp. Major) JOHN DOUGLAS FIDDES.—For conspicuous gallantry and devotion to duty in continuing to dress the wounded under heavy shell fire at the advanced dressing station. Although the dressing station received a direct hit, he continued to work, and saved many lives by his courage and untiring energy.

Capt. JOHN HENRY PEARSON FRASER.—For conspicuous gallantry and devotion to duty in organising a new line of evacuation when the original line was blocked by the initial success of an enemy counter-attack. Many wounded had collected, but he got away over 100 stretcher cases, working unceasingly in the open for 36 hours.

Capt. PHILIP JACOB GAFFIKIN, Spec. Res.—For conspicuous gallantry and devotion to duty while in charge of stretcher-bearers during an engagement. He directed the removal of the wounded under heavy shell fire and showed great courage and resource.

Temp. Capt. HUGH BERNARD GERMAN.—For conspicuous gallantry and devotion to duty. When his dressing station was heavily shelled he organised the removal of 38 stretcher cases. He also rescued several wounded of another division under heavy shell fire. He established dressing stations without delay at various stages in an advance of four or five miles, and so enabled the wounded to be rapidly evacuated.

Temp. Capt. FRANK ARTHUR GRANGE.—For conspicuous gallantry and devotion to duty. He worked night and day without any rest attending to wounded from all units under continuous shell fire. He also went up to the front line under heavy fire to attend to a severely wounded man, and succeeded in getting him away.

Temp. Capt. EDWIN ALLAN THOMAS GREEN.—For conspicuous gallantry and devotion to duty. He worked with ceaseless energy, attending and evacuating the wounded. He moved his aid-post forward and worked under heavy shell fire till the enemy were within a few yards of his aid-post. He evacuated all the wounded save a few bad cases who could not be moved. His courage and presence of mind saved a large number of wounded from falling into enemy hands.

Temp. Lieut. ARTHUR COLLIS HALLOWES.—For conspicuous gallantry and devotion to duty when in charge of bearers. He succeeded in rapidly evacuating all the wounded under very difficult conditions. He attended to a severely wounded officer under machine-gun fire.

Temp. Capt. JAMES PHILLIPS JONES.—For conspicuous gallantry and devotion to duty. He worked in the line for a fortnight organising advanced dressing stations and bearer systems. During an enemy attack he was cut off from battalion headquarters, but established an aid-post and worked under heavy fire in the open for 36 hours attending to a large number of wounded. He showed the greatest courage and endurance throughout.

Temp. Capt. FREDERICK BENNETT JULIAN.—For conspicuous gallantry and devotion to duty. He remained at his post attending to the wounded during an engagement with great courage and determination though suffering severely from the effects of gas.

Temp. Capt. ARTHUR GRIFFITH MAITLAND-JONES.—For conspicuous gallantry and devotion to duty. During the operations he repeatedly reconnoitred the roads under heavy shell fire. By his example and leading he established communication with the most forward dressing stations, and succeeded in bringing up his ambulances and rapidly evacuating the wounded from very exposed positions.

Lieut. (temp. Capt.) WILLIAM WYLLIE MacNAUGHT.—For conspicuous gallantry and devotion to duty. He organised a bearer party during an action, and collected and cleared many wounded under heavy shell fire. His prompt and gallant action saved many lives.

Temp. Capt. JAMES MANUEL.—For conspicuous gallantry and devotion to duty. During an enemy attack he showed the greatest courage in attending to wounded men who were lying in shell holes exposed to enfilade machine-gun fire. With complete disregard of his own safety he went from one shell hole to another attending to the wounded, and continued at this work after he had been wounded himself.

Lieut. JOHN MARSHALL, Spec. Res.—For conspicuous gallantry and devotion to duty. When in charge of stretcher squads he succeeded in evacuating all the wounded during a critical period of a withdrawal from a village, frequently going forward beyond the firing line in order to accomplish his task.

Temp. Capt. DUNCAN JOHN McAFEE.—For conspicuous gallantry and devotion to duty. When two attempts to remove a wounded man from a regimental aid-post had failed owing to the stretcher-bearers being killed, he at once led forward a third party and succeeded in getting all the wounded back to a place of safety under very heavy shell fire. He showed splendid courage and self-sacrifice.

Temp. Capt. FREDERICK BUICK McCARTER.—For conspicuous gallantry and devotion to duty. When after an attack there were heavy casualties, he continued to attend the wounded in an open road enfiladed by machine-gun fire, and undoubtedly saved many lives.

Temp. Capt. JAMES ALLEN MONTGOMERY.—For conspicuous gallantry and devotion to duty. On his own initiative he organised a line of stretcher-bearers to search "No Man's Land." He personally took charge of the party and was often under fire and within a few feet of the enemy.

Capt. GEORGE MORRIS, Spec. Res.—For conspicuous gallantry and devotion to duty. He moved his aid-post forward and worked there ceaselessly day and night until the battalion was relieved. The aid-post three times sustained a direct hit from an enemy shell, but he immediately found another aid-post and continued to dress the wounded under continual shell fire.

Temp. Lieut. DAVID ASSUR HENRY MOSES.—For conspicuous gallantry and devotion to duty in working continuously at his aid-post during three days' operations under heavy shelling. Frequently shells dropped close by, killing and wounding several men, but he remained at work and showed the utmost indifference to danger.

Temp. Lieut. EVAN EDWARD OWENS.—For conspicuous gallantry and devotion to duty. He carried on his work in a crowded aid-post under continual shell fire with the greatest coolness and determination. Though blinded by gas, he continued for four hours to supervise the treatment of stretcher cases.

Capt. HAROLD DOBSON PICKLES.—For conspicuous gallantry and devotion to duty when in charge of bearers. When a number of wounded were lying in a cellar and the adjoining building, in which a number of "P" bombs and S.A.A. were stored, was set on fire he at once went to extinguish it and remove the ammunition. While doing so he, a N.C.O., and a man were wounded, but he got them both under cover. An hour later a second fire occurred, and he again went out to extinguish it. For three days he worked without rest superintending the evacuation of the wounded.

Capt. JOHN ALEXANDER PRIDHAM, Spec. Res.—For conspicuous gallantry and devotion to duty. He was in charge of an advanced dressing station where there were a large number of wounded when the enemy attacked. The task of removing the wounded was an extremely difficult one owing to the proximity of the enemy and heavy shell and machine-gun fire, but he carried it out successfully, remaining on the spot until all the wounded had been evacuated. By his courage and devotion to duty he was the means of saving many lives.

Capt. WILLIAM ROBERTSON.—For conspicuous gallantry and devotion to duty in attending to the wounded in the open during an attack when the battalion was held up by heavy machine-gun and rifle fire, and several casualties occurred. When two companies were cut off by heavy machine-gun fire and sustained casualties he volunteered to try and reach them. His conduct throughout was most courageous.

Temp. Capt. LIONEL MATTHEW ROWLETTE, D.S.O.—For conspicuous gallantry and devotion to duty. He worked untiringly attending to the wounded under very heavy fire throughout the whole day, and set a magnificent example of courage and coolness to all.

Temp. Capt. CEDRIC RUSSELL.—For conspicuous gallantry and devotion to duty. He worked in the open attending to the wounded during an engagement with complete disregard of danger under heavy fire.

Temp. Capt. ROBERT RUTHERFORD.—For conspicuous gallantry and devotion to duty. He worked continuously day and night at his aid-post under continual shell fire. When the aid-post had twice sustained direct hits and he himself was suffering from severe concussion, he established a new post and remained at work under heavy fire.

Temp. Capt. BRIAN HERBERT SWIFT.—For conspicuous gallantry and devotion to duty. When the front line was driven back close to the battery positions he moved about throughout the day from one battery to another, wherever his services were needed, with utter disregard of danger under heavy fire. He remained on the spot until the batteries had withdrawn, and was the last to leave the position. He set a splendid example of courage and determination.

Capt. ARTHUR PEREGRINE THOMSON.—For conspicuous gallantry and devotion to duty. He worked untiringly and with utter disregard of danger, attending to the wounded under heavy fire for several days during an engagement. It was entirely due to his efforts and example that a large number of wounded were safely evacuated.

Temp. Capt. GEORGE DIBBS KING WALDRON.—For conspicuous gallantry and devotion to duty when in charge of a party of bearers. Though several times blown over by bursting shells, he succeeded in evacuating all the wounded of the brigade. On one occasion he assisted to carry a stretcher case through a heavy barrage. He continued to work till utterly exhausted.

Capt. DOUGLAS LARMER WALL.—For conspicuous gallantry and devotion to duty. He attended the wounded under heavy shell fire in most exposed positions. He showed great courage and determination.

Capt. JAMES ANDERSON YOUNG.—For conspicuous gallantry and devotion to duty. When the building in which a number of wounded were lying was heavily shelled, with the assistance of another man he succeeded in carrying all the wounded into a cellar, though shells were continually bursting in the building. He showed the greatest courage and determination.

Capt. JAMES CARRUTHERS YOUNG, Spec. Res.—For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station. When the village was continuously shelled he personally superintended the removal of many of the wounded to a safer position. During the night he had them all evacuated and established a new dressing station.

Capt. EDGAR DOUGLAS, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. He directed his relay of bearers under heavy shell fire, and, though wounded, remained at duty until he was relieved.

Capt. AUSTIN DWIGHT IRVINE, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. During four days in the front line he worked day and night attending to the wounded, often under heavy shelling. When casualties occurred during an enemy barrage, without hesitation he left battalion headquarters and went to the assistance of the wounded.

Capt. GORDON LEIGH JEPSON, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. He established an aid-post during an attack under heavy shell fire, and for over ten hours attended to the wounded in the open under enemy shelling. When the enemy shelled his position with gas shells, and a number of stretcher cases were lying outside the aid-post, he went out at great personal risk and put box respirators on all the wounded, and by his prompt action saved many lives. He showed the greatest courage and self-sacrifice.

Capt. JAMES GRANT MACNEILL, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. He worked unceasingly in the open attending to the wounded under heavy shell fire During a gas-shell bombardment he adjusted his own box respirator on a wounded sergeant and obtained others for a number of stretcher cases who were unable to help themselves. His coolness and courage were a splendid example to all and undoubtedly saved many lives.

Capt. WESLEY HERBERT SECORD, Canadian A.M.C.—For conspicuous gallantry and devotion to duty when in charge of the evacuation of the wounded from the forward area. During a heavy bombardment of gas and other shells he made a tour of all the bearer-posts to ensure that all anti-gas measures were being employed. He attended to wounded men in the open during the bombardment with complete disregard of danger. His coolness and courage were a splendid example to all.

Capt. WILLIAM EWING SINCLAIR, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. When in charge of bearers at the regimental aid-post he worked for three days and nights attending to the wounded under heavy fire and in the face of great difficulties. Though suffering severely from the effects of gas he remained at duty and set a magnificent example of courage and coolness to all.

Capt. REX CARRINGTON BREWSTER, New Zealand M.C.—For conspicuous gallantry and devotion to duty during an action. Throughout the day he was continually exposed to heavy shell fire while attending to the wounded, and set a splendid example to all ranks by his devotion to duty and contempt of danger.

Lieut. S. DUTT, I.M.S.—For conspicuous gallantry and devotion to duty. He worked indefatigably and attended a large number of wounded belonging to various units at the aid-post, which was under heavy shell, machine-gun, and rifle fire. His absolute coolness and steady devotion to duty were a splendid example to all.

The following medical officers have been brought to the notice of the Secretary of State for War for valuable services rendered in connexion with the war:—

Capt. (temp. Hon. Lt.-Col.) D. J. Armour, R.A.M.C.; Col. W. H. Horrocks, A.M.S.; Lt.-Col. F. S. Irvine, D.S.O., R.A.M.C.; Col. (temp. Maj.-Gen.) G. B. Stanistreet, C.M.G., A.M.S.; Temp. Col. A. S. Woodwark, A.M.S.; Col. G. E. Armstrong, Canadian A.M.C.; Hon. Lt.-Col. G. W. Badgerow, Canadian A.M.C.; Col. A. Primrose, Canadian A.M.C.; Lt.-Col. C. H. Tewsley, New Zealand M.C.; Maj. C. Macpherson, Newfoundland Contingent.

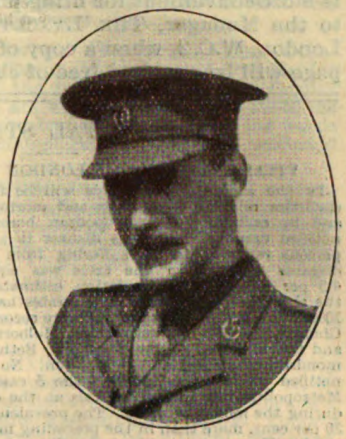
Captain Manley Angell James, M.C. (Gloucester Regiment), son of J. Angell James, L.R.C.P., M.R.C.S., of Nevil-road, Bristol, has been awarded the Victoria Cross.

OBITUARY OF THE WAR.

JAMES TENNANT WHITWORTH BOYD, M.D., C.M. ONTARIO,

CAPTAIN, CANADIAN ARMY MEDICAL CORPS.

Captain J. T. W. Boyd, who died at the Kitchener Military Hospital, Brighton, on June 16th, was 27 years of age, and son of the Rev. Andrew Boyd, of Port Arthur, Ontario. He obtained his medical qualification at Queen's University Medical School, Kingston, in 1914, and after spending a year at the Kingston General Hospital he enlisted in the C.A.M.C. and came overseas in February, 1916, when he was drafted to a Canadian General Hospital (Queen's University Unit) at Étaples. There he worked for a year in the laboratory until the results of a chronic scarlatinal nephritis necessitated his return to England, when he joined the staff of the Kitchener Hospital. In spite of the severe handicap of high blood pressure his work in the laboratory was consistently of the highest order, being characterised by a precise technique and an intellectual honesty which would have brought him to the fore had he lived. His death was due to uræmia. The photograph which we are able to give of Captain Boyd has been taken from a snapshot of a group.



PHILIP BEAUCHAMP SEWELL, M.D. MELB.,

CAPTAIN, AUSTRALIAN ARMY MEDICAL CORPS.

Captain P. B. Sewell, who was recently killed in action in France, was a student at Melbourne University (1911–16), obtaining his qualifying degree at a special War Final held in the latter part of 1916. He enlisted immediately, and for a short time was at a base hospital prior to embarkation. He was attached for a while as M.O. in a command depôt in England, and in August of last year went to France, where he was attached in succession to a field ambulance and an infantry battalion. During a counter attack on the night of April 24th–25th he was hit by a machine-gun bullet. His chief writes of Captain Sewell: "Throughout the winter he did most efficient work in watching over the good health of the battalion, and in all operations he proved himself a gallant, cheerful, and capable officer, and was a good comrade and well liked by both officers and men."

DEATHS OF WEST OF ENGLAND MEDICAL MEN.—Mr. Gillman Churton Pring Pauli, L.R.C.P. Edin., M.R.C.S., died at his residence, Redland, Bristol, on June 25th, in his seventy-ninth year. He was the son of the late Rev. C. H. Pauli, professor of ancient languages at Oxford University. Mr. Pauli was formerly in practice at Bedminster, Bristol, but recently had devoted himself solely to the duties of visiting surgeon to the Bristol City hospitals, with which he had been connected for 44 years. Mr. Pauli had a sound knowledge of infectious diseases. He was very popular and will be much missed in Bristol.—Mr. Vernon H. Starr, M.B., B.S. Lond., formerly house surgeon to the Royal Devon and Exeter Hospital, who was appointed in charge of the Peshawar Mission, N.W.F.P., India, in connexion with the Church Missionary Society, was murdered on March 17th. Dr. Starr was greatly respected in Exeter, and much sympathy is felt there for Mrs. Starr, who was with him at the time of the tragedy.—Surgeon Edwin John Gostwyck Sargent, L.M.S.S.A., R.N., died on June 25th at Bombay from the effects of sunstroke, in his twenty-sixth year. He was the son of Mr. W. G. Sargent, L.M.S.S.A., J.P., of Padstow, and grandson of the late Dr. H. E. Sargent, of Launceston. The deceased received his medical education at St. Bartholomew's Hospital, qualified L.M.S.S.A. in 1917, and entered the Royal Navy as a surgeon. He was highly esteemed at Padstow, and much sympathy is felt there for his relatives.

THE LANCET, VOL. I., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of June 29th is in preparation. Owing to the increasing shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a *post-card* (which is more convenient for filing purposes than a letter) to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

URBAN VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING JUNE, 1918.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 4·5 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 4·9, 3·9, and 4·1 per 1000. The lowest rates in June were recorded in Kensington, Fulham, Chelsea, the City of Westminster, Holborn, and the City of London; and the highest rates in Finsbury, Bethnal Green, Southwark, Bermondsey, Deptford, and Greenwich. No fresh case of small-pox was notified during the month; the 3 cases under treatment in the Metropolitan Asylums Hospitals at the end of May were discharged during the month of June. The prevalence of scarlet fever was about 20 per cent. more than in the preceding month; this disease was proportionally most prevalent in Finsbury, Southwark, Bermondsey, Wandsworth, Greenwich, and Woolwich. The Metropolitan Asylums Hospitals contained 846 scarlet fever patients at the end of the month, against 931, 898, and 786 at the end of the three preceding months; the weekly admissions averaged 127, against 132, 105, and 129 in the three preceding months. The prevalence of diphtheria was about equal to that in the preceding month; the greatest proportional prevalence of this disease was recorded in Stoke Newington, Bethnal Green, Stepney, Southwark, Bermondsey, and Lewisham. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1529, 1358, and 1232, numbered 1179 at the end of June; the weekly admissions averaged 165, against 182, 143, and 202 in the three preceding months. The prevalence of enteric fever was slightly more than in the preceding month; of the 41 cases notified in June, 9 belonged to Wandsworth, 5 to Hackney, 3 to the City of Westminster, 3 to Islington, and 3 to Battersea. There were 40 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 23, 23, and 32 at the end of the three preceding months; the weekly admissions averaged 6, against 3, 3, and 5 in the three preceding months. Erysipelas was proportionally most prevalent in St. Marylebone, St. Pancras, Shoreditch, Bethnal Green, Deptford, and Greenwich. The 18 cases of puerperal fever included 2 each in Fulham, Southwark, Lambeth, Wandsworth, and Woolwich. Of the 13 cases of cerebro-spinal meningitis 3 belonged to Stepney and 3 to Lambeth; while of the 9 cases of poliomyelitis 3 belonged to Bermondsey and 2 to Woolwich.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended June 29th the deaths of 3655 London residents were registered, equal to an annual rate of 11·8 per 1000; in the three preceding months the rates had been 18·1, 17·1, and 13·7 per 1000. The death-rates ranged in June from 8·8 in Wandsworth, 9·1 in Woolwich, 9·3 in Lewisham, 9·5 in Paddington, 9·6 in Stoke Newington, and 9·6 in Battersea, to 13·4 in St. Pancras, 13·6 in Chelsea, 13·7 in Bethnal Green, 13·9 in Greenwich, 14·7 in St. Marylebone, 15·8 in Southwark, and 15·9 in Finsbury. The 3655 deaths from all causes included 336 which were referred to the principal infectious diseases; of these, 151 resulted from measles, 5 from scarlet fever, 45 from diphtheria, 98 from whooping-cough, 9 from enteric fever, and 28 from diarrhœa and enteritis among children under 2 years of age. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Paddington, the City of Westminster, Hampstead, Shoreditch, and Wandsworth; and the highest in Fulham, the City of London, Southwark, Bermondsey, Battersea, and Greenwich. The 151 deaths from measles were 30 above the average number in the corresponding period of the five preceding years; this disease was proportionally most fatal in Bethnal Green, Southwark, Bermondsey, Battersea, and Camberwell. The 5 fatal cases of scarlet fever were 9 below the average number. The 45 deaths from diphtheria exceeded the average number by 7, and included 5 in Stepney, 4 in Lambeth, 4 in Camberwell, 3 in St. Pancras, and 3 in Bermondsey. The mortality from whooping-cough was lower than in any of the preceding six months, the deaths numbering 98 against an average of 66; this disease was proportionally most fatal in Fulham, Islington, Finsbury, the City of London, Southwark, Deptford, and Lewisham. The 9 deaths from enteric fever agreed with the average; 2 belonged to Stepney. The 28 fatal cases of diarrhœa and enteritis among children under 2 years of age showed a decline of 40 from the average; 4 deaths belonged to Woolwich, 3 to Hammersmith, 3 to Greenwich, 2 to St. Marylebone, 2 to Islington, and 2 to Poplar. In conclusion, it may be stated that the aggregate mortality in London in June from these principal infectious diseases was 6 per cent. above the average.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JUNE, 1918.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1917.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.									Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,026,901	—	504	661	—	41	—	18	148	13	9	1394	4·5	—	151	5	45	98	9	28	336	1·1	3655	11·8
West Districts:																								
Paddington	122,507	—	10	20	—	1	—	1	7	1	—	40	4·3	—	2	—	2	—	—	1	5	0·5	89	9·5
Kensington	151,535	—	10	17	—	1	—	1	7	1	—	37	3·2	—	4	1	—	4	—	1	10	0·9	138	11·9
Hammersmith	114,952	—	11	18	—	—	—	1	2	—	—	32	3·6	—	3	—	—	1	—	3	7	0 8	94	10·7
Fulham	145,186	—	15	12	—	—	—	2	4	—	—	33	3·0	—	7	1	—	8	1	1	18	1·6	123	11·0
Chelsea	57,368	—	5	2	—	1	—	—	1	—	—	9	2·0	—	3	—	—	2	—	—	5	1·1	60	13·6
City of Westminster	122,046	—	3	8	—	3	—	—	2	—	—	16	1·7	—	2	—	1	2	1	—	6	0·6	121	12·9
North Districts:																								
St. Marylebone	92,796	—	5	19	—	1	—	1	6	—	1	33	4·6	—	2	—	2		1	2	10	1·4	105	14·7
Hampstead	75,649	—	7	11	—	—	—	—	2	—	—	20	3·4	—	—	—	2	—	—	1	3	0·5	59	10·2
St. Pancras	186,600	—	25	30	—	—	—	—	11	—	—	66	4 6	—	7	—	3	2	—	—	12	0·8	192	13·4
Islington	297,102	—	30	41	—	3	—	—	7	—	—	81	3·6	—	1	—	1	12	—	2	16	0·7	274	12·0
Stoke Newington	47,426	—	—	13	—	—	—	—	1	1	—	15	4·1	—	1	—	1	—	—	1	3	0·8	35	9·6
Hackney	196,598	—	13	29	—	5	—	—	6	—	—	53	3·5	—	4	—	2	5	—	1	12	0·8	189	12·5
Central Districts:																								
Holborn	35,303	—	4	1	—	1	—	—	—	—	—	6	2·2	—	—	—	—	1	1	—	2	0·7	34	12·6
Finsbury	68,011	—	22	10	—	—	—	—	3	—	—	35	6·7	—	1	—	1	4	—	—	6	1·2	83	15·9
City of London	16,138	—	—	1	—	—	—	—	—	—	—	1	0·8	—	—	—	—	1	—	1	2	1·6	13	10·5
East Districts:																								
Shoreditch	89,675	—	10	14	—	2	—	—	6	—	—	32	4·7	—	—	—	—	1	1	—	2	0·3	88	12·8
Bethnal Green	107,362	—	7	27	—	2	—	1	9	—	1	47	5·7	—	10	—	1	—	—	—	11	1·3	113	13·7
Stepney	232,010	—	18	56	—	2	—	—	7	3	—	86	4·8	—	6	—	5	—	2	—	13	0·7	217	12·2
Poplar	143,443	—	10	24	—	—	—	1	6	1	1	43	3·9	—	5	—	2	3	—	2	12	1·1	142	12·9
South Districts:																								
Southwark	167,936	—	48	50	—	1	—	2	7	—	—	108	8·4	—	19	1	2	15	—	—	37	2·9	203	15·8
Bermondsey	107,635	—	18	41	—	—	—	1	5	1	3	69	8·4	—	10	—	3	1	—	1	15	1·8	102	12·4
Lambeth	272,038	—	43	44	—	1	—	2	6	3	—	99	4·7	—	16	—	4	7	1	1	29	1·4	252	12·1
Battersea	150,023	—	18	16	—	3	—	—	5	—	—	42	3·6	—	15	—	1	4	—	1	21	1·8	111	9·6
Wandsworth	300,787	—	52	46	—	9	—	2	2	—	—	111	4·8	—	7	1	2	1	1	1	13	0·6	204	8·8
Camberwell	239,461	—	38	34	—	2	—	—	13	—	—	87	4·7	—	18	—	4	3	—	—	25	1·4	214	11·6
Deptford	103,527	—	16	13	—	1	—	—	13	—	1	44	5·5	—	5	—	2	8	—	1	16	2·0	110	13·9
Greenwich	90,440	—	30	16	—	—	—	—	7	1	—	54	7·8	—	3	—	1	1	—	3	8	1·2	83	12·0
Lewisham	161,405	—	13	41	—	—	—	1	—	—	—	55	4·4	—	—	1	2	6	1	—	10	0·8	115	9·3
Woolwich	131,942	—	22	6	—	2	—	2	3	1	2	38	3·8	—	—	—	—	3	—	4	7	0·7	92	9·1
Port of London	—	—	1	1	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

URBAN VITAL STATISTICS FOR WEEK ENDED JULY 6TH, 1918.

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 19·0 per 1000, which with one exception was the highest rate recorded in any week of the present year; in the three preceding weeks the rates were 11·4, 11·7, and 13·2 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 17·4, or 4·2 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 4·4 in Southend-on-Sea, 5·8 in Wimbledon, and 6·0 in Cambridge to 41·2 in Sunderland, 41·4 in Huddersfield, 44·6 in Middlesbrough, and 45·6 in Rochdale. The principal epidemic diseases caused 340 deaths, which corresponded to an annual rate of 1·1 per 1000, and included 142 from whooping-cough, 108 from measles, 42 from infantile diarrhœa, 33 from diphtheria, 10 from scarlet fever, and 5 from enteric fever. Measles caused a death-rate of 2·6 in Sunderland, 3·6 in Lincoln, and 7·6 in Barnsley; whooping-cough of 2·3 in Warrington, 2·8 in Merthyr Tydfil, 2·9 in Preston, and 3·0 in Walsall; and diphtheria of 2·3 in St. Helens. The 830 cases of scarlet fever and 1146 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 27 and 43 below the respective numbers remaining at the end of the previous week. The 1340 deaths from all causes in London included 218 from influenza, of which 110 were of persons aged 15 to 35 years. The causes of 77 deaths were uncertified, of which 23 were registered in Birmingham, 5 each in Liverpool and Sunderland, and 4 in South Shields.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 13·9, against 11·8 and 11·5 per 1000 in the two preceding weeks. The 273 deaths in Glasgow corresponded to an annual rate of 12·8 per 1000, and included 7 from whooping-cough, 3 each from measles, scarlet fever, and diphtheria, 2 from infantile diarrhœa, and 1 from enteric fever. The 82 deaths in Edinburgh were also equal to a rate of 12·8 per 1000, but no fatal case of the principal epidemic diseases was recorded during the week.

Irish Towns.—The 179 deaths in Dublin corresponded to an annual rate of 23·4, or 7·7 per 1000 above that recorded in the previous week, and included 4 from whooping-cough and a fatal case each of measles, diphtheria, and infantile diarrhœa. The 335 deaths in Belfast were equal to a rate of 44·4 per 1000, and included 6 from whooping-cough, 5 from infantile diarrhœa, 2 from measles, and 1 each from enteric fever and diphtheria.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Second Professional Examination in Anatomy and Physiology, held on June 27th and 28th and July 1st and 2nd, 81 candidates presented themselves, of whom 43 were approved and 38 were referred. The following are the names and medical schools of the successful candidates:—

A. H. Abdel-Messieh and M. V. Abraham, Manchester University; F. Blake, King's College; C. H. Bulcock, St. Bart.'s Hosp.; C. L. C. Burns, St Thomas's Hosp.; Marion Constance Vera Clarke, Royal Free Hosp; C. S. Cloake, London Hosp.; J. L. Cope, Cambridge University and St. Bart.'s Hosp.; P. G. Cumming, King's College; S. Douglas, Sydney University and University College; F. W. Crook, Guy's Hosp.; W. L. Dunlop, Liverpool University; F. T. Evans, St. Bart.'s Hosp.; H. Freeman, King's College; S. A. Gunter, St. Bart.'s Hosp.; R. Henein, Cairo and Manchester University; F. W. Herbert, Charing Cross Hosp.; H. D. Lawson, London Hosp.; K. W. Leon, St. Bart.'s Hosp.; W. B. A. Lewis, Cambridge University and St. Bart.'s Hosp.; G. M. Lewis, University College; Elizabeth Kathleen Mackay and A. Mikhail, King's College; L. S. Morgan, St. Bart.'s Hosp.; J. N. Morris, King's College; E. D. Nagel, St. Thomas's Hosp.; J. L. Nisbet, St. Bart.'s Hosp.; R. M. Patterson and W. Remington, Guy's Hosp.; Constance Elizabeth Ridout and Mary Jane Ripley, Royal Free Hosp.; L. C. Rogers, Middlesex Hosp.; Mary Frances Roope, King's College; I. Rosenberg, Guy's Hosp.; L. Smalley, St. Thomas's Hosp.; H. K. Snell, King's College; J. A. Stephens, Leeds University; E. R. Stearn, D. R. Thompson, and H. M. Toop, London Hosp.; A. R. Walker, Cambridge University and St. Thomas's Hosp.; J. G. Walker, King's College; and J. F. Weakley, University College.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: ELECTION OF MEMBERS OF COUNCIL.—A meeting of Fellows of the College was held at the College on July 4th, Sir George Makins, the President, being in the chair, for the purpose of electing four members of Council. The following was the result of the poll:—

	Votes.	Plumpers.
Sir John Bland-Sutton	410	37
W. G. Spencer	322	9
E. W. Hey Groves	307	25
J. Lynn Thomas	266	14
F. J. Steward	229	54
H. B. Grimsdale	185	28

The President declared that Sir John Bland-Sutton and Mr. Walter Spencer had been elected, and that Mr. Hey Groves and Mr. Lynn Thomas had been elected members of the Council. Five Fellows voted in person and 620 voted through the post. Mr. H. J. Price and Mr. Willmott Evans acted as scrutineers.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The annual general meeting will be held at the West London Hospital on Friday, July 19th, beginning at 5.30 P.M., when the report of the council will be read and officers elected for 1918–19.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS, IRELAND.—The Reuben Harvey Memorial Prize has been awarded to William Robert Fearon, B.A., B.Sc., for an essay on "The Amylolytic Properties of Urine," and a second prize to Joseph Warwick Bigger, M.B., for one on "The Effect of Keeping on the Complementary Power of Guinea-pig Serum."

ROYAL MEDICAL BENEVOLENT FUND GUILD.—We may remind our readers of the garden party in aid of the Guild to be held in the Royal Botanic Gardens, Regent's Park, London, on Tuesday, July 16th, from 2.30–7 P.M. Lady Tweedy, chairman of the Guild, desires it to be known that inexpensive and useful gifts for the auction sales may be sent to her at 100, Harley-street, W. 1.

DEVON COUNTY MENTAL HOSPITAL.—The Committee of Visitors of the Devon County Asylum has decided to change the name of the institution to Devon County Mental Hospital. There are at present 1381 patients in the institution, and it has been arranged that some of the wards shall be fitted up to accommodate 200 sick and wounded soldiers.

PUBLIC HEALTH (TUBERCULOSIS) REGULATIONS, 1918.—In view of the recent alterations in the limits of age of men liable to military service, the Local Government Board have issued an Order requiring every medical officer of health to send to the Chief Commissioner of Medical Services particulars of every male person between the ages of 16 and 53 years notified as suffering from tuberculosis. The information, as heretofore, is to be regarded as confidential.

THE MCQUITTY EXHIBITION.—The McQuitty exhibition (founded as a memorial of the late Dr. W. B. McQuitty, physician to the Belfast Royal Victoria Hospital), awarded to senior students attending the Royal Victoria Hospital, Belfast, for excellence in clinical medicine, surgery, gynæcology, and ophthalmology (with pathology), has this year been gained by Mr. W. J. Lyttle.

BRISTOL ROYAL INFIRMARY.—The report for 1917 of the Bristol Royal Infirmary has just been issued. The medical statement shows that nearly 50,000 civilian patients and 4200 military cases were treated during the year. The adverse balance against the institution is now over £14,000. The committee make a strong appeal for increased financial support. What is more especially wanted is a regular income of £15,000 from annual subscriptions; at present this amounts to barely £10,000, but the Bristol residents have so generously supported their infirmary in the past that the required sum should be eventually raised.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The annual meeting of the association will be held on Tuesday and Wednesday, July 23rd and 24th, at Edinburgh. The presidential address will be delivered by Lieutenant-Colonel John Keay, R.A.M.C., at 2 P.M., on Tuesday, and papers will be read: Dr. W. Ford Robertson on "The Infective Factors in Some Types of Neurasthenia," and by Dr. Claud F. Fothergill on "The Prevention and Treatment of Neurasthenia and other Functional Nervous Breakdowns." On Wednesday, at 2.30 P.M., at the Edinburgh War Hospital, Bangour, Lieutenant-Colonel C. W. Cathcart and Major Rankine will give a demonstration on provisional artificial limbs, Sir Harold J. Stiles will show cases from the orthopædic department, Captain Edwin Bramwell cases illustrating functional neuroses, and Major D. G. Marshall and Dr. L. K. Davies will give a microscopical demonstration on malaria and dysentery.

WE are informed that a few cases of "influenza" can be received at the London Fever Hospital, Liverpool-road, London, N.

A SECOND edition of Sir Rickman Godlee's life of Lord Lister has just appeared (Macmillan and Co.), in which a few minor additions and corrections, chiefly of dates, have been made.

THE project of endowing a bed in the Royal City of Dublin Hospital in memory of the late Lieutenant-Colonel Henry Moore, R.A.M.C., has now assumed a definite form, and an influential committee has been elected for the purpose. Mr. G. Jameson Johnston, F.R.C.S.I., 13, Lower Fitzwilliam-street, Dublin, is the honorary treasurer.

UNDER the auspices of the London County Council a course of lectures on the Care of Mother and Child, with special reference to the work of midwives, is being given at the Birkbeck College, London, E.C., at 4 P.M. on July 15th and 22nd, by Dr. F. Truby King, C.M.G. The same course is also being given at the Morley College, Waterloo-road, London, S.E., at 4 P.M. on July 18th and 24th, by Dr. Truby King. The lectures will be illustrated by lantern slides and practical demonstrations.

Obituary.

SIR JAMES ACHESON MACCULLAGH, M.D. DUB., J.P.

WITH tragic suddenness the death of this well-known and much-esteemed member of the medical profession in Ireland occurred on the evening of Wednesday, July 3rd, in Roscommon. In his capacity as medical inspector of the Local Government Board for Ireland he had been engaged on the day of his death in his customary quarterly inspection of the Western District entrusted to his care. Half an hour before he died he had been seen walking through the streets of the town apparently in his usual health, which, however, had not been robust for some years. In the afternoon, while engaged in conversation he suddenly expired from valvular disease of the heart.

James Acheson MacCullagh was born in Dublin on Oct. 4th, 1854, and was the son of John MacCullagh, resident magistrate of Newry, co. Down, and of Wilhelmina, daughter of Acheson O'Brien, D.L., of Drumsilla, co. Leitrim. He was educated at Ennis College, co. Clare, and Trinity College, Dublin. He graduated in arts in 1875. In February, 1875, he joined the clinical class at the Meath Hospital and County Dublin Infirmary, and some two years later acted as clinical clerk to Dr. (now Sir) John Moore, physician to the hospital. In 1878 he graduated in medicine in the University of Dublin and in 1892 he proceeded to the degree of Doctor of Medicine, *stipendiis condonatis* in view of his attainments. Shortly after graduation Dr. MacCullagh became house surgeon to the Derry City and County Infirmary and the City of Londonderry Fever Hospital, having meanwhile taken the additional surgical qualification of the Royal Faculty of Physicians and Surgeons of Glasgow. He was also appointed a medical officer to one of the dispensary districts of Derry, and in that historic town he established his reputation as a painstaking and clever physician. Dr. MacCullagh became a member of the borough council, and in three successive years filled the office of Mayor of Derry; in 1896 he received the honour of knighthood.

Sir J. Acheson MacCullagh joined the medical staff of the Local Government Board for Ireland in June, 1898, and during the past 20 years the Western District has been the scene of his services. No part of Ireland makes greater demands on the energy and character of a medical inspector; it is subject to recurring outbreaks of typhus fever and enteric fever, though now happily to a much less extent than in past years. Working under such circumstances among a population of primitive ideas and habits, with sparse hospital facilities and undeveloped means of transit, and often cut off from ready communication with headquarters, a medical inspector needs to exhibit exceptional qualities of decision and resource. Sir Acheson MacCullagh in his long career was frequently called on to deal with epidemics of enteric and typhus fever under these conditions, and never failed to acquit himself with distinction. On one occasion in a remote island he had in face of a local panic to render personal assistance in removing typhus patients from their homes among the rocks and heather to the building which was fitted up as an emergency hospital. For his eminent services in this instance he was awarded the Order of St. John of Jerusalem. He could always be relied on to deal with a difficult situation with promptitude and sound judgment, and to his zeal and activity may be attributed the comparative immunity from serious outbreaks of fever which the isolated districts along the Atlantic seaboard have enjoyed in recent years. Although often called on to act with firmness, he succeeded in retaining the goodwill and support of the local authorities and officers with whom he was brought in contact. His long experience of typhus fever was constantly appealed to by medical officers in cases where diagnosis was obscure.

In an appreciative note to the writer of this memoir, touching the occasion and manner of Sir Acheson MacCullagh's death, his chief, Dr. E. Coey Bigger, Medical Commissioner of the Local Government Board for Ireland, writes under date July 6th:—

"I need hardly say that he was beloved by all who came in contact with him, not only in the department of the Local Government Board, but throughout his own district, where he was looked upon by the medical officers at large as a personal friend and a trusty adviser."

In 1880 he married Ida, a daughter of Mr. M. McClelland, J.P., of Glendarragh, Londonderry. J. W. M.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Maternity and Child Welfare Bill.

THE Maternity and Child Welfare Bill passed through Committee in the House of Commons on Tuesday, July 9th. The discussion turned largely on points connected with the machinery of local administration. A new clause in the names of Sir WATSON CHEYNE and Major ASTOR, proposing a transfer of the powers under the Bill to a Ministry of Public Health in the event of the latter being created, was ruled out of order.

HOUSE OF COMMONS.

WEDNESDAY, JULY 3RD.

Grading under the New Military Service Act.

Sir C. HENRY asked the Parliamentary Secretary to the Ministry of National Service whether he would state, of those medically examined who were within the new age-limit as provided by the Military Service Act, 1918, the percentage that had been passed into Grades 1 and 2.—Mr. BECK answered: The percentage of men placed by the medical boards in Grade 1 and Grade 2 is different in each year of age. A comprehensive percentage covering the whole of the new age-period would therefore tend to mislead those interested in the results of the medical examinations and yet would give information which might be of value to the enemy. In view of these circumstances it seems undesirable to publish the information asked for.

Commissions in the R.A.M.C.

Mr. PENNEFATHER asked the Under Secretary for War what qualifications were necessary to enable a man to be appointed a quartermaster and given a commission in the Royal Army Medical Corps; whether any Royal Army Medical Corps commissions had been given to schoolmasters, architects, and others as sanitary officers; and, if so, what were the qualifications necessary for the holding of such commissions.—Mr. MACPHERSON replied: Appointments of quartermasters in the R.A.M.C. are usually reserved for qualified warrant officers and non-commissioned officers and ex-warrant officers and non-commissioned officers of the R.A.M.C. In the early part of the war, owing to there being an insufficient number of R.A.M.C. candidates, a limited number of other persons were appointed. The officers of sanitary companies must be conversant with sanitary science but need not necessarily be medical men.

Appeal Tribunal on Officers' Disabilities.

Colonel ASHLEY asked the Parliamentary Secretary to the Ministry of Pensions whether he would give some information as to the composition of the appeal tribunal which dealt with the cases of officers who claimed that their disability was owing to, or was aggravated by, military service, but who had been unsuccessful in obtaining pensions; whether it included legal as well as medical members; when and where it sat; and whether he would state the steps necessary for an officer to take who desired to bring his case before such a tribunal.—Sir A. GRIFFITH-BOSCAWEN said in reply: The Appeals Board is constituted as follows: Chairman, Sir Ernest Pollock, K.C., M.P.; Sir Frederick Taylor, Bart., F.R.C.P., Sir Alfred Pearce Gould, F.R.C.S., and Captain Albert Smith, M.P. The Board meets at intervals as the cases to be dealt with require at Bridgewater House, St. James's. An officer whose appeal to the Ministry of Pensions has been considered and rejected may ask the Ministry for it to be referred to the Appeals Board. This is then arranged, and the officer informed of the date and place.

The Reported Deaths from Small-pox in Suffolk.

Mr. CHANCELLOR asked the President of the Local Government Board how many of the five small-pox deaths in the county of Suffolk reported in the quarterly return of the Registrar-General for the first three months of 1918 were civil, military, and naval respectively; and what was the vaccinal condition in each case.—Mr. HAYES FISHER replied: I am informed by the Registrar-General that the cases referred to were wrongly entered as small-pox. They should have been entered as whooping-cough.

Medical Treatment of School Children.

Mr. ROWNTREE asked the President of the Board of Education whether he could state the local authorities which were not providing medical treatment for school children.—Mr. HERBERT FISHER replied: The following is a list of the 39 local education authorities in England and Wales who, in 1917, did not submit schemes for sanction by the Board of Education under Section 12 (1) (b) of the Education Administrative Provisions Act, 1907, for medical treatment of school children: Isle of Ely, Kingston-on-Thames, Herefordshire, Morecambe, Hertfordshire, Middlesex, Mossley, Soke of Peterborough,

Ossett, Penzance, Staffordshire, Pontefract, Suffolk (East), Pudsey, Sussex (East), Royal Leamington Spa, Yorks (North Riding), Stalybridge, Carmarthenshire, Sutton Coldfield, Canterbury, Carmarthen, Dudley, Llanelly, Gateshead, Coseley, Great Yarmouth, Edmonton, Rotherham, Farnworth, Barnstaple, Felling, Berwick-on-Tweed, Ince-in-Makerfield, Congleton, Glossop, Oldbury, Hornsey, and Spenborough. In 1916 the number of such authorities was 43. It must not be assumed that all these authorities, while themselves incurring no expenditure, make no arrangements which secure, or aim at securing, the treatment of defects by private practitioners or voluntary organisations.

THURSDAY, JULY 4TH.

The Medical Service in France.

Sir WILLIAM COLLINS asked the Under Secretary for War whether, in view of the objections raised to recruiting medical men between 50 and 55 years of age and the allegations that medical men with the Army in France were insufficiently occupied, he had now further considered the desirability of making public the report of the committee which recently investigated the employment of medical men with the Army in France, and with what result.—Mr. MACPHERSON answered: There is no evidence that medical men in France are insufficiently occupied. It is not intended to publish the report of the committee.

Blackburn Medical Board.

Mr. SNOWDEN asked the Parliamentary Secretary to the Ministry of National Service whether he was now in a position to report the result of his inquiry into the methods of the Blackburn Medical Examining Board, who are passing totally unfit men into the Army.—Mr. BECK answered: Inquiries have been made into the methods of the Blackburn Medical Board, and no evidence can be found in support of the allegations made against it.

Medical Appeals in the Yorkshire Region.

Mr. JOWETT asked the Parliamentary Secretary to the Ministry of National Service how many appeals had been made on the ground of wrong grading as to medical fitness for military service at the West Riding of Yorkshire Appeal Court; and how many of such appeals had been granted.—Mr. BECK answered: The necessary information regarding the West Riding Appeal Tribunal is not available, but the following are the figures in respect of all appeal tribunals in the Yorkshire region during the period March 9th, 1918, to June 29th, 1918, inclusive: Number of applications made to an appeal tribunal in the Yorkshire region for re-examination by the medical assessors 1472, of which 252 cases have not yet been heard. Number of appeals allowed 283. It is not known in how many of these "appeals allowed" the medical assessors have altered the grading.

Extra Rations to Invalids.

Answering Sir FREDERICK HALL, Mr. PARKER (on behalf of the Ministry of Food) stated that food control committees were empowered to grant extra rations to invalids in the case of certain specified diseases only. Rheumatoid arthritis was not one of these. They were also empowered in any exceptional case of disease in which they were of opinion that a special allowance of meat or butter should be granted to forward the application to the Ministry of Food for the consideration of the medical adviser.

Supplies of Salvarsan Substitutes.

Mr. SNOWDEN asked the President of the Local Government Board what payments were made to the manufacturers of the salvarsan substitutes as supplied to local authorities, and from what funds were these payments made.—Mr. HAYES FISHER answered: The payments made by local authorities to manufacturers for supplies of salvarsan substitutes are at the minimum rates prescribed by the licences issued by the Board of Trade, and are at the same rate as those charged to Government departments for supplies of these preparations. The payments are made in the first instance from the funds of the local authorities, but 75 per cent. of their expenditure for this purpose is repaid by the Local Government Board.

MONDAY, JULY 8TH.

New Grading of the Older Men.

Answering Sir DONALD MACLEAN, Sir AUCKLAND GEDDES (Minister of National Service) said: Conferences have been held, with the President of the Local Government Board in the chair, between the Minister of National Service, chairmen of Tribunals, and other Members of Parliament, with the following result. It was agreed that the following classifications should be introduced for men of the new military age with regard to their fitness for military service. In future men of these ages passed by Medical Boards as fit for Grade I. will be classified as Grade I. (B i.). Similarly, men of these ages passed as fit for Grade II. will be classified Grade II. (B ii.), and those passed as fit for Grade III. will be classified as Grade III. (B iii.). These classifications will be distinctly marked on the grading cards. Instructions will be immediately issued by the Local Government Board to tribunals that in considering the relative military value of Grade I. (B i.) they must assume these men are "not fit to be trained for first line infantry," and that in considering the relative military value of men in the new classifications, Grade II. (B ii.) and Grade III. (B iii.), they must assume that they are of substantially less military value than men under the previous Military Service Acts who were placed in Grade II. or Grade III. respectively. Instructions will be given to each National Service representative that if and when requested by a tribunal he shall state whether a man placed in Grade III. has been found by the medical board to be fit only for sedentary work. Certain other points were discussed. The Minister of National Service informed the Conference that he had already issued instructions that no notice calling up a man of the new ages for service was to give shorter notice than 14 days, nor was it to be issued until ten days after the date upon which the man was due to report for medical examination. He further informed the Conference that he had instructed all Directors of National Service to see that the unauthorised use of books which recruits were asked to sign at medical boards, stating that they were satisfied with their examination, was to be discontinued, and that he had prohibited the adoption of any practice of this nature. It was agreed that greater publicity should be given to the opportunity of every man to apply for a second examination by a National Service Medical Board if he were dissatisfied with his first examination, and, further, that attention should be drawn by means of a printed intimation enclosed with the notice to report himself for medical examination of the limit of five days to the time within which he may apply to an Appeal Tribunal for permission to be examined by the Appeal Medical Assessors.

Mr. PRINGLE: Will an opportunity be given to the men who have come before tribunals to have their cases reopened in view of this decision?—Sir A. GEDDES: I do not think it would be quite easy to say that every case should be reopened, because many of the cases the tribunals might not wish to hear further. But I imagine that an application for a re-hearing will be considered.

Mr. ALBION RICHARDSON: Is it not the fact that a man is entitled as a matter of right to obtain a re-hearing of his case on the ground that a new and material fact has arisen since the case was last heard?—Sir A. GEDDES: He has a right to apply, but the tribunal may refuse the application.

Mr. FRANCE: Was the number of medical men on the board considered at the Conference and the length of time to be given to the medical examination?—Sir A. GEDDES: The number of doctors on the board was not discussed at the Conference. I think it was referred to once, but it was not discussed or made an important point.

Medical Grading.

Sir CHARLES HENRY asked the Parliamentary Secretary to the Ministry of National Service whether of those who were within the new age limit as provided by the Military Service Act, 1918, who were medically examined up to June 30th, the percentage passed into Grade I. and Grade II. was in excess of or below the percentage that he anticipated when the measure was passed; and, if so, to what extent in percentage.—Mr. BECK replied: Of the men medically examined up to June 29th who were above the former military age the percentage passed as Grade I. and Grade II. was about 12 per cent. less than anticipated. I must again point out that these percentages are based on a review at present necessarily incomplete and are liable to be misleading.

WEDNESDAY, JULY 10TH.

A Ministry of Health.

Answering Major ASTOR, Sir G. CAVE (Home Secretary) said: The proposal for a Ministry of Health Bill has been referred to the Committee of Home Affairs, and was considered by the Committee at its first meeting yesterday. After discussion it became clear that the proposal raised questions of some difficulty, and it was decided to adjourn the consideration of the Bill to a special meeting of the Committee to be held early next week. It is, I think, obvious that it would be impossible to pass such a Bill before the adjournment of the House in August next.

Major ASTOR: Will the Bill be introduced before the adjournment?—Sir G. CAVE: I cannot answer that until the Committee has decided.

At a later stage Major ASTOR proposed to ask leave to move the adjournment of the House in order to raise, as a matter of urgent public importance, the delay in introducing a Bill to set up a Ministry of Health.

The SPEAKER, however, in declining to allow the honourable and gallant gentleman to take this course, pointed out that a blocking motion was down on the order paper, and this, combined with the probability that there would be an opportunity of raising the matter within a reasonable time, shut out such a motion for the adjournment.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

R. B. Campbell to be temporary Fleet-Surgeon.

To be temporary Surgeons: D. J. Micah, J. V. Mainprize, D. S. Prentice.

To be temporary Dental Surgeons: T. P. H. Roberts, R. Page, J. C. Payne.

ROYAL ARMY MEDICAL CORPS.

Major A. L. B. Green, Hereford Regiment (T.F.), to be temp Major.

Temporary Captains relinquishing the acting rank of Major on re-posting: T. Martin, H. J. de Brent, A. S. K. Anderson, T. T. Higgins, F. C. Tibbs.

Temporary Captains to be acting Majors: J. F. R. Gairdner, J. McN. Murray, N. G. W. Davidson, H. Dudley, R. H. R. Whitaker, R. Hodson, J. G. Johnston, R. J. Vernon, S. J. L. Lindeman, A. M. Wood, R. R. Blair, W. B. G. Angus, H. C. Watson.

To be acting Majors while specially employed: Temp. Major M. Bridgman, Temp. Major C. M. Row, Temp. Capt. E. W. Willett.

To be Captains:—Captains from Special Reserve: R. A. Hepple, J. Y. Moore, A. L. Robertson, T. I. Dun, R. H. Leigh, H. G. Trayer, R. A. Austin, C. Popham, C. de W. Gibb, G. P. Kidd, S. D. Robertson, T. K. Boney, S. S. B. Harrison, H. D. Lane, F. C. Chandler, H. S. Milne, Q. V. B. Wallace, J. P. Quinn, J. B. Fotheringham; Temp. Capts. W. E. Adam, C. S. P. Hamilton, C. A. Bernard, R. E. Gibson, K. P. MacKenzie, E. G. Foley, S. Smith, J. H. Fletcher, J. H. Barry, G. D. R. Carr, D. H. Hadden, E. F. W. MacKenzie, C. Scales, A. Wilson, C. K. G. Dick, T. R. Snelling.

To be temporary Captains: Capt. S. S. Dunn (ret., Australian Army Medical Corps), attached R.A.M.C.; Temp. Lieut. A. J. Ferguson.

To be Lieutenants, and to be granted the temporary rank of Captain:—Captains from Special Reserve: F. J. Hallinan, J. H. Baird, W. D. Anderton, T. D. Inch, W. T. Hare, J. D. Proud, J. E. Rusby, J. H. C. Walker, M. B. King, W. Hunt, C. A. Slaughter, W. H. Ferguson, G. G. Drummond, F. G. L. Dawson, W. M. Cameron, A. Rodd, D. J. Batterham. Temporary Captains: T. J. L. Thompson, A. G. P. Hardwick, R. D. Davy, J. M. McKenzie, A. J. Hickey, W. J. Robertson, C. Russell, W. J. Knight, R. A. Mansell, W. L. Partridge, W. D. Newland, L. S. C. Roche, G. T. Baker, G. T. Garraway, G. E. Spicer. Captains from Territorial Force: S. Robertson, R. T. Jones.

Temporary Lieutenants to be temporary Captains: W. F. Erskine, O. May, G. A. Hoffmann, R. Alderson, W. P. Miles, J. Lambie, H. O'H. O'Neill, C. W. Preston-Hillary, H. G. F. Spurrell, S. E. Atkinson, J. Avery, H. V. Mitchell, W. B. Wilson, P. W. Hampton, R. Crawford, K. McK. Duncan, J. Ritchie, W. Anderson, W. Lilico, H. B. Wickham, J. Hunter, J. F. Bridge, J. Wylie, S. D. Craig, L. Hutchinson, E. S. Prior, E. O'D. Graham, R. Duncan, H. O. West, E. W. Witney, S. H. White, G. H. C. Lumsden, A. E. Knapp, Q. Madge, O. V. Payne, G. W. Curtis, W. A. Allison, E. Tate, J. D. Ferguson, A. J. May, A. B. Sykes, A. C. Renton, R. H. Thomson, F. G. Ralphs, W. H. F. Eales, J. A. Wood, T. Clarke, H. R. Wright, F. W. Pollard, V. G. Best, T. Gillespie, W. E. Waymark, J. Williamson, S. Wood, J. A. McSweeny, R. E. G. Gray, A. E. Leapingwell, H. T. P. Young, H. M. Roberts, J. F. Peart, J. Brown, W. B. Primrose, W. Weir, J. B. Aickin, J. A. Mearns, W. Mair, J. Steward, G. A. Pratt, A. H. B. Hartford, R. Peart, W. W. Cawlow, P. Talbot, J. C. Wootton, A. W. Ewing, W. Rotherham, A. Evans, A. C. Russell, J. Wilson, C. M. Ockwell, J. Dunbar, T. P. Robertson, L. Welply, F. H. Fuller, N. E. Sampey, J. J. F. Knight, C. B. Ticehurst, F. W. MacKichan, R. Brown, J. Scott, F. H. Dodd, J. H. Jones, D. P. Lindsay, L. H. Werden, N. Gray, J. S. Wilson, C. L. Driscoll, E. E. Paget-Tomlinson, G. C. Anderson, H. W. Horan, R. G. Smith, P. D. Hunter, B. J. Cusack, E. A. Sanders, J. R. Munro, R. J. W. McKane, J. Ferguson, D. D. Ritchie, R. J. Bentley, S. H. Sweet, H. Spurway, A. I. Shepherd-Walwyn, G. E. Thornton, W. S. Graham, J. K. Manson, J. Dalgleish, J. L. Meynell, E. M. Mall, S. W. White, J. K. Reid, W. Tregea, W. B. Clarke, S. N. Galbraith, E. MacM. Mahon, J. B. Cook, J. Grogono, E. W. Grogono, E. P. Harding, B. Kelly, C. A. B. Horsford, C. A. Lawrence, J. B. Banister, J. Ellenbogen, E. Morrison, P. J. Hay, J. A. W. Ponton, J. C. Ryan, B. Suggit, F. H. Diggle, A. M. Malcolmson, A. Tait, M. S. Wood, A. R. Taylor, G. H. Hackney, O. Smith, J. Cross, C. H. G. Lyall, E. Morgan, T. A. Davies, T. Kennedy, B. B. Phillips, C. B. Gerrard, C. B. M. Aldridge, R. N. Woodsend, J. McGibbon, R. T. A. Patchett, L. Wayne-Morgan, A. H. Gray, F. Crooks, H. Baird, V. J. Rigg, M. Aikman, P. L. Pollard, W. Cook, R. S. Strachan, D. O. Fairweather, T. Fraser, C. Brash, R. Taylor, J. D. Oliver, J. A. Powell, J. N. M. Sutherland, A. Matheson, F. L. Thomas, J. W. A. Wilson, D. L. G. Radford, F. A. Morrison, D. P. Smith, P. A. Hendley, S. W. Swindells, A. Westerman, G. Eager, E. G. D. Benson, G. Milne, C. M. Stevenson, U. Marks, T. B. Vaile, A. H. Duckett, J. J. Todd, D. W. Tacey, H. R. Cran, R. N. Dunlop, J. G. Woolham, N. H. M. Burke, J. D. Hartley, J. D. Jones, G. Denholm, A. F. Waterhouse, M. D. Mackenzie, L. D. Callander, J. Dawson, H. C. Taylor, J. B. H. Holroyd, H. E. Middlebrooke, W. H. Parkinson, H. Maffin, T. Brodie, G. L. Langley, F. de R. Martyn, W. B. Peacock, A. O. Bisson, J. F. Lindsay, F. McG. Loughnane, C. Gray, G. D. Dawson, H. A. Mason, J. Gilchrist, J. Orr, J. W. McDougall, G. Mowat, D. R. C. Shepherd, C. L. Stewart, E. C. Roberts, H. F. Marshall, H. R. L. Allott, F. F. C. Willington, R. C. Pitt, A. J. Adkins, W. H. Gibson, J. T. R. MacGill, D. Longwill, M. J. Macauley, F. H. Mosse, D. P. Macdonald, L. D. Wright, R. Fraser, E. J. Manning, C. J. Taylor, W. Duguid, St. G. M. L. Homan, C. W. C. Harvey, G. E. A. Mitchell, T. R. Couldrey, P. J. O'Brien, J. Fortune, I. B. Richardson, C. H. Gunson, W. B. A. Moore, S. G. Johnson, R. W. Dale, A. G. Bland, A. S. Findlay, J. A. Hagerty, H. P. Wright, F. D. Scott, W. H. Gowans, A. G. Stewart, J. W. Robertson, G. Garland, A. R. Jennings, H. Thorp.

A. E. J. Barcroft and T. Bell, late temporary Captains, are granted the honorary rank of Captain.

Temp. Hon. Lieut. D. A. Bartley to be temporary honorary Captain.

Officers relinquishing their commissions: Temp. Major W. Robinson (on ceasing to be employed at the Sutherland War Hospital); Temp. Capts. K. M. B. Simon, F. M. Harvey, W. W. D. Thomson, N. W. Jenkin, L. M. Davies, D. T. Evans; Temp. Lieuts. J. Rusk, N. Morris, P. J. D. O'Malley, W. R. Read, J. Good; Temp. Hon. Lieuts. C. S. Gilman, M. C. Pruitt.

Canadian Army Medical Corps.

Temp. Col. C. A. Hodgetts is seconded for duty with the Ministry of National Service.

Temp. Major J. G. W. Johnson to be acting Lieutenant-Colonel while specially employed.

Temporary Majors (acting Lieutenant-Colonels) to be temporary Lieutenant-Colonels: N. B. Gwyn, H. H. Moshier.

Temp. Lieut. R. Robillard to be temporary Captain.

F. D. Derrick to be temporary Lieutenant.

VOLUNTEER FORCE.

Medical Volunteer Corps.—City of Aberdeen: M.O. and Temp. Capt. W. S. Cheyne, from 1st Bn. City of Aberdeen Vol. Reg., to be temp. Capt. M.O. and Temp. Capt. J. O. Wilson, from 2/1st Bn. County of Aberdeen Vol. Regt., to be temp. Capt. M.O. and Temp. Lt. R. A. Slessor, from 1/1st Bn. County of Aberdeen Vol. Regt., to be temp. Lt. Anglesea: M.O. and Temp. Capt. G. L. Jones, from 1st Bn. Anglesea Vol. Reg., to be temp. Capt. Ayrshire: M.O. and Temp. Capt. W. McAlister, from 2/1st Bn. Ayrshire Vol. Regt., to be temp. Capt. M.O. and Temp. Lt. F. McKenna, from 1/1st Bn. Ayrshire Vol. Regt., to be temp. Lt. Banffshire: M.O. and Temp. Lt. G. C. Grant, from 1st Bn. Banffshire Vol. Regt., to be temp. Lt. Bedfordshire: M.O. and Temp. Capt. F. B. W. Phillips, from 1st Bn. Bedfordshire Vol. Regt., to be temp. Capt. M.O. and Temp. Lt. N. Edwards, from 2nd Bn., Bedfordshire Vol. Regt., to be temp. Lt. Berkshire: M.O. and Temp. Lt. J. T. R. Miller, from 1st Bn., Berkshire Vol. Regt., to be temp. Lt. Berwickshire: M.O. and Temp. Capt. J. MacWatt, from 1st Bn., Berwickshire Vol. Regt., to be temp. Capt. City of Bristol: M.O. and Temp. Capt. H. I. Owen, from 1st Bn., City of Bristol Vol. Regt., to be temp. Capt. M.O. and Temp. Capt. F. E. Peake, from 2nd Bn., City of Bristol Vol. Regt., to be temp. Capt. Buckinghamshire: M.O. and Temp. Lt. H. Barrett, from 1st Bn., Buckingham Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. J. D. J. Harris, from 2nd Bn., Buckinghamshire Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. H. T. Wickham, from 3rd Bn., Buckinghamshire Vol. Regt., to be temp. Lt. Cambridgeshire: M.O. and Temp. Lt. A. J. Laird, from 1st Bn., Cambridgeshire Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. F. Robinson, from 2nd Bn., Cambridgeshire Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. F. W. Mawby, from 3rd Bn., Cambridgeshire Vol. Regt., to be temp. Lt. Carmarthenshire: M.O. and Temp. Capt. E. Evans, from 1st Bn., Carmarthenshire Vol. Regt., to be temp. Capt. Carnarvonshire: M.O. and Temp. Lt. R. R. Jones, from 1st Bn., Carnarvonshire Vol. Regt., to be temp. Lieut. Cheshire; M.O. and Temp. Lt. L. C. A. Savatard, from 1st Bn., Cheshire Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. L. Pearson, from 2nd Bn., Cheshire Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. M. Young, from 3rd Bn., Cheshire Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. C. McA. Wilson, from 4th Bn., Cheshire Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. F. Cant, from 5th Bn., Cheshire Vol. Regt., to be temp Lt. M.O. and Temp. Lt. T. H. Smith, from 9th Bn., Cheshire Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. W. R. J. Garson, from 10th Bn., Cheshire Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. A. Banks, from 11th Bn., Cheshire Vol. Regt., to be temp. Lt. Clackmannanshire: M.O. and Temp. Capt. D. W. Currie, from 1st Bn., Clackmannanshire Vol. Regt., to be temp Capt. Cornwall: M.O. and Temp. Capt. A. J. Little, from 1st Bn., Cornwall Vol. Regt., to be temp. Capt. Cumberland: M.O. and Temp. Lt. J. R. S. Anderson, from Cumberland Motor Vol. Corps, to be temp. Lt. M.O. and Temp. Lt. F. H. Morison, from 1st Bn., Cumberland Vol. Regt., to be temp. Lt. Derbyshire: M.O. and Temp. Capt. G. S. Sims, from 1st Bn., Derbyshire Vol. Regt., to be temp. Capt. M.O. and Temp. Lt. W. E. Bond, from 2nd Bn., Derbyshire Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. W. R. Paton, from 3rd Bn., Derbyshire Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. A. Court, from 4th Bn., Derbyshire Vol. Regt. to be temp. Lt. M.O. and Temp. Lt. G. E. Sawdon, from 6th Bn., Derbyshire Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. S. J. Parkhill, from 7th Bn., Derbyshire Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. W. A. Walters, from 8th Bn., Derbyshire Vol. Regt., to be temp. Lt. Dorsetshire: M.O. and temp. Lt. G. G. Morrice, from 1st Bn., Dorsetshire Vol. Regt., to be temp. Lt. Dumbartonshire: M.O. and temp. Capt. J. R. F. Cullen, from 1st Bn., Dumbartonshire Vol. Regt., to be temp. Capt. City of Dundee: M.O. and temp. Capt. D. J. Forbes, from 1/1st Bn., City of Dundee Vol. Regt., to be temp. Capt. Durham: M.O. and temp. Lt. J. J. Weir, from 1st Bn. Durham Vol. Regt., to be temp. Lt. M.O. and temp. Capt. J. C. French, from 2nd Bn., Durham Vol. Regt., to be temp. Capt. M.O. and temp. Lt. S. G. Mostyn, from 4th Bn., Durham Vol. Regt., to be temp. Lt. M.O. and temp. Lt. N. Philipson, from 9th Bn., Durham Vol. Regt., to be temp. Lt. M.O. and temp. Lt. A. D. Kelly, from 12th Bn., Durham Vol. Regt., to be temp. Lt. City of Edinburgh: M.O. and temp. Lt. W. G. Aitchison-Robertson, from 1/1st Bn., City of Edinburgh Vol. Regt., to be temp. Lt. M.O and Temp. Capt. H. Hay, from 2/1st Bn. City of Edinburgh Vol. Regt., to be temp. Capt. Essex: M.O. and Temp. Lt. G. F. Wilson, from 1st Bn. Essex Vol. Regt., to be temp. Lt. M.O. and Temp. Capt. J. H. Salter, from 3/2nd Bn. Essex Vol. Regt., to be temp Capt. M.O. and Temp. Lt. F. Isdell, from 4th Bn. Essex Vol. Regt., to be temp. Lt. M.O. and Temp. Lt. G. F. Cooper, from 5th Bn. Essex Vol. Regt., to be temp. Lt. Fifeshire: M.O. and Temp. Capt. A. L. Curror, from 1st Bn. Fifeshire Vol. Regt., to be temp. Capt. County of London: M.O. and Temp. Lt. A. H. Gibbon, from County of London Vol. Eng., to be temp. Lt. West Riding: P. Bennett to be temp. Lt. Norfolk: R. Grant to be temp. Capt. Lancashire: Temp. Capt. G. Stowell to be temp. Major. Northumberland: M. Thompson to be temp. Lt. Kent: F. Holgate-Smith to be temp. Lt. Lincolnshire: H. S. McIntosh to be temp. Lt. Middlesex: Temp. Major P. G. Darvil-Smith, from Middlesex Motor Volunteer Corps, to be temp. Major. Suffolk: Lt.-Col. W. Keates (late the Suffolk Regt.) to be temp. Lieut.-Col; to be temp. Majors: Lieut. H. G. Wood-Hill (late R.A.M.C.), Lieut. H. E. Barnes (late R.A.M.C.), R. W. Mullock (late Surgeon-Captain, 3rd E.A., Howitzer Brigade), Capt. J. R. Dobbin (late R.A.M.C.), J. F. C. Hossack, A. M. N. Pringle, C. K. Moseley, D. A. Carruthers (late Captain, 1st Forfar R.G.A. (V.)); to be temp. Capts.: W. F. Fryer, H. P. Sleigh, D. N. Seth-Smith, G. H. Ransome, M. H. Mannigan (late Lt., 2nd V.B., Suffolk Regt.), G. I. T. Stewart, S. O. Eades, A. C. Young, G. R. Fox, F. C. Wetherell, E. A. C. Baylor (late Surg.-Lt. 1st V.B., "The Buffs," East Kent Regt.)

ROYAL AIR FORCE: *Medical Branch.*

The undermentioned are granted temporary commissions as Lieutenant-Colonels: Fleet-Surgs., R.N., R. H. Mornement, W. H. Pope, N. J. Roche, J. St. J. Murphy; Staff-Surg., R.N., H. Cooper. As Captain: A. E. Henton. As Lieut.: A. K. Soutar, F. H. Wallace.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

DALY, T. J., F.R.C.S. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Mullingar District of the county of Westmeath.

MACKENZIE, RACHEL E. W., M.B. Lond., Assistant Medical Officer of Health for the Borough of Woolwich.

ROBERTSON, D., Certifying Surgeon under the Factory and Workshop Acts for Aberdeen.

Vacancies.

For further information refer to the advertisement columns.

Alnwick Infirmary.—H.S. £150.
Birmingham, St. Chad's Hospital.—Res. M.O. £150.
Birmingham University.—Sen. Demonstrator of Anatomy. £250.
Bristol Education Committee.—Female Asst. School M.O. £350.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Bristol University.—Demonstrator in Physiology.
Great Northern Central Hospital, London, N.—H.S. £100.
Hampstead General and North-West London Hospital.—Cas. O. £150.
Hospital for Consumption and Diseases of the Chest, Brompton.—Asst. Res. M.O. £100.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Asst. Phys.
Hospital for Sick Children, W.C.—H.S. £100.
Kensington Dispensary and Children's Hospital.—Res. M.O. £180.
Kensington and Fulham General Hospital, S.W.—Res. M.O. £250.
London County Mental Hospital, Coulsdon, Surrey.—L.T. Asst. M.O. 7 guineas a week.
Maidstone, West Kent General Hospital.—Sen. H.S. £250. Also Jun. H.S. £125.
Manchester County Asylum, Prestwich.—L.T. £7 7s. per week.
Manchester Education Committee.—Asst. School M.O. £350 to £500.
Ministry of Pensions, Allerton Tower Home of Recovery, Liverpool.—Res. M.O. £450.
Northamptonshire Sanatorium, Creaton.—Med. Supt. £300.
Portsmouth Royal Hospital.—H.S. £200.
Queen Mary's Hospital for the East End, Stratford.—H.S.
Royal Free Hospital, Gray's Inn-road, W.C.—Female Cas. H.S. (£100), and Gynæcological Registrar.
St. Mark's Hospital for Cancer, Fistula, and Other Diseases of the Rectum, City-road, E.C.—H.S. £250.
St. Mary's Hospital, Paddington.—Asst. Path. £100.
Sheffield Royal Hospital.—H.P. £140. Also Cas. O. £135.
Sheffield Royal Infirmary.—H.S. £120. Also H.P. £120.
Stockport Infirmary.—Jun. H.S. £200.
Stoke-on-Trent County Borough, Stanfield Sanatorium.—Asst. Tuberc. O. £360.
Walsall Education Committee.—L.T. Sch. Med. Insp. £400.
West London Hospital, Hammersmith-road, W.—H.S. £4 4s. weekly.
West Riding of Yorkshire, Maternity & Child Welfare.—Med. Prac. £400.
York City.—Temp. Tuberc. O. £500.
York County Hospital.—Female H.S. £200.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Aberdare, Glamorgan.

Births, Marriages, and Deaths

BIRTHS.

ALLNUTT.—On June 30th, at Hornchiffe-road, Blackpool, the wife of Captain E. Bruce Allnutt, M.C., R.A.M.C., of a son.

MEYER.—On July 2nd, the wife of Surgeon R. Meyer, D.O. Oxon., B.A., M.D., F.R.C.S.E., R.N., of a son.

RUXTON.—On July 1st, to Captain H. W. B. Ruxton, R.A.M.C., and Mrs. Ruxton (*née* M. H. Naylor, M.B., B.S. Lond.), of The Mall, Brentford, W.—a daughter.

MARRIAGES.

HARVEY—HENDERSON.—On July 5th, at the Friends' Meeting House, Golders Green, Surgeon W. F. Harvey, R.N., to Margaret Muir, elder daughter of John Henderson, of Coringham-road, London, N.W.

WARD—GOURLEY.—On July 3rd, at St. Mary Abbot's, Kensington, Temp. Surgeon George E. S. Ward, M.D., R.N., to Una, youngest daughter of the late Dr. Gourley, of West Hartlepool, and Mrs. Gourley, of Harrogate.

DEATHS.

COWAN.—On July 1st, at Tenby (suddenly), John James Cowan, M.B., C.M. Edin.

FOULERTON.—On June 29th, at Pembridge-villas, John Foulerton, M.D., F.R.C.P. & S. Edin., F.G.S., in his 90th year.

KEALY.—On July 6th, at Ashley House, Gosport, J. W. Gregory Kealy, M.R.C.S., L.R.C.P., aged 60.

SENIER.—On June 29th, at Galway, Alfred Senier, M.D., D.Sc., Ph.D., Professor of Chemistry and Lecturer in Medical Jurisprudence and Hygiene in University College, Galway.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

Tuesday, July 16th.

GENERAL MEETING OF FELLOWS, at 5 P.M.
Ballot for Election of Candidates to the Fellowship. (Names already circulated.)

Wednesday, July 17th.

OCCASIONAL LECTURE by Colonel William Hunter, C.B., A.M.S., in the Robert Barnes Hall, at 5.30 P.M., on
"The Prevention and Arrest of Lice-borne Diseases (Typhus, Relapsing, and Trench Fevers) by New Methods of Disinfection. A summarized account of two and a half years' practical experiences in the Eastern War Areas." (Illustrated by lantern.)

MEETINGS OF SECTIONS.

EPIDEMIOLOGY.—This Section is specially invited to attend Colonel Hunter's Lecture.

Thursday, July 18th.

DERMATOLOGY (Hon. Secretaries—J. E. R. McDonagh, Henry MacCormac; Acting Hon. Secretary—S. E. Dore): at 5 P.M.
Cases will be shown at 4.30 P.M.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of Post-Graduate Course were given in issue of June 29th.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.

THE THROAT HOSPITAL, Golden-square, W.
MONDAY, July 15th.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

COLLEGE OF AMBULANCE, 3, Vere-street, Cavendish-square, W.
Course of Special Lectures and Demonstrations on Ambulance Work and First Aid (illustrated as far as may be possible and followed by a Discussion).
THURSDAY, July 18th.—4.30 P.M., Lecture X.:—Mr. G. F. Shee: The Work of the Royal National Life Boat Institution.

EDITORIAL NOTICES.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

Offices: 423, STRAND, LONDON, W.C. 2.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. G. R. Anderson, Southport; Australian Imperial Force, Lond., Surg.-Gen. of; Col. J. G. Adami, A.D.M.S.; Mr. W. D. Anderson, Keswick; Messrs. Adlard and Son and West Newman, Lond.

B.—Board of Agriculture and Fisheries, Lond.; Board of Trade, Coal Mines Dept., Lond.; Babies of the Empire, Lond., Sec. of; Capt. W. Langdon Brown, R.A.M.C.(T.); British Women's Hospital Nation's Fund for Nurses, Lond., Committee of; Mr. J. Bell, Lond.; Dr. C. A. Bucklin, Glasgow; Sir Thos. Barlow, Bt., K.C.V.O.; Dr. J. Brownlee, Lond.; Board of Trade, Asst. Sec. of, Lond.; British Museum (Natural History), Lond., Director of.

C.—Dr. F. G. Crookshank, Lond.; Dr. J. B. Christopherson, Khartoum; Children's Country Holidays Fund, Lond.; Dr. A. K. Chalmers, Glasgow; Mr. F. H. A. Clayton; Mr. J. H. Clements, Winkleigh; Mr. A. L. Cameron, New York; Major W. B. Cameron, M.R.C.; Mr. A. H. Cheatle, Lond.

D.—Dr. V. Dickinson, Lond.

E.—Eugenics Education Society, Lond.

F.—Mr. H. G. Fell, Lond.; Factories, Chief Inspector of, Lond.

G.—Pte. P. Gibson, R.A.M.C.(T.); Mr. F. Golla, Sunningdale.

H.—Major A. T. Henderson, C.A.M.C.; Dr. J. B. Hurry, Lond.; Prof. R. Howden, Newcastle-upon-Tyne.

I.—Ilford, Medical Officer of Health of.

J.—Capt. W. Jameson, R.A.M.C.

K.—Mr. W. Kean, Glasgow.

L.—London Hospital Medical College, Sec. of; London County Council, Chairman of; London and Counties Medical Protection Society, Sec. of; Local Government Board, Sec. of.

M.—Medico-Psychological Association of Great Britain and Ireland; Dr. N. Macleod, Shanghai; Mr. J. F. McMillan; Mr. J. Y. W. MacAlister, Lond.; Major W. E. McKechnie, I.M.S.

N.—Miss J. Neil-Kerrison, Smethwick; Norwich, Medical Officer of Health of; *National Food Journal*, Lond.

O.—Mr. J. Offord, Lond.

P.—Poole Rural District, Medical Officer of Health of; Dr. F. C. Poynder, East Grinstead; Mr. R. H. A. Plimmer, Lond.; Dr. F. Prosser, Rainford.

R.—Miss E. A. Rout, Lond.; Mr. R. T. Reynolds, Redruth; Royal Sanitary Institute, Lond.; Royal College of Surgeons in Ireland, Dublin, Registrar of; Dr. C. Rolleston, Stamford.

S.—Sir Edward Schäfer, Edinburgh; Dr. A. E. Stansfeld, Lond.

T.—Dr. J. Tatham, Oxted; Dr. C. J. Thomas, Lond.

U.—University of Durham College of Medicine, Newcastle-on-Tyne, Sec. of; Under-Secretary of State, Home Office.

W.—Capt. A. H. Watson, R.A.M.C.; West London Medico-Chirurgical Society; Major F. R. Walshe, R.A.M.C.

Notes, Short Comments, and Answers to Correspondents.

FOLK-MEDICINE IN THE ARAN ISLANDS.

IN her "Glimpses of My Life in Aran," Miss Hedderman, a district nurse, describes a number of survivals which in the past must have baffled medical men in many districts nearer the centres of civilisation than the remote and often inaccessible Aran Islands. Belief in the evil eye was once universal; it is still firmly rooted among the popular superstitions of the Western Irish.

"A child bitten by a dog was thought to have been 'looked upon,'" she writes, "by a person possessing this evil influence." A hydrophobia cure, once universal, had been resorted to and the child had been treated with a hair of the dog that bit it. The hair of the shaggy animal had been rubbed stiffly across the boy's mouth, causing intense torture to the bleeding patient. We are not told where the bite was, but we presume it was on the lips. The dog itself had had its hair dragged off and had then been drowned in the sea. It was three weeks before Miss Hedderman, a patient apostle of Listerism, could free the wound from the "hair-conveyed" poison by the use of warm boric lotion.

The "saliva cure" met Miss Hedderman at every turn in connexion with the evil eye. The person accused of casting a spell can also cure it by spitting. Sputum was doubtless once held to convey the soul or, like blood, to contain the soul and, on the homœopathic principle, the magician's soul can cure the evil wrought by the magician's eye. In cases of acute disease

"the first resort is the saliva cure, and should the person accused of casting the spell resent the insinuation and not be friendly disposed in that special direction, the patient's progress and relief from suffering are supposed to be hindered until he [the caster of the spell] enters the sick-room and saturates the bed-clothes with this filthy secretion."

A new-born child in Aran must be duly spat upon by the first person entering the lying-in chamber, and the compliment must be extended first to the mother, then to the medical man, nurse, or other attendant. The Aran islanders regard this spitting as a potent charm. In other parts of the world people spit on an object—a coin, for instance, in the case of a first sale in a new shop—"for luck." Readers of Dickens will remember that when Martin Chuzzlewit lay ill of a fever a local resident spat a kind of halo round the sick man's head. Dickens sees in this achievement only an instance of bravado and nastiness, and does not suggest the performance of some dimly remembered ritual similar to that described in Miss Hedderman's book.

Magic and witchcraft, like therapeutic virtue, are supposed to reside in certain persons or families. Thus the light-haired or red-haired woman is regarded as much of a witch, and this belief seems to point to a time when Ireland, inhabited by dark-haired people, was invaded by the Norse or the hated Saxon, or even by an older race.

Fairies, according to some folklorists, are the representatives in modern superstition of ancient races, often smaller in stature than those who have supplanted them. Fairies are mysterious, often malevolent, and given to kidnapping children, and this is the character often borne by an aboriginal race, driven into forests and swamps by newcomers and given to furtive reappearances and acts of treachery. The Aran islanders believe that fairies meet them in certain places, as for instance "on the rocks" of the lonely seashore, and that they there work spells on them, damaging to health.

A belief of the Aran Islands mothers is to the effect that sick children are changelings. Thus Miss Hedderman numbered among her charges a little golden-haired girl very ill of pneumonia. The mother, on being told that only the greatest care would keep the child alive, replied, sadly but emphatically: "She is gone; she has been taken by the fairies," who "have substituted 'that object,'" pointing to the poor little patient on the bed.

The Aran women, like all tribal women, are truer to the primitive type than the men, who travel and come under the influence of modern ideas.

RESUSCITATION FROM DROWNING.

IN THE LANCET of July 6th (p. 30), under this heading, we reported that Dr. F. J. Waldo, the City coroner, had called attention to the lack of proper provision in riparian districts for the resuscitation of people apparently drowned. Another aspect of the subject was dealt with at the College of Ambulance (3, Vere-street, London, W.), on July 4th, by Mr. William Henry, the founder and secretary of the Royal Life-Saving Society, who, on the occasion of the eighth of the series of lectures on First-aid, gave a demonstration of the methods of teaching the principles of saving life from drowning. Dr. T. N. Kelynack, who presided, said the objects of the Royal Life-Saving Society were to promote technical education in life-saving and the resuscitation of the apparently drowned, and to stimulate public opinion in favour of the general adoption of swimming and life-saving in schools and other establishments. Previous to the demonstration by a team of boys from Lady Owen's School, Islington, who illustrated the five methods of rescue, the three methods of release from the clutch of a drowning person, and the Schäfer method of resuscitation, Mr. Henry said that the society was started in London some 26 years ago and there were now branches in every capital in the British Empire, while in Australia and New Zealand it was subsidised by the Governments. In the London district last year the members of the society had saved the lives of over 200 people without the loss of a single rescuer. Swimming and life-saving were just as good exercises as cricket, and he hoped would some day be used instead of that sport in schools. It was not necessary for the rescuer to be a stronger person than the rescued nor an expert swimmer, and in the records of the Royal Humane Society for 100 years only two cases could be found of champion swimmers receiving awards for life-saving. The system was being taught at Harrow School, where the teaching was in charge of one of the senior boys. Sir James Cantlie, who moved a vote of thanks to the lecturer, directed attention to the importance of first-aid instruction, remarking that no first-aid was taught in hospitals to either nurses or doctors. While the Schäfer method of resuscitation might perhaps be the best for use in cases of drowning, it was impossible to use it in many accidents, on the operating-table, for instance, and other methods should not be forgotten.

[It may be mentioned that the Hunterian Lectures by Professor Arthur Keith (THE LANCET, 1909, i., 745, 825, 895) give, besides an historical summary of the Royal Humane Society, an account of the methods used since 1774 for the resuscitation of the apparently drowned.]

AN EXTEMPORISED CENTRIFUGE.

Major W. E. Home, R.A.M.C., sends us a note on an extemporised electric centrifuge devised by Private P. Gibson, R.A.M.C. (T.), first-class nursing orderly and laboratory attendant of H.M.A.T. *Essequibo*. The horizontal arm of a hand centrifuge with the buckets is taken and lashed to two of the arms of a ventilating fan hanging from the laboratory roof. When the fan is switched on the buckets fly out, the velocity reached being sufficient to throw down urinary sediments and even red blood cells. The device may be of use to others.

THE USE OF FRUIT-STONES FOR WAR PURPOSES.

A MEMORANDUM marked "Urgent" has been sent from the Local Government Board to town councils, urban and rural district councils, boards of guardians, and other Poor-law authorities, stating that *all fruit-stones*, including *date-stones*, and *hard nut-shells* are immediately required for an *urgent war purpose*. The National Salvage Council has been requested to arrange the collection of these materials, and they have already approached jam makers, hotel and restaurant proprietors, and secretaries of clubs, hospitals, and institutions. It is felt that Poor-law authorities and their staffs will gladly coöperate in this matter, and they are accordingly asked to ensure that the stones of all fruit consumed or made into jam in their institutions are collected and forwarded, carriage forward, O.H.M.S., to the Officer in Charge, Munitions Depôt, Southend Gas Works, Southend-on-Sea. Official labels will be issued shortly by the National Salvage Council, and stones should be carefully saved until these labels are received. In making jam all stones should be excluded. It is important that stones and nut-shells should be forwarded in a dry condition. Stones should be dried by being placed for a short time in the sun or in an oven. If possible stones should be packed in bags or sacks, fruit-stones being kept separate from nut-shells. Any inquiries should be addressed to the Director-General, National Salvage, Caxton House, Tothill-street, S.W.1.

Dr. J. C. Uhthoff has been promoted from honorary Serving Brother to a Knight of Grace of the Order of the Hospital of St. John of Jerusalem in England.

Dr. J. N. Langley, professor of physiology in the University of Cambridge, has been elected a foreign member of the Royal Academy "dei Lincei," Rome.

Professor Sir Edward Schafer wishes it to be known that he is adopting the name of Sharpey before the surname of Schafer.

AMONG the signers of the Declaration of Independence of the United States of America on July 4th, 1776, were the following physicians: Josiah Bartlett, New Hampshire, born in November, 1729; Lyman Hall, Georgia, born in 1731; Benjamin Rush, Pennsylvania, born Dec. 24th, 1745; George Taylor, Pennsylvania, born in 1716; Matthew Thornton, New Hampshire, born in 1714; and Oliver Wolcott, Connecticut, born Nov. 26th, 1726. They died at the ages of 66, 53, 68, 65, 89, and 72 respectively. There were six physicians, but 26 lawyers out of the 56 signatories.

Hunterian Lecture

ON THE

PATHOLOGICAL ASPECTS OF CERTAIN

WAR INJURIES OF THE EYE.

Delivered before the Royal College of Surgeons of England

BY W. T. LISTER, C.M.G., B.A., M.B., B.C. CANTAB., F.R.C.S. ENG.,

TEMP. COLONEL, A.M.S.; CONSULTING OPHTHALMIC SURGEON, B.E.F.; OPHTHALMIC SURGEON, LONDON HOSPITAL.

MR. PRESIDENT AND GENTLEMEN,—While highly sensible of the honour of delivering one of the Hunterian lectures this year, I am conscious of the fragmentary nature of my communication. While in France it has been difficult to find out how far some of the observations are original or well known; indeed, if it had not been for the kindly encouragement of Sir John Bland-Sutton I should not have ventured to make this strain upon your patience. However, by means of photographs and ophthalmoscopic pictures I will show you some of the specimens obtained and lay certain views before you, in the hope that if anything important is therein contained the facts may be incorporated in some more complete work later on.

In this lecture I have selected various observations made on certain war injuries which appear of special interest from their novelty or comparative novelty, from the light they throw on other allied conditions, or from the contrast they draw between civil and military experience.

RUPTURES OF THE SCLEROTIC.

In civil life it is well known by far the greater number of ruptures take place either immediately above the cornea, or above and internal, and are situated about 3 mm. from the limbus.

In military practice, on the other hand, though similar injuries may be seen, yet other very different ruptures are met with. For example, the cornea may be burst forwards, or we find equatorial ruptures, or the whole eye may be split into numerous petals.

In endeavouring to find an explanation for the sites of ruptures, and the difference between those caused by the various forms of blows, one is faced by a complicated subject. Much has been written and many theories put forward to account for the site of civil ruptures, but even for these no one theory has received universal acceptation. No doubt the variations both in thickness and strength of the sclerotic, and in the amount of support the globe receives from surrounding structures, are important factors in determining the site of rupture. If, however, these were the *only* factors, one would expect that all ruptures would take place in one zone. As already noted, this is not the case, and, as we shall see, the site of rupture in the majority of cases, bears a special relation both to the site of impact and to the character of the blow. The following remarks I put forward tentatively till further experience is gained.

The first important point which stands out clearly is that unless the sclerotic is actually perforated by the missile itself, rupture does not start from the point of impact, but occurs at some considerable distance from it.

This is explained by the experiments of Rauber, who found when investigating the effects of blows on hollow spheres that the resistance of the envelope to pressure is one-third greater than its tensile strength (so that, for example, the eyeball would tend to burst at some distance from the point of impact sooner than give way at this point).

If we summarise our experience we find that the site at which ruptures take place is most commonly either in the equatorial zone about the line of impact, or opposite to the point of impact—i.e., at the point of contrecoup.

Also it would appear that these two sites of rupture are associated with two different kinds of blow.

I. The ruptures caused by slowly moving objects which strike the eyeball directly without penetrating globe or orbit, occur in the equator round the line of impact at a point where the globe is least supported.

This group will include the bulk of ruptures met with in civil life. They are caused by direct impact of comparatively slowly moving objects, such as stones, fists, boots, sticks, or cows' horns. The site of impact is at the anterior half of the eye, usually below or down and out, owing to the protection afforded to other parts of the eye by the brow and nose. The line of impact from a blow below the cornea will pass from below upwards and backwards; the least supported portion of the equator to that line of impact will be above the cornea—viz., the site at which civil ruptures usually occur.

II. In contrast to these we find that ruptures caused by rapidly moving missiles which pass through the orbit but do not strike the eye directly, occur at the side opposite to the point of impact—i.e., at the point of contrecoup. For example, missiles passing through the back of the orbit cause the cornea to be burst forwards, or if they have passed through the side of the orbit the rupture may be found near the equator on the opposite side.

I will now show some specimens illustrating these forms.

1. Rupture of cornea from passage of bullet at back of orbit.

2. Similar condition due to passage of bullet through both orbits. Both optic nerves were divided by missile; one at optic foramen, the other close to back of globe. In former globe was intact; in latter, though back of globe is intact the sclerotic around cornea is ruptured. Both eyes were proptosed, projecting right in front of lids; patient was complaining of such intense pain that, much against one's inclination, the two eyes were removed.

3. Large equatorial rupture on inner side of globe following passage of missile through outer side of orbit.

Causation of Different Forms of Rupture.

Our problem is to find out why the different forms of blows bring about the different forms of rupture.

When pressure is applied to the globe it would seem that there are two main methods by which rupture can be brought about.

(*a*) According to von Arlt's theory, indentation of the globe due to the impact of slowly moving missles, by lessening the diameter in the line of impact, must necessarily cause an increase in the diameter in the equator round this line. A sphere has the greatest cubic content for a given surface; any force, therefore, which distorts a hollow sphere containing a practically incompressible fluid, must bring about an increase of surface—that is to say, the envelope will be distended. The eyeball, being supported both at the place of impact and at the pole opposite to this, the distending force will be felt chiefly at the equator round the line of impact, and it is here, therefore, that distension will take place. And if the distension is sufficient to overcome the tensile cohesion of the sclerotic rupture will take place at some point on this equator where the globe is least supported.

This theory appears thus to account for the ruptures due to slowly moving bodies which strike the eye directly occurring at a site equatorial to the line of impact.

(*b*) When we come to ruptures caused by missiles passing rapidly through the orbit, quite a different set of conditions exists. The globe is not deformed by direct pressure, but is subjected to an indirect impact, or shock, due to the passage of the missile through the orbit. If the globe is not deformed the equatorial zone will not be over-stretched, and therefore von Arlt's theory will not afford an explanation.

I am greatly indebted to Professor Love, who has kindly considered the problem for me, and has suggested the following explanation.

The contents of the globe being fluid, sudden impact at one spot on the surface will cause a wave of pressure to radiate out through the vitreous from the point of impact; the more rapid the impact, the more forceful the wave of pressure; the slower the impact, the less forceful the pressure wave.

The wave of pressure will be felt most by the sclerotic exactly opposite to the point of impact, where the wave strikes at right angles to the surface, while at the sides, where the wave strikes obliquely, the pressure will be less felt. The wave of the sea which strikes the breakwater at right angles dashes much higher than the one which strikes it obliquely.

Again, where the incident wave strikes the sclerotic there will be a *wave of reflexion*, which will beat back against the incident wave. This wave of reflexion will only directly oppose the incident wave immediately opposite the place of impact; at other parts of the spherical surface the wave of reflexion will be directed more or less away from the incident wave.

Professor Love, when calculating the effects of air waves, found that where the wave of reflexion met the incident wave the pressure is enhanced, it may be as much as eightfold.

Though one cannot insist too closely on the similarity of the effects produced by air waves and those produced by waves in the semi-fluid vitreous, yet it would seem certain that a corresponding enhancement of pressure must take place in the eye at the point of meeting of the wave of reflexion and the incident wave.

It is common knowledge with what force the sea wave reflected from a breakwater meets the oncoming wave. So great is the pressure at this place that a mass of water is shot up into the air. In this instance the wave of reflexion beats back against the succeeding wave, but in the eye the wave of reflexion will beat back against the incident wave. In the open, the breakwater does not bear the brunt of this enhancement of pressure, but in a closed space, where no fluid can get away, this pressure must be borne by the walls.

Theoretically, the point of meeting of the incident and reflected waves will not lie exactly at the internal surface of the globe, but slightly nearer the centre of the eye. But this distance will be infinitesimal, and this enhanced pressure will be transmitted to, and borne by, the sclerotic immediately opposite the point of impact.

It would therefore appear that the stress on the sclerotic produced by the incident wave, plus the enhancement of pressure due to the meeting of the incident and reflected waves, will be far greater at the point of contrecoup than at any other part of the globe.

This view put forward by Professor Love seems to be highly satisfactory.

To recapitulate. The explanation for these different types of rupture would seem to be, that there are two forms of impact which have two different effects.

(1) The comparatively slowly moving blunt object striking the eye directly causes great deformation of the globe, but owing to the impact being slow there will be a weak pressure wave. This brings about ruptures in the globe round the line of impact.

(2) The rapidly moving missile passing by the side of the globe will cause little deformation, but the vibration set up by its passage through the orbit will cause a powerful pressure wave, which will bring about a contrecoup rupture.

III. We have, lastly, to consider the ruptures of the eye caused by a missile passing through the eye.

When the foreign body passes through the *back* of the eye the cornea is shot forwards and the contents ejected, which is comparable with the effect produced by firing a bullet through a canister full of water—both the lid and the water are shot upwards. Specimen 4 shows almost complete tearing away of the cornea due to a fragment passing through the posterior part of the globe and orbit.

When a sufficiently large fragment enters the eye in *front* there is an explosive effect, and the sclerotic is split into numerous petal-like lobes by radial ruptures extending backwards from the point of entrance.

The elasticity of the sclerotic will accommodate the entry of small particles without rupture. When, however, the fragment is of such a size and has such velocity that the united effect of the increase in volume caused by the entry of the body, together with the distending force of the pressure wave set up by its impact, is sufficient to overcome the elasticity of the supporting coat, widespread ruptures occur splitting the sclerotic into leaves. The point of entry determines the point of cleavage and the ruptures radiate backwards often close up to the optic nerve, so that when the sclerotic is removed it resembles the calyx of a flower. I can show you two specimens illustrating this form of rupture.

5. Where a small particle passed right through eye into orbit. The sclerotic is seen split into numerous leaves, the leaves radiating out from point of entrance.

6. Where two large splinters of wood were driven into the eye, splitting the sclerotic into two halves.

IV. In a separate group I would place certain other ruptures we have seen, which do not quite conform to the above-mentioned types.

7. A missile passing across lower margin of orbit caused an unexpected rupture. There was a vertical slit through centre of cornea, extending from limbus below to a point in sclerotic 6 mm. from limbus above.

It is difficult to explain this specimen satisfactorily. One would have expected on the above theory a superior rupture in the region of the equator. It is possible that the missile was not travelling fast and the eye was squeezed against the orbit above, and that the cornea was ruptured like the skin of a grape pressed between the finger and thumb in a line parallel to the line of impact.

8. A large mass struck the orbit up and in, fracturing frontal bone over frontal sinus. It caused a concentric rupture of sclerotic practically at equator, extending from immediately above cornea to a point in anterior inferior external quadrant. In this case the rupture runs parallel (i.e., meridional) to line of impact in equator round the line of impact, and conforms more with the civil type. One would have expected, however, that the cornea would have given way, being the least supported portion of this equator.

9. In another case a blow at lower margin of orbit caused T-shaped rupture—i.e., there was a concentric rupture 3 mm. from cornea above, from centre of which a radial split ran backwards almost to optic nerve.

Why the rupture in the equator to the line of impact runs sometimes parallel to this line, as in the tensile fractures of the skull, and sometimes at right angles to this line is probably due to the anatomical arrangement of the fibres of the sclerotic and to its varying thickness.

With the three variants—(1) thickness of sclerotic in different zones; (2) support of surrounding structures to different parts of globe; (3) site and nature of impact, above or below, outside or inside, direct or indirect, rapid or slow—one would expect considerable variety in the resulting ruptures. I do not suggest that the above theories completely explain all the ruptures that are met with. They appear to account for the main types, but we have come across several ruptures which certainly need further elucidation.

Comparison with Fractures of Skull.

It is interesting to compare ruptures of the sclerotic with fractures of the skull, though the dissimilarities of the two structures prevent the comparison being very close.

In both we have more or less spherical bodies with a semi-elastic envelope and practically incompressible semi-fluid contents. The skull has numerous bony buttresses and great variation in thickness of its walls, but no external support. The eye, on the other hand, has some, though less, variation in structure, but it is set in the conical bony-walled orbit, padded round with fat and muscles, which give it definite support for at least the posterior two-thirds of its surface.

In the skull we find three main types of fracture: (1) The "bending" fracture at the site of impact; (2) the "tensile" fracture occurring at a distance from the point struck, somewhere on the equator to the line of impact, the site being determined by the bony buttresses and the varying thickness of the skull at different spots; (3) the "explosive" fracture due to a large penetrating missile exerting a hydrodynamic force.

Explosive fractures of the skull and explosive ruptures of the sclerotic are directly comparable. Tensile fractures of the skull also correspond closely with those ruptures of the sclerotic due to the impact of slowly moving bodies which strike the eye directly. On the other hand, bending fractures of the skull cannot satisfactorily be compared with direct wounds of the sclerotic caused by the penetration of a missile, since there are no changes in the sclerotic to compare with the splintering of the skull at the part struck.

The point of special interest, however, in the comparison is the apparently rational revival of the old theory of fracture by contrecoup, a theory which has been described as "mechanically wrong, though still remaining popular."

Contrecoup ruptures certainly occur in the sclerotic, even if they rarely occur in the skull. As mentioned above, the theory put forward by Professor Love appears to explain satisfactorily their occurrence in the eye. It would be expected that neither the more resistant skull nor the more solid brain would transmit the wave of pressure so readily as the more elastic sclerotic and the nearly fluid vitreous. Thus it would be inferred that fracture of the skull through contrecoup by the mode described above would seldom take place. Nevertheless, pressure waves must necessarily be set up by severe blows on the head, and these, with the enhancement of pressure by the beating back of the wave of reflexion against the incident wave, will be at any rate partially responsible for the bruising of the brain and membranes at the pole opposite the point of impact.

CONCUSSION CHANGES.

The next subject I will take is certain of the less common concussion changes.

Rupture of anterior layers of cornea.—As a result of a severe blow on the eye one occasionally meets with cases of rupture of the anterior layers of the cornea which give rise

to straight or curved superficial striæ. If in cases of some standing microscopic section is made through such striæ, it is found that there is a rupture of Bowman's membrane and a variable number of the anterior layers of the substantia propria, and that the epithelium has grown into the gap in the same way as epithelium grows into an operation wound of the limbus or after tattooing of the cornea.

These striæ of the cornea, though often similar clinically, are different both in origin and in microscopic structure from the nearly straight, radiating, anterior striæ met with in soft ruptured eyes, which are due to *folding or crinkling* of Bowman's membrane. The latter radiate across the cornea from the line of rupture in the same way that the posterior striæ, due to folding of the posterior layers of the cornea (i.e., the ordinary striate keratitis), radiate from an operation wound when there has been much bruising of the corneal tissue or when cyclitis has supervened.

Specimens.—10. Drawing of a case of anterior striation of cornea (probably due to rupture of Bowman's membrane). 11. Rupture of Bowman's membrane, showing gap in this layer and anterior layers of substantia propria, into which epithelium was grown. 12. Ingrowing of epithelium into wound at limbus. 13. Tattooing. 14. Crinkling of Bowman's membrane following rupture of sclerotic.

Retroflexion of iris.—One specimen of retroflexion of the iris has been met with which is of interest, since the condition, though frequently described, is seldom verified anatomically.

15. The photograph shows the tucking back of iris between ciliary body and equator of lens. Such a condition would clearly give rise to the appearance clinically of "apparent iridectomy."

Rupture of ciliary body.—Mr. Treacher Collins has described the form of splitting of the ciliary body which separates the longitudinal and circular portions of the ciliary muscle. It is easy to see in the specimen (16) that such splitting carried a little further would allow the iris and the internal portion of the ciliary body to slip back, and thus be another condition which gives rise clinically to "apparent iridectomy."

Hyphæma.—This photograph (17) shows the condition of enormous distension of the A.C. with blood, the lens and iris being pushed backwards. There is marked blood-staining of the cornea.

Complete dislocation of lens into vitreous is seldom shown accurately in pathological specimens owing to the ready displacement of the lens in the nearly fluid vitreous when mounting the specimen, but in this case (18) the lens has been held in position by the surrounding blood clot.

Multiple intraocular hæmorrhages.—Hyphæma, vitreous hæmorrhage, inter-retinal and subretinal hæmorrhages are all shown, as well as hæmorrhage which has penetrated inside the lens capsule. It is easy to see what havoc to nutrition and sight would be caused by such a blow.

Concussion changes of retina and choroid.—(*a*) Commotio retinæ is frequently seen in military practice and does not differ from the civil type. Several cases have been seen where early pigmentation of the macula followed commotio, either as fine peppering or as somewhat diffuse greyish-brown spottings.

Lieutenant W. had an irregular central scotoma, which had the same pattern as the pigmented area of the retina. The scotoma disappeared in the course of about three weeks, but the pigmentation persisted (19).

The only point we have noticed but not seen described is that in the late stages of commotio retinæ, when the white haze has disappeared, for several disc diameters round the macula the retina had a peculiar striated appearance, evanescent in character—that is to say, the striæ changed their position with alteration in direction of illumination, like the rippled-sea-sand retina. This suggests that the retina is still somewhat swollen and wrinkled.

(Commotio retinæ may reasonably be compared with concussion of the brain, of which the retina is a specialised portion. The swelling is probably due to œdema, which can well be accounted for by the bruising from the pressure waves, and is similar to the imbibition of fluid by other colloidal matter.)

(*b*) The more grossly concussed fundus met with in military practice, when unobscured by vitreous hæmorrhage, affords one of the most dramatic ophthalmoscopic pictures.

In the early stages we see widespread, rich red clouds of hæmorrhage, interspersed with gleaming white patches (20).

The hæmorrhages in the retina are both subhyaloid and in the substance of the retina, and often there are, in addition, choroidal hæmorrhages forming a background.

The white spots, glistening in appearance soon after the injury, gradually fade, and in course of time their place is taken by plaques of fibrous scar tissue. It has not yet, so far as I know, been definitely ascertained what is the histological character of the white spots, and therefore what it is which gives rise to their glistening appearance. It would appear likely that they are patches of coagulation necrosis, brought about by the rupture of the retinal and choroidal vessels in the immediate neighbourhood, and thus cutting off the blood-supply and nutrition of certain areas of the retina. This view is supported by the few sections I have seen so far. The sections showed areas of necrosis, but it could be definitely stated if the necrotic areas corresponded with the white areas seen clinically.

The fibrous tissue plaques frequently have a festooned outline and they are sometimes reticulated—i.e., perforated, as it were, by round or oval holes (21).

The probable reason for this festooned edge is that the plaque has been larger at one time and roughly circular; it became attached at certain spots to the retina, where its structure was not completely disorganised, so that as contraction took place the outline became bayed between the fixed points.

It is more difficult to account for the holes which occur in the plaques; but, on the supposition that complete absorption takes place at a certain spot, retraction of the fibrous tissue round this spot will leave an oval or circular hole.

Choroidal ruptures.—As the blood becomes absorbed choroidal ruptures are frequently revealed. We find not only the usual crescentic type situated near to and concentric with a disc, but occasionally others are seen radial to the disc and usually more peripheral. In addition we frequently meet with more or less stellate ruptures, both adjacent to the part of the globe struck and also at the macula.

Combined with choroidal ruptures *areas of retinal and choroidal atrophy* occur, often so intermingled with the fibrous tissue plaques that it is difficult to be sure of the respective boundaries of the three conditions when viewed ophthalmoscopically—viz., choroidal ruptures, areas of atrophy, and newly laid down fibrous tissue.

Pigmentation is commonly seen after the first few weeks. It may be either in irregular coarse patches, fine peppering, or in bone-corpuscle deposits.

Sites at which Concussion Changes Occur.

Blows on the front of the eye give rise to changes as a rule only at the posterior pole, at or around the macula. While missiles passing through the side of the orbit may cause concussion changes at three different situations: (1) Adjacent to site of impact; (2) at macula; and (3) immediately opposite site of impact.

(1) The area which is always concussed is that adjacent to the site of impact. (This is strikingly in contrast to rupture of the sclerotic from a similar injury, which frequently takes place exactly opposite the place of impact, as already noted.) So constant is this that in certain cases of wound on one side of the head, with no apparent disturbance on the other side with the exception of some blurring of vision, the ophthalmoscope by revealing concussion changes in the eye of this side will enable us to state with certainty, not only that a foreign body has passed across the head and through the orbit on the opposite side to the wound of entrance, but also to define its course—a piece of information which may be of great value to the general surgeon.

(2) The concussion changes found at the macula from blows on the front of the eye are common, and would be anticipated as the result of bruising at the site of contre-coup, but macular changes due to blows on the side of the eye are difficult to account for and the subject needs elucidation. The greater vascularity and delicacy of structure in this region renders it in all probability more vulnerable. They are often in a group quite distinct from the disturbed area adjacent to the site of impact, and a band of normal retina may separate the two (22). Such cases have corresponding fields of vision, which show two defects (23), a central or paracentral scotoma and a peripheral defect, separated from one another by a band where vision is retained.

(Commotio retinæ may also occur in two distinct patches—one central, the other peripheral—as has been described by other observers.)

(3) In some cases of a lateral blow on the eye hæmorrhages were seen immediately opposite the site of impact, which

corresponds with the bruising of the brain at the pole opposite to the point struck, and also with the site of the contrecoup rupture of the sclerotic.

Effect of Concussion on Vision.

This is neither the place nor the opportunity to give detailed notes of cases in which the vision has been watched, but our experience may be summarised.

Concussion may produce a profound impairment of vision both in lowering the acuity and in contracting the field of vision. In the majority of instances great improvement takes place in the early weeks, and in the milder cases recovery is complete, both in field and acuity; but in the severe cases there is some permanent loss of field, and the acuity remains persistently lowered.

No doubt the early improvement is due to the clearing up of the commotio and the superficial hæmorrhage in the retina and also the vitreous hæmorrhages; but the parts of the fundus where large inter-retinal hæmorrhages or coagulation necrosis have occurred never recover, and there is a permanent defect in the field corresponding closely in shape with the disturbed area of the fundus.

It is important to remember that in severe cases of commotio, sight may be completely lost for a few days—a fact which may be of the greatest importance in deciding the fate of a wounded and concussed eye.

For example, I was called to see a man whose eye was penetrated by and contained a non-magnetic foreign body, complicated by a prolapse of iris which was of two days' standing. No P.L. The patient was ill from other wounds, and it was therefore important he should have as few anæsthetics as possible. Should the apparently useless eye be removed, or should an attempt be made to excise the prolapse and leave a fairly safe though blind eye, giving it a chance of quieting down, even though it contained a foreign body? As the eye was blind excision was decided on, but for some reason was postponed for 36 hours, by which time vision had returned so far that he could count fingers with this eye. An iridectomy was therefore done, and the eye quieted down with useful vision.

It is important to look carefully for *rupture of the retinal vessels*. These occasionally occur and their discovery will account for an otherwise inexplicable contraction of the field of vision. I will show you a drawing (24) and a field (25) of a very interesting case in which there were combined very marked concussion changes with rupture of the inferior temporal retinal artery.

Lieutenant K. C. had transverse wound of face; entrance at R. lower lid and exit through L. orbit. The L. eye was shattered and removed. The R. V. was reduced at first to the barest perception of light. Later, in about a week, it had improved to hand movements in lower part of field. Fundus showed huge clouds of hæmorrhage in retina interspersed with white spots in lower half; upper half unaffected. After two and a half years the fundus still shows extensive changes below, atrophic areas, fibrous tissue plaques extending up to macula, together with pigmentation. Also rupture of inferior temporal artery, which accounts for field being practically horizontally hemianopic. But the acuity has so much improved that he can read J.8 with the aid of a magnifying glass, and his handicap at golf is 10. He has travelled to Algiers by himself, and is still in the Army doing useful work.

Occasionally one comes across cases where the defect in the field is curiously sharply cut, with no corresponding definition in the limits of the fundus change.

For example (26), a case with a roughly quadrantic but sharply defined defect in the field was associated with a faint greyness over only a small part of the corresponding portion of retina, so that a shallow detachment was diagnosed. The affected area in the fundus showed no sharply defined border. After some weeks festooned fibrous tissue plaques with areas of atrophy and pigmentation made their appearance, showing that severe nutritional changes had taken place.

One interesting case (27) we were able to watch was that of a large, nearly circular, *choroidal hæmorrhage* at the macular region.

The ophthalmoscope revealed a central purplish-red area over which the retinal vessels ran, while in its centre was a deeper purple area, evidently the macula, which appeared as a purple morello-cherry spot (as opposed to the "cherry-red spot" seen in embolism of the central artery). In the course of a fortnight the purple area was changed to a glistening white patch of the "melting snow" variety, at the edge of which a choroidal rupture began to be revealed. Finally the white patch disappeared completely, disclosing a large crescentic choroidal rupture (28) passing just behind the macula, with no trace of fibrous tissue or indication of previous hæmorrhage.

In the early stages of this case there was a large circular central scotoma, but later, when the hæmorrhage had cleared, central vision returned, and though it could not be improved beyond 6/60, yet with a 2 mm. object on the perimeter no definite scotoma could be discovered even after careful search.

The hæmorrhage was undoubtedly choroidal and must have infiltrated the chorio-capillaris layer to give rise to the ophthalmoscopic appearance. How was it the central scotoma was not permanent? It can only be supposed that the retinal nutrition was sufficiently impaired over the hæmorrhagic area as to cause temporary abrogation of vision, but with the absorption of blood and improvement in the circulation central vision, though with poor acuity, was restored.

Comparing the concussion changes of the fundus met with in civil and military life we see a striking difference.

In *civil life*, where concussion is due to blows of direct violence on the anterior half of the eye from comparatively slowly moving blunt objects, detachment of the retina and holes at the macula are comparatively common, while severe concussion changes are rare.

In *military practice*, where the concussion is produced for the most part by rapidly moving missiles passing through the orbit, detachment of the retina and holes at the macula are infrequent, while severe concussion changes are nearly constantly present.

SUPPURATIVE CHANGES IN THE EYE.

As would be expected from the large number of penetrating wounds of the eye in warfare, suppuration is all too commonly met with. But panophthalmitis, whether exogenous or endogenous, following war wounds is usually not of an acutely infectious type. There is seldom much pain, and tenonitis, with consequent proptosis and chemosis, is seldom marked.

In the *endogenous* or *metastatic* forms we have been much struck by the difference in the clinical picture, according to whether the anterior or posterior vessels of the eye received the septic embolus.

In cases where the anterior half of the eye is first infected there is early exudate in the A.C. and anterior portion of the vitreous associated with marked discolouration of the iris. Thus in the specimen shown (29) there was to be seen clinically a plug of exudate in the pupil, and a peculiar white ring of exudate like a collar all round the angle of the A.C., together with a whitish-green discolouration of the iris.

While in cases of primary infection of the choroidal or retinal vessels the first sign is a general diffuse œdema of the bulbar conjunctiva, associated with loss of fundus reflex and dimness of vision; there is no discolouration of the iris, and no sign of exudation in the anterior part of the eye in the early stages. In the course of about 24 hours there is slight proptosis, and the loss of sight is practically complete.

In eviscerating the globe in one case the anterior portion of the vitreous was quite pellucid, and for a moment the diagnosis seemed to have been wrong; but on scraping out the retina and choroid purulent masses appeared, which indicated the posterior site of infection.

Exogenous panophthalmitis provides the bulk of our specimens and is due to penetrating injuries.

1. Sometimes the vitreous shows a nearly even infiltration and as it shrinks the position of its greatest adherence to surrounding structures is clearly defined—viz., the pars ciliaris and the optic disc (30). Fuchs has pointed out that purulent infiltration spreads out into the vitreous from these two situations. Some of the specimens show well the early involvement of the papilla, by, as it were, a fountain of pus pouring out into the vitreous from the disc (31). In others one sees the purulent thickening of the retina immediately around the disc to be quite separate from the infiltration in the pars ciliaris (32).

2. When the infective process is mild and the inflammatory changes approach the plastic type, the vitreous, which may have become one homogeneous purulent mass, gradually shrinks, and in consequence the retina becomes detached. One specimen (33) shows well the dragging forward of the retina from just behind the ora serrata which, on section of the eye, gives rise to a peculiar configuration to its outline.

In pathological departments this dragging forwards of the retina from the ora towards the back of the lens, as the result of plastic cyclitis, is well known, but clinically it is not universally recognised. Thus occasionally after a penetrating injury, when all seems to be going fairly well except for continued injection of the eye, one sees, a week or ten days after the injury, a white reflex behind one portion of the lens. It may wrongly be inferred that panophthalmitis has set in; the eye is removed, but on section and microscopic examination it is found that there is no panophthalmitis, but the retina has been drawn forwards at this spot, by the shrinking of plastic exudate, from the ora to the back of the lens.

3. The absence of continuity in certain specimens you have seen, between the exudate at the O.D. and that at the anterior part of the eye, shows that the infection must be carried to the O.D. and that the inflammation has not spread

simply by continuity. This must take place by the transference of organisms or toxins along the lymph channels in the vitreous; and Cloquet's canal, forming a direct means of communication, is probably the main channel.

Such cases come into line with those of optic neuritis without infiltration of the vitreous following severe infective ulceration of the cornea, which are met with fairly often in the laboratory but seldom guessed clinically.

We may suppose the toxic matter passes through the cornea into the aqueous, in the same way as atropine or cocaine is absorbed, and from here it can pass into the vitreous and along the flue-like Cloquet's canal and set up irritation at the disc, exactly as in Giffard's experiments, the vermilion granules, injected into the front of the eye, found their way on to the physiological cup.

The irritating substance, having once arrived at the disc, may set up optic neuritis, and it may also cause inflammatory exudate to be poured out either into the vitreous or into the inter-retinal space immediately round the disc (34).

Exudate into the vitreous may be suppurative, as we have seen, or it may be plastic, in which case it may be replaced by fibrous tissue, which on shrinking will cause folding or even detachment of the retina.

On the other hand, contraction of the exudation in the inter-retinal space may cause the peculiar rosette-like folding of the retina occasionally met with. (Specimen (35) of rosetting of the retina at the O.D. following membranous conjunctivitis, in which there was no obvious continuity between the inflammation in the cornea and that at the back of the eye, the vitreous being quite clear.)

Such inflammatory involvement of the optic nerve with consecutive atrophy may well explain the surprising loss of sight in certain cases following ulceration of the cornea, which is out of proportion to what one would expect from the corneal opacities.

CHANGES IN THE VITREOUS.

When examining the vitreous in eyes which have been penetrated by a foreign body one is struck by the extraordinary variety of the changes that are met with. In some the track of the foreign body is clearly defined, either by blood, by pus, or by a fibrous band, or, again, the whole vitreous, more or less hæmorrhagic and infiltrated, may be found shrunk up around the track, but remaining attached (or as it were "pegged out") to the retina at a point at which the foreign body struck.

The foreign body, by penetrating the vascular coats of the eye from without or striking the retina and choroid within, often causes a hæmorrhage to take place at one or both spots. Such a hæmorrhage may merely follow the track of the foreign body, but often it is much more widespread and occurs in fans which correspond with no known structure of, or lymph channels in, the vitreous, which fans may be seen with the ophthalmoscope. Just as a bullet when passing through a limb causes splits in the muscles and fasciæ radiating from its track, into which blood and infective material will find their way, so it would seem a foreign body passing through the jelly-like vitreous may split this body in various planes into which blood and, at a later date, infective material may also spread. This seems a rational explanation for the widespread fans and planes of hæmorrhage and fibrous tissue that are met with, which do not correspond with any known lymph passages in the vitreous.

The vitreous, as we have seen, becomes adherent to the retina at the point where a foreign body strikes; yet allowing for rebounding of a foreign body more than once or twice, or the possibility of more than one or two foreign bodies being present, we come across many specimens where the vitreous has been pegged out at too many spots to be accounted for by either of these causes. Hæmorrhages from the retina which burst through the hyaloid into the vitreous will doubtless be a cause of adhesion between the two structures. One of the specimens (36) shows a conical hæmorrhagic tip to a vitreous adhesion, which supports such a view. The hæmorrhage being only at the point of the adhesion, it is probable the blood came from the retina.

It would seem probable that when rifts of the vitreous caused by the penetration of a foreign body reach the retina, either blood may follow up along the rift or a new hæmorrhage may start from the retina, and thus also a connecting link is formed.

Shrinking of the vitreous and absorption of the various inflammatory elements may go on till all that is left of hæmorrhage and infiltration is a series of strands or fans of delicate fibrous tissue attached in front to the back of the lens, or ciliary body, and behind to the retina (37).

Occasionally these strands are exquisitely delicate, as in the specimen shown (38), merely branching threads with a variable amount of pigment deposited on or in them.

Where the fibrous bands are attached to the retina (39) they may by their shrinking exercise considerable traction, bringing about puckering or folding of the retina; or actual detachment may occur (40), provided sufficient exudation has not been poured out to bind together the retina, choroid, and sclerotic.

It is probable also that certain of the tears and holes which occur in the retina are due to the attachment and traction of vitreous bands.

In any case fibrous vitreous bands must be looked upon as a decided menace, and one must therefore avoid as far as possible any procedure in ophthalmic surgery which is liable to cause a vitreous hæmorrhage. Thus, in removing foreign bodies from the eye, this is one of the strongest arguments for drawing at any rate the smaller magnetic particles forwards into the A.C. and removing them through an incision in the avascular cornea rather than withdrawing them through a new incision made in the vascular sclera and choroid, which very probably will create a fresh vitreous hæmorrhage.

It is recognised, of course, that not every vitreous hæmorrhage gives rise to fibrous tissue, and one may digress for a moment to discuss this point.

Fibrous tissue may follow hæmorrhage both from penetrating and non-penetrating injuries. It appears to follow mild infections fairly regularly, but infection, in the ordinary acceptation of the term, is not necessary for its formation.

As Parsons has pointed out, the fixed cells of the vitreous will not by themselves produce fibrous tissue; fibroblasts from already formed connective tissue must be present, and they can pass in either from the retina or choroid after rupture in the internal limiting membrane of the retina or the hyaloid, or both, has been brought about. But it is, so far as I am aware, unexplained.

(1) Why in certain cases of recurring vitreous hæmorrhage in young people described by Eales, fibrous tissue fans develop, while in others even large hæmorrhages clear up, leaving no trace of fibrous tissue.

(2) Why a subhyaloid hæmorrhage at the macula, in the specimen shown (41), left a star-shaped plaque of fibrous tissue at this spot, which by its contraction caused crinkling of the hyaloid; while, as a rule, such subhyaloid hæmorrhages clear up completely.

(3) Why choroidal ruptures are not followed by deposit of fibrous tissues.

(4) Why in glaucoma, hæmorrhages from the disc sometimes are followed by fibrous tissue development so that the cup is filled in, and even a large nipple-like projection extends into the vitreous.

EFFECT PRODUCED ON RETINA AND CHOROID BY PENETRATING FOREIGN BODIES.

A small fragment, after entering an eye, may pass on into the orbit, or it may strike and rebound off the retina, coming to rest far from its original track. This rebounding of foreign bodies in the eye is quite comparable with the bouncing of missiles inside the skull, an astounding instance of which was kindly given me by Colonel Percy Sargent, where a small fragment, after entering the skull, actually bounced twice on the inner surface of the cranial cavity before it came to rest after a curiously complex course through the brain substance.

I can show you drawings of a case of which the only explanation I can offer is that a fragment rebounded twice on the retina.

42. Shows scar in sclerotic at its entrance on inner side of cornea.

43. The fundus shows two scars on retina, one on inner, the other on outer side of disc, bridged across by a fan of fibrous tissue which can be traced forwards towards wound of entrance. The small inset on right shows foreign body glistening like a jewel in the blood-stained vitreous, situated far forwards and on outer side.

44. X ray localises foreign body at a spot which corresponds with the ophthalmoscopic estimation; and shows no other F.B. in orbit.

45. Diagram of the supposed track—viz., that the foreign body entered the eye on the inner side in front, struck the retina on inner side of disc, bounced across to outer side, and was again reflected, but this time forwards.

46. The field of vision shows two scotomata situated in the horizontal meridian, corresponding with the two scars on the fundus.

When a foreign body strikes the retina it will certainly bruise and in most instances cut it.

I will show you microscopic sections of a case at Moorfields in which a foreign body bounced on the retina and later was removed by means of Haab's magnet. The spot where the foreign body struck the retina was indicated by attachment of the vitreous (47, 48). The sections through the spot show the retina to be divided, and the gap thus caused is occupied by a plug of newly formed fibrous tissue which is continuous with the shrunken and hæmorrhagic vitreous, in which fibrous tissue is beginning to replace the blood.

In some cases the retina may become folded and puckered at the site struck (49).

Correlation of Lesions with Defects in Field of Vision.

The delicate localised lesions of the retina are in reality wonderfully neat physiological experiments, for which in peace-time it would be difficult to obtain either the subjects or a licence.

Though Usher, Dean, and Parsons, among others, by dividing portions of the retina in animals, have been able to trace out the course of the degenerated fibres in the optic nerve, they were unable to correlate these lesions with the defects in the fields of vision of the dogs and rabbits they operated upon.

But in these war experiments on man we *can* correlate the visible lesions with defects in the field, though we are unable to complete the examination by tracing the course of the degenerated fibres.

Thus we find that lesions above or below the horizontal plane cause a defect in the field out of all proportion to the local disturbance—i.e., there is a "distribution defect," in addition to the local defect due to the lesion. This is due to the lesion having not only damaged the spot which is struck, but has involved nerve fibres which were passing on to a more peripheral portion of the retina.

The distribution defect is fan-shaped from the point corresponding with the lesion and extending towards the periphery. The nearer the lesion is to the disc the greater the blind sector and vice versa, which agrees with the accepted distribution of the nerve fibres in the retina.

When the lesion occurs in the horizontal plane there is no "distribution defect," but the loss of the field is limited to the area corresponding with the lesion, as would be expected, for the fibres supplying the retina in the horizontal line arch round from the disc to their destination, and therefore these lesions would only involve the nerve fibres at their termination.

As an example we may take the case already described when the foreign body bounded twice on the retina. The defect in the field was two scotomata corresponding with the two lesions of the retina with no distribution defect or peripheral loss.

These sector defects following bruising of the retina are strikingly similar to the sector defects in the field following solitary patches of choroiditis described and worked out with such care by Hepburn, but I venture to disagree with his explanation.

He suggests that the inflammation in the choroid has not only blocked the choroidal circulation at the site of the patch, but thereby has cut off the blood-supply of a corresponding peripheral sector of the choroid; and in consequence the retina degenerates, bringing about a similar sector defect in the field of vision.

Such a theory demands not only that the choroidal circulation is divided up into separate sectors corresponding with each vessel, but that the circulation is terminal—that is to say, no anastomosis exists between the various sectors—neither of which hypotheses is proved, nor is it, in my judgment, probable. It has long been recognised that the ciliary and choroidal circulations anastomose fully, and therefore blocking of one short ciliary artery is not likely to bring about an anæmic area. Also, if such a condition did occur the ophthalmoscope would surely reveal some difference in the appearances of the functioning and non-functioning choroid; and he admits there is none.

It would seem more probable that the sector defect in the field in these cases is due to an involvement of the nerve fibres by the inflammatory process as they pass over the patch of choroiditis, and therefore that the visual sector defect is one of nerve distribution, and not associated with any supposed distribution of the choroidal vessels.

Case of Complete "Ring Field."

The last case I wish to bring to your notice is one of great interest, for which I am much indebted to Captain W. Stirling, R.A.M.C. A minute particle perforated the cornea, iris, lens, and vitreous, and struck the optic disc, a "bull's-eye."

There is an adherent leucoma, a hole in the iris (50), an opaque track through the lens (51), from which there extends a delicate fibrous band in the vitreous to the mass of inflammatory tissue covering the disc and parts immediately around (52). X rays prove the presence of a foreign body on the disc. The rest of the fundus is normal.

The astounding fact is that this lesion has caused a nearly circular *ring field* (53); that is to say, there is a very large central defect, and considerable peripheral contraction, between which is a nearly circular band in which vision is retained.

If we are correct, as seems likely, in thinking that the nerve fibres in the outer third of the disc supply the macular area, and the most peripheral fibres on the disc supply the retina immediately around, while those in the centre are the long distance fibres which supply the periphery of the retina, then the fibres in the intermediate horseshoe zone on the disc must pass to that portion of the retina corresponding with this "ring field" (54). It would have been almost unbelievable that a complete ring field could have been left, yet it has to be accepted as fact, for the field has been taken most carefully on two separate occasions at an interval of several weeks, and the two fields are practically identical.

I will not weary you with any hypothesis of how this foreign body caused these bundles of fibres to suffer. For the moment the important fact is—*that a wound of the disc can lead to a (double) concentric defect in the field.*

Three important points are suggested by this case—namely:—

(1) That the nerve fibres which are in association with the various concentric zones of the retina, and which will be distributed to the corresponding zones in the appropriate superior and inferior calcarine areas of the occipital lobes, are arranged in definite zones in the optic nerve.

(2) A second interesting point is that this case throws light on those cases with concentric defects in the field which have been attributed to, but not definitely proved to be the result of, disease of the optic nerve, such as retro-bulbar neuritis (e.g., Hancock's case of ring scotoma following lightning stroke). This case, with the definite physical lesion of the nerve which can be demonstrated, substantiates the view that these other cases may also be due to a nerve lesion.

(3) But perhaps the most suggestive interest of the case is the possible light it throws on the etiology of diseases associated with concentric defects in the field, such as retinitis pigmentosa. Several have tried to explain the ring scotoma in this disease by the "water-shed" theory of the choroidal circulation, but this theory does not account for the variable position of the ring, nor the cases where from the beginning there is no ring scotoma, but either peripheral contraction or a gradually increasing central scotoma.

This case gives support to the suggestion which Hancock and I, and possibly others, have put forward, that retinitis pigmentosa may be primarily a degenerative disease of the nerve. On such a theory all the various defects in the field can be well accounted for. There are doubtless obvious difficulties which have to be explained, such as why the pigmentation of the retina should occur with this form of nerve atrophy and not in another. Nevertheless, I think this view is worthy of consideration, supported as it is by this very unusual case.

CONCLUSION.

Before closing my lecture I should like to express my cordial thanks to Miss Glazebrooke and Captain Hopwood, R.A.M.C., for the care they have taken over making lantern slides from my negatives; to the Committee of Medical Research for allowing Sergeant Maxwell to make the beautiful ophthalmoscopic drawings for me; and to Sergeant Maxwell himself for all the care and skill which he has displayed.

METROPOLITAN HOSPITAL SUNDAY FUND.—Up to the end of last week the total contributions received amounted to £64,000.

Major-General Charles Henry Burtchaell has been elected an honorary Fellow of the Royal College of Physicians of Ireland.

WAR DEAFNESS,

WITH SPECIAL REFERENCE TO THE VALUE OF VESTIBULAR TESTS.

BY P. McBRIDE, M.D. EDIN.,
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HAVING had the opportunity of examining a large number of men whose hearing has suffered during the war, we venture to hope that a brief record of our experience may prove of interest.

Classification.

The cases we have observed naturally fall into four categories:—

1. Those who heard well previously and in whom deafness had resulted from injury of the internal ear alone.
2. Those who heard well previously, but in whom middle-ear suppuration as well as injury of the internal ear had supervened.
3. Those in whom there previously existed deafness, but in whom the tympanic membrane remained intact, the deafness having become aggravated.
4. Those who previously suffered from chronic middle-ear suppuration.

Classes 3 and 4 may be dismissed in a few words. It goes without saying that patients coming under these headings often become more deaf after exposure to concussion, and so in cases of middle-ear or nerve deafness an increase of this symptom was often observed. In the course of our work we have seen very many soldiers with middle-ear suppuration, and it has occurred to us that the advantage of enlisting men who suffer from this condition is open to question. It is perfectly true that many of them hear sufficiently well to make useful soldiers, but it is also true that the existence of a condition which may at any moment give rise to serious symptoms makes it possible for them, if they so desire, to spend much of their time in hospital. If, for instance, a patient with chronic suppuration complains of headache, giddiness, and nausea even the expert will often find it difficult to distinguish between real illness and malingering. Moreover, it is impossible for a soldier on active service to have his ears properly attended to unless very special and expensive provision is made for this class of case.

Classes 1 and 2, in which, so far as could be ascertained, the hearing was previously perfect, afforded data of great interest. In the former the deafness was due solely to lesion of the labyrinth, while in the latter, although nerve deafness existed, there was also a second factor in the presence of chronic middle-ear suppuration, due to the fact that the explosion which had injured the cochlea had at the same time ruptured the membrana tympani. We have been much struck by the number of cases in which, where this occurred, the patients gave histories of having been buried by a shell explosion. Presumably under such circumstances there is greater probability of septic material getting into the middle ear. In some of these there were not only suppuration but granulations and even polypi as well.

Tests Employed: Vestibular Reactions.

In examining cases of primary concussion deafness, with or without suppuration, we adopted the various tests now in use.

Thus, bone conduction for a tuning-fork of medium pitch was noted, the hearing power for low and high tones was tested with tuning-forks, the Galton whistle, and frequently with the monochord as well. Vestibular tests, too, were employed in all the cases. In testing the hearing for the voice the opposite ear was excluded by employing Barany's noise apparatus. It is now recognised that if a normal ear be syringed with cold water a nystagmus results, the quick movement of which is away from the ear operated upon and which is most easily observed by making the patient look in this direction. This usually comes on after the water has been running into the ear for from 40–50 seconds, but too much importance cannot be attached to this time, as individuals react differently. Again, if a normal person be placed upon a revolving chair and rotated ten times in 10 seconds a nystagmus, the quick movement of which is opposite to the direction of rotation, will result and last from 20–40 seconds.

Now it has been suggested that if there is deafness following concussion, and if the vestibular tests give a normal result, we are therefore entitled not only to arrive at a favourable prognosis, but even to assume that the deafness is of purely functional origin. This proposition is very unlikely to appeal to anyone who has had opportunities of studying ear disease and utilised such opportunities intelligently. To such an one the evidence of his own pre-war experience will supply ample refutation. Space does not permit us in this communication to enlarge upon the many reasons that make the hypothesis untenable, but we hope to adduce proof that these vestibular tests—interesting and important as they no doubt are—must be considered of subsidiary value either in estimating prognosis or detecting malingering in cases of concussion deafness. We have thought it well to bring the matter forward as shortly as is compatible with clearness in a journal accessible to the medical profession as a whole rather than in one devoted to otolaryngology, because we believe that very grave injustice might be done if the dictum were accepted that given a man deaf from explosion, if he reacts to the vestibular tests in what his examiner considers a normal manner he is therefore either a malingerer or the victim of hysteria.

Group A.

Let us in the first place give brief records of five cases in which suspicion of either hysteria or malingering might be justified.

1. Blown up; unconscious; temporarily totally blind and deaf. When examined heard loud voice in each ear at 1 foot; deafness of the nerve type; cold water induced nystagmus in 60 seconds on the right side and in 40 seconds on the left, while rotation produced after nystagmus lasting 25 seconds both from right to left and from left to right.

The suggestion of possible hysteria is furnished in this case by the history of blindness and total deafness immediately following the injury.

2. Shell fell in trench; was uninjured, but quite deaf for two or three days, and also lost his voice. The latter returned and hearing is slowly improving. Was giddy after the explosion. When examined could hear a shout near the right ear and a very loud voice near the left; deafness of nerve type. Cold water produced reaction in 20 seconds from the right and 30 seconds from the left ear.

The loss of voice is in this case suggestive of hysteria.

3. Exposed to shell explosion; since has suffered from total deafness and loss of speech; general symptoms of shell shock. Both ears completely deaf to voice, tuning-fork by air or bone conduction, and Galton's whistle. Rotation from right to left had to be stopped at eight revolutions owing to hysterical manifestations, but only very slight nystagmus resulted. From left to right ten revolutions were tolerated and the after-nystagmus lasted only 12 seconds.

There was certainly hysteria in this case, as evidenced by the aphonia.

4. Knocked over once and buried twice during an advance. Deafness was complete at first, but now varies a little. Had shell shock, but now recovered. When examined heard only a shout near either ear, but he seemed to hear better when discussing his ailments. Bone conduction lost; Galton's whistle not heard; rotation right to left produced nystagmus lasting 35 seconds and from left to right 75 seconds.

Hearing better in conversation suggested possible malingering.

5. Buried by shell explosion and since then left ear has been deaf. Discharge said to come from right ear, but hearing on that side fair. Pain said to occur in right ear when discharge stops. Right tympanic membrane normal, but some impetigo of meatus. With the right ear hears a low voice at 15 inches, but with the left only a shout near is heard. Tuning-fork tests unsatisfactory as regards both ears and result in some obvious misstatements. Galton's whistle not heard by left ear. Rotation from right to left caused nystagmus lasting 10 seconds and from left to right 17 seconds.

A consideration of these cases, which, owing to collateral circumstances, might furnish just suspicion of the presence of a functional or malingering element, does not in any way justify the assumption that a normal vestibular reaction confirms this diagnosis. While Cases 1, 2, and 4 showed good and, in the last, even excessive reaction, it was found to be defective in 3 and 5. Again, in 4, although the hearing power of each ear was equally involved, one vestibule was much more sensitive than the other. It is worthy of note that in 5 both reactions were below normal, but that obtained from the deaf ear was the more pronounced.

Group B.

In the following cases there was diminished vestibular reaction.

1. Blown up by shell; total deafness in both ears. Cold irrigation caused no reaction after 140 seconds on the right, while nystagmus followed in 50 seconds on the left. Patient treated by pilocarpine, and after a fortnight could hear a low voice at 1 foot on the right side, while the monochord was perceived up to 12,000. Now vestibular reaction was produced by cold syringing in 35 seconds. The left ear remained as before.

In this case, therefore, the ear which *gave no* reaction improved, while the other *did not*.

2. Wounded by shell explosion. Since then deafness and tinnitus in both ears. By each ear conversational voice heard at 1 foot. After 90 seconds of cold irrigation no nystagmus could be produced from either ear.

3. Shell burst in front of him, followed by immediate loss of hearing in both ears. Left ear improved, but not the right. Hears a loud voice

at 1 foot with the right ear and a distinct voice at the same distance with the left. No nystagmus resulted after 90 seconds' irrigation of either ear, and rotation also was without effect.

4. Blown up; was "blinded and unconscious" for 16 hours; afterwards found he was deaf in his right ear and that the hearing in his left "comes and goes." The right tympanic membrane was chalky and cicatrised, while the left was opaque. On the right a loud voice was not heard, while on the left a low voice was heard at 18 inches. Rotation from right to left and from left to right produced no nystagmus in either case.

5. Blown up by shell explosion; was stone deaf and had discharge from both ears immediately afterwards. The left ear has recovered slightly, but the right has remained completely deaf. The right membrane showed a large dry perforation, while the left was indrawn. By the right ear a shout was not heard, while by the left a distinct voice was heard at a foot. After rotation from right to left and left to right no nystagmus resulted in either case.

These five cases afford, in our opinion, definite proof that the vestibular reaction is of no decisive value in either diagnosis or prognosis. It will be noted that in the first it was the ear from which no nystagmus could be produced which recovered, while the others give ample demonstration of the fact that while vestibular reaction may be in abeyance the cochlear function may be more or less maintained. Whether we are to assume that the explosion was the cause of interference with the functions of the semicircular canals, or that for some reason the patients were defective in reaction, does not in the least affect the argument.

Group C.

In the following cases there is a history of head injury, and in them, therefore, we may assume that the evidence is in favour of organic rather than functional trouble.

1. Wounded behind left ear in August, 1915. Has suffered from deafness and tinnitus since; was very giddy at first. Hearing normal on right side, but by the left ear only a very loud voice near the ear was heard. Cold water produced nystagmus on the right side in 30 seconds and on the left in 15 seconds.

2. Shrapnel injury to right side of face; right ear has been deaf since. A shout was not heard by the right ear, while on the left hearing was normal. From both ears nystagmus was produced in 20 seconds by cold water.

3. Shrapnel injury to head, followed by deafness which has been getting worse; right auricle torn. By the right ear only a shout was heard at a foot, while on the left a whisper was heard at the same distance. Cold water produced no nystagmus from either ear after 120 seconds.

4. Wounded by bullet entering just behind left mastoid and coming out through the neck on the same side; not unconscious; noticed deafness a little later when trying to hear a watch. The hearing of right ear is normal, but on the left a very loud voice is only heard at a foot. Cold water produced nystagmus in 20 seconds on the right and in 40 seconds on the left.

5. Bullet entered left eye and came out one inch below the zygoma. Left eye shot out and blind in right eye when he regained consciousness. Marked deafness in both ears for some weeks. Left improved, but right remained deaf and was affected by tinnitus. The right ear was quite deaf, a shout not being heard, while the left heard a whisper at 1 foot, but there were symptoms of nerve deafness on this side (tuning-fork tests and monochord 9000 only being perceived). This case was examined nine months later, but the hearing remained as above. The vestibular reaction was exactly equal, cold water causing nystagmus in 32 seconds on each side.

6. Wounded in left cheek and blinded in left eye. Since has suffered from deafness in left ear and giddiness. While a low voice was heard at a foot by the right ear, a shout was not perceived by the left. Tuning-fork and monochord indicated complete nerve deafness on the left and partial on the right (11,000). Cold water caused nystagmus on the right side in 40 seconds and on the left in 30 seconds.

With the possible exception of Case 5, in which unfortunately the condition of the right eye does not seem to have been especially noted or inquired into, we may with reasonable certainty exclude all question of functional trouble. It will be observed that in Case 4 the vestibular reaction was better marked from the good ear. In Cases 1 and 6 this was, however, reversed, while in Cases 2, 3, and 5 the vestibular reactions were the same in both ears, varying from induction of nystagmus after 20 seconds of cold water (Case 2) to apparent extinction of vestibular reaction (Case 3), where after two minutes no result was obtained from either ear. It must also be noted that in this case one of the ears retained a good amount of hearing power.

Group D.

In the two following cases wounds were succeeded by middle-ear suppuration as well as nerve deafness.

1. Gunshot wound of face: bullet entered below right eye and came out behind right ear. Deafness and discharge on this side followed. The right tympanic membrane showed perforation and discharge, while the left was normal. By the right ear a shout was only just heard, while the hearing of the left was normal. Rotation from right to left and from left to right produced nystagmus lasting 16 seconds in each case.

2. Wounded by shrapnel on left side of neck and has been deaf since; was very giddy at first, but this has gone off. The left ear shows granulations and discharge, while there is a scar below the left mastoid. The hearing on the right side was good, but a loud voice was not heard by the left ear. Rotation from right to left caused nystagmus lasting 20 seconds, but that from left to right caused no nystagmus.

It will be noted that in Case 1 both vestibules reacted equally, but that in Case 2 that corresponding to the affected ear failed to respond. Are we, therefore, to conclude that Case 1 is suffering from hysteria or is even malingering, while we accept Case 2? As the results we have given seem to us to furnish absolute proof that the condition of the vestibular apparatus gives us no trustworthy guide to that of the cochlear, we must answer this question by an emphatic negative.

Conclusions.

While we have not been able to prove in any of the cases that we had to do with either functional deafness or malingering, we have shown that in Group A, where, perhaps, one or other of these conditions might be suspected, vestibular reaction was sometimes good and sometimes defective. Turning now to Group B, the first thing to be noted is that in the only case of partial recovery after concussion deafness we have met with, it was the ear in which vestibular reaction was absent which recovered. Again, the other cases of this series furnish ample evidence that vestibular reaction may be lost, while the cochlear functions are more or less active. In Group C we find unilateral deafness, the hearing in the other ear being good or fair. In only one of them was vestibular reaction more marked in the better ear; in two this was reversed and in the others it was equal. In one of the latter no reaction was obtainable from either ear, and yet the hearing power on one side was good.

From our experience and from analysis of the cases we have examined we conclude:—

1. That concussion deafness is generally due to some organic change.
2. That the prognosis is usually bad.
3. That the results of the vestibular tests can only be utilised in conjunction with information derived from other sources. Thus, if the patient shows other hysterical symptoms, vestibular tests may perhaps under certain circumstances help diagnosis; but to state that they do more than this is, in our opinion, misleading and dangerous.

GUNSHOT FRACTURES OF FEMUR:

SOME METHODS OF REDUCING SERIOUS DISPLACEMENTS.[1]

BY PHILIP TURNER, M.S. LOND., F.R.C.S. ENG.,
MAJOR, R.A.M.C.

TREATMENT of compound fractures of the femur on the Thomas's splint has been so generally adopted, and has so many advantages both as regards comfort of patients and easy performance of dressings with least amount of pain and disturbance of fragments, that the following remarks apply only to patients treated in this way.

Displacements.

"Serious" displacements will come under one of the following heads:—

1. Shortening.

This is often due to obliquity of fracture or to overlapping of main fragments. The most important way of overcoming these displacements is by efficient extension.

For over a year I have used steel springs to obtain extension in cases of fracture of long bones of leg treated on Thomas's splints. The springs used in ordinary spring mattresses answer quite well. When used for a mattress one end of the spring is naturally in the form of a hook, which can be slipped over the end of the splint, while the other forms a ring through which the extension bands can be threaded. (Fig. 1.)

If these bands do not pass round the side bars of the splint and are not attached to them none of the pull on the leg will be lost by friction. The actual pull exercised can be estimated by measuring increase in length of spring, having previously measured the lengthening obtained by pulling the mattress spring against a spring balance which has a dial showing amount of tension expressed in pounds. If small spring balances about four inches long can be obtained they may, as suggested to me by Lieutenant-Colonel Fairrie, R.A.M.C., be used on the splint instead, and the amount of tension at any time can be seen at a glance.

Springs are easily attached and have distinct advantages over other methods of obtaining extension.

[1] Abstract of a paper read before the Tréport Medical and Surgical Society.

Spring extension is easily applied, usually little or no readjustment is required, and any pull up to 15 lb. can be obtained or more if thought necessary, though this is rarely called for.

2. Rotation.

One of the drawbacks to the Thomas's splint, both for arm and leg, is that rotation of the limb may take place after the splint has been applied. A simple and effective method of preventing rotation, or of fixing the leg in any degree of rotation which position of fracture renders desirable, is that brought forward by my colleague, Captain H. M. Anderson, R.A.M.C. This consists in the use of two small lateral supports, about 4½ in. by 3½ in., cut from a sheet of Gooch's splinting. These supports are made in pairs, and to each two tapes and buckles are fastened by a couple of drawing-pins. If the tapes of one are fixed near the centre and of the other near upper and lower margins they will clear one another during fixation.

These supports are held against the lateral aspects of the leg which is in the desired position, either at level of knee or just below it, a jaconet-covered pad of gamgee tissue rather larger than the support being placed between each and the limb to avoid pressure. The tapes are now passed behind the leg and beyond opposite bar of splint and are then securely fastened by buckles. Not only is rotation prevented, but the limb is also more securely attached to the splint.

Generally speaking, the leg should be fixed with a slight degree of external rotation. The lateral supports should not be applied until after the extension has been obtained. The supports and their mode of application are shown in Fig. 1.

3. "Sagging."

This is a deformity all too frequently seen. It may occur with fractures of any part of shaft of femur, but is especially common in fractures of middle and lower thirds. Sagging

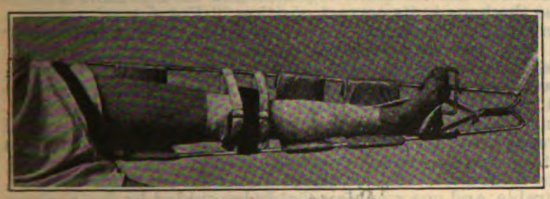

FIG. 1.—Illustrating the method of obtaining extension by a steel spring and the lateral splints for preventing rotation. The tapes attached to the outer of the two small lateral splints are coloured black.

may sometimes be prevented or remedied by careful attention to adjustment of supports which suspend thigh from bars of Thomas's splint. These should be brought as near the wounds as possible, and if removal for dressings is necessary support should be given, if possible, by temporary sling of gauze. Not infrequently, in spite of all care and attention, a certain amount of sagging will occur.

Sagging is likely to produce serious permanent disability. It is commonly associated with some lateral displacement of the main fragments.

4. Displacements of comparatively small fragments at the ends of the bone to which powerful muscles are attached.

These displacements may be very difficult to rectify, especially where there is much comminution and severe septic infection, and there is then a great probability of mal-union and a bad functional result.

(*a*) If at the upper end of shaft a fracture should occur just below the small trochanter the small upper fragment will be flexed by action of ilio-psoas and abducted and externally rotated by action of muscles attached to great trochanter. The upper end of the lower fragment will be behind and to the inner side of the upper, and is also displaced in an upward direction, a position, in all probability, largely due to the weight of the limb.

(*b*) When the shaft of the femur is fractured in its lower third just above condyles the lower fragment is generally displaced and rotated backwards, sometimes excessively so.

[The usual methods of treatment were criticised and causes of failure pointed out.]

Treatment by Direct Wire Suspension and Traction.

The great difficulty of rectifying the displacements described above, especially in the more severe and complicated cases, suggests the desirability of some method of mechanical fixation applied directly to the fragments rather than to the limb.

Plating of recent septic gunshot fractures has been condemned, and, I think, rightly so. Even in the late stages of treatment after mal-union the extensive disturbance of soft parts necessary and the denudation of periosteum from a large area of bone are liable to be followed by a renewed outburst of severe septic infection.

I have recently treated a number of cases in which "sagging" was present to a marked degree, and of fractures of upper and lower part of shaft with typical displacements already described, by a method in which the straight Thomas's splint and the ordinary methods of obtaining extension and preventing rotation are used, and which can be employed in conjunction with any method of suspending or supporting the splint. The principle of this method, which has been called "wire suspension and traction," is that a loop of silver wire is manipulated round the free end of the displaced fragment, which is then pulled into position, and maintained so by attaching the wire to a rigid arch passing over the limb between the two bars of the splint.

Before employing this method a careful examination of stereoscopic X ray plates, or of plates showing the fracture in two planes at right angles, is essential.

The position of the fracture, nature and extent of displacement, and amount of comminution must all be determined, for upon these points will depend the shape and kind of loop required, whether one or both fragments will require suspension, and also direction of pull necessary to maintain fragments in position.

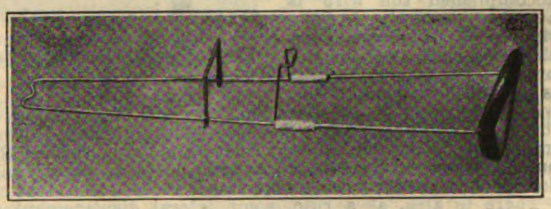

FIG. 2.—A Thomas splint with two arches for wire suspension attached. To the right is a standard pattern foot-piece fixed in position by strapping. To the left a specially made arch with holes and notches is screwed to side bars of splint.

Three types of rigid arch have been tried.

1. A strip of aluminium splinting is bent into suitable shape. A thin strip of metal is on each side passed through the notch opposite side bar of splint and is fixed to this by strapping. This is not sufficiently firm and soon allows some movement of the arch and so of the wire.

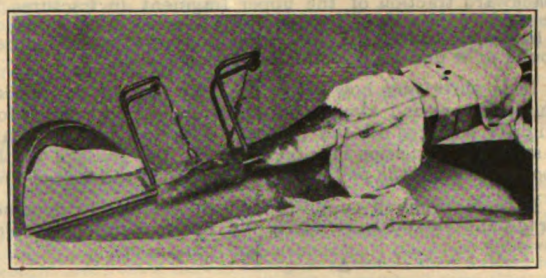

FIG. 3.—A septic comminuted fracture near middle of right femur. There was much sagging with backward and inward displacement of lower fragment. Wire suspension to each fragment, the lower being drawn forwards and outwards, the upper forwards and inwards. The ends of the loops project beyond the wound.

2. One of the standard pattern supports for the splint often employed as a foot-piece can be widened and altered so as to fit the splint at any point, and is then fixed by strapping. (Fig. 2.) These are perfectly firm, and answer very well, but as there are no holes or notches the wire is apt to slip unless the support is fitted exactly in the right place.

3. Special arches can be made so as to screw on to the side bars, and are provided with holes or notches through which the wire can be threaded. (Fig. 2.) Though most useful, these are not essential.

If it is thought desirable that one of the displaced fragments shall be pulled backwards (traction) the arch can be equally well fitted to pass behind the leg.

Method of Application.

The splint is first put into position, supports are arranged, and strong extension is obtained by a spring.

The limb is now held so that the foot shows a position of slight external rotation, and the lateral supports which control rotation are applied. Both the extension and lateral supports can be readjusted, if thought necessary, after the wire suspension has been carried out.

The wire employed is ordinary silver patella wire.

Where there is an oblique fracture, or where the comminution is not severe, the end of a suitable length of wire may be twisted to form a loop. The ends of the fragments are usually already denuded of soft parts, and can be felt by a finger in the wound. The wire loop is then introduced and with the help of the finger is insinuated round the free end of the displaced fragment. In the event of the free end of the fragment not being sufficiently exposed a periosteal elevator may be used to clear it for a short distance, but extensive baring is neither necessary nor desirable.

The displaced fragment is now pulled up into position, and when the finger shows this to be satisfactorily accomplished the wire is attached securely to the rigid arch which has been sterilised and fixed in the proper position. If the pull is made obliquely and if the wire is fastened in this direction there will be no danger of the loop slipping off—i.e., if a backwardly displaced lower fragment of a supracondyloid fracture is being treated the pull should not be straight forwards but also slightly in a downward direction towards the knee.

There is also, as a rule, some lateral displacement of the fragments, the upper being abducted and the lower adducted. This must also be taken into consideration when drawing the fragment into position and fixing the wire. Generally speaking, in fractures of lower and middle thirds of shaft of femur the attempt should be made to draw the lower fragment into line with the upper, and hence the single wire around the lower fragment will, as a rule, be sufficient.

In some cases of sagging, however, where the upper fragment is abducted and the lower adducted or the reverse excellent alignment may be obtained by two wire loops, one drawing the lower fragment forwards and outwards and the other the upper fragment forwards and inwards. (Fig. 3.) Backward traction of the upper fragment in fractures in this region is seldom required, and in a few cases in which I have employed it in this region the wire has soon been found to be unnecessary and has been removed.

It is surprising how often the wire can be introduced through a wound already present, this being, if called for, slightly enlarged in the required direction. If necessary a small fresh incision may be made for the passage of the loop or to allow the pull of the wire to act in the correct line.

If there is much comminution all completely detached fragments should be removed and the wire or wires should pass round the extremity of one or both main fragments, including, if possible, any large piece of bone which is not quite loose.

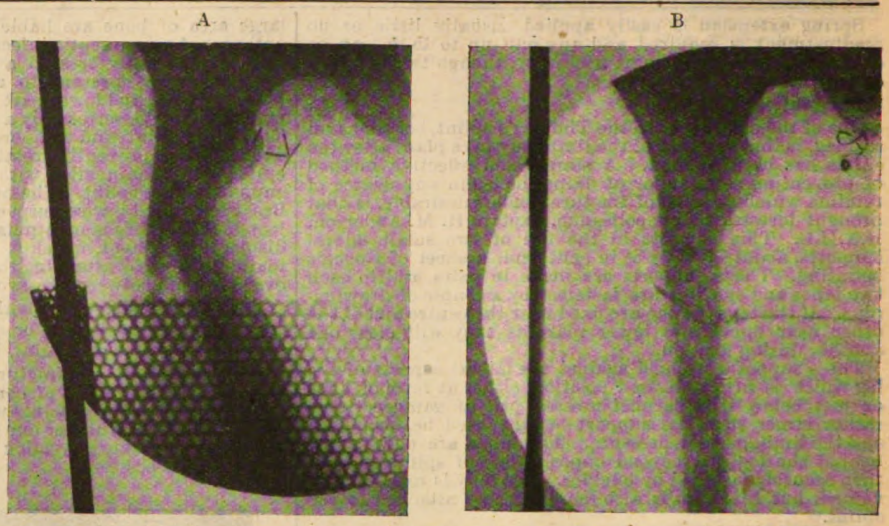

FIG. 4 (Case 3).—Fracture of right femur. A, Position when sepsis had subsided; B, after wire traction of upper fragment.

In some comminuted fractures it may be possible to pass a wire round all the fragments and cross the wire again in front so as to bind them together and at the same time to raise the bone to its correct position. (Fig. 5.)

In the case of fractures below the small trochanter the question will arise as to whether a loop should be used to draw the upper fragment backwards and inwards, or whether the lower fragment should be drawn forwards and outwards into line with the upper and smaller fragment. If the former procedure be adopted the wire will have to pass through the adductors and to be attached to a posterior arch or to a support attached to inner bar of splint. It is difficult to say which of the two methods is most desirable, and one would probably be guided by the position of the wounds, the amount of displacement, and which fragment was the more accessible. So far I have only treated two fractures in this situation by wire suspension, one by each method, and in each the result has been equally satisfactory. (Fig. 4.)

Efficient drainage having been secured attention is directed to the extension, and, if necessary, the spring and the lateral supports are readjusted. The supports beneath the thigh should also be tightened up so as to raise the soft parts and take some of the weight of the limb off the wire. It may here be pointed out that after sagging of the fragments has been corrected there may be a sagging of soft parts due to œdema and the dropping back of muscles and soft tissues which gives a very similar outline to the thigh, though an X ray examination may show a perfect alignment.

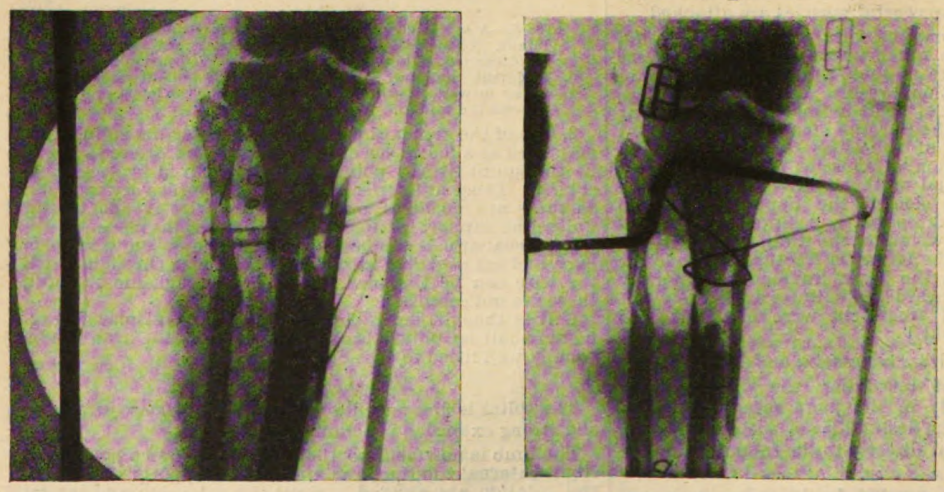

FIG. 5 (Case 5).—Fracture of right tibia and fibula. A, Before treatment; B, after wire suspension. The outline of the large wound can be seen.

Removal of Wire: Advantages of Method.

The presence of the wire causes no irritation or increase of sepsis.

Indeed, as a rule, the fixation of the limb in good position is attended with improvement in wound and in general condition of patient. There is no pain even when, as sometimes occurs, the wire cuts a little into the soft tissues. Needless to say, care must be taken that the wire does not press against nerve trunks or against large vessels, and in the lower part of the thigh the presence of supra-patellar pouch

of knee-joint must be remembered. Fortunately in this region the wire has to be usually brought out well to the side of the limb. After a week or ten days a further X ray examination should be made, and if necessary the wire can be readjusted.

The shortest time the wire has been left in position is two weeks, and in this case, where there was some cutting into the muscle and a little oozing of blood, there was no recurrence of the displacement. It is better to allow three or four weeks, or even longer, to elapse before removing the wire, as its presence causes no trouble; in one case it was left for eight weeks. The amount of bone lost and the radiographic evidence of union will guide one as to the advisability of removal. If the ends of the loop can be seen the wire may be cut and pulled out at an ordinary dressing, but if out of view in the deeper part of the wound nitrous oxide anæsthesia will be desirable.

Wire suspension can also be employed for suitable fractures of the tibia and fibula, especially where there is much comminution with large posterior wounds and sagging of the leg. It might also be of use in some fractures of the humerus.

Though in some cases wire suspension can be carried out with advantage as soon as the patients are admitted to a general hospital, as a rule it should be left until the acute infection has been overcome and the swelling has subsided—i.e., during the second stage of treatment and as early in this stage as possible.

I have recently employed the method in a very troublesome case of non-union of a fracture of the lower third of a shaft with backward rotation of the lower fragments five months after the injury, where several previous attempts by other methods had been made and failed, and after four weeks the fragments are still in good position.

The chief advantage of the method is its simplicity.

No special apparatus of any sort is required, for the ordinary foot-piece fixed over the splint is a perfectly efficient support. The actual operative interference, division of soft tissues, &c., is always slight and in many cases is literally nil. The kind of loop used and the arrangement of the wire will depend on the necessities of each individual case. The ordinary Thomas's splint is used and any method of dressing and treating the wound can be employed.

While fully admitting that there are other ways of effectively treating these displacements, I venture to bring this forward as a simple method which is of the greatest service in some very troublesome cases.

Illustrative Cases.

CASE 3 (Fig. 4).—Lance-Corporal G.P.K., aged 30, admitted Oct. 31st, 1917. Metal fragment removed before admission. Very septic wound, much swelling 5 inches long on outer side of right thigh in upper third. X ray showed oblique fracture sloping downwards and outwards from small trochanter for 3 inches.

Nov. 1st: Anæsthetic; wound opened up and spring extension applied. Pyrexia and sepsis persisted for a long time, though drainage appeared satisfactory. By end of December improvement had taken place in these respects, but the fracture was obviously in very bad position, upper fragment being very flexed and abducted, so that lower fragment could be felt passing upwards to inner side of, and behind, the upper. X ray examination showed these points clearly. (Fig. 4 A.) Fresh extension was applied and leg held in fully flexed and abducted position, but X ray examination showed only slight, if any, improvement.

Jan. 12th, 1918: Anæsthetic. Wire loop placed round free end of upper fragment. Counter incision made in adductor region and wire brought out through this and upper fragment pulled backwards and inwards into line with lower. Wire fastened to inner bar of Thomas's splint.

On Jan. 20th X ray examination showed perfect alignment. (Fig. 4 B.) Little pain and no increase of sepsis, but on 30th, as there had been a little oozing of blood from the inner wound the wire was removed. After this patient did well and an X ray on Feb. 20th showed that there was no recurrence of displacement.

Discharged to United Kingdom March 1st, wounds nearly healed, firm union, no obvious deformity. Shortening ¾ inch.[2]

CASE 5 (Fig. 5).—Private A. P., aged 25, admitted Jan. 5th, 1918, with compound fracture of right tibia and fibula. Large wound on outer aspect of leg, 5 by 3½ inches, which had been freely excised at C.C.S., anterior tibial vessels having been ligatured. Wound very septic; severe comminuted fracture of tibia could be seen. The main lower fragment was displaced forwards 1½ inches in front of main upper fragment. In addition several large fragments not completely detached were projecting into wound at various angles. (Fig. 5A.)

Jan. 6th: Anæsthetic; leg put up on Thomas's splint with spring extension taken from plaster-of-Paris anklet. A wire was insinuated under fracture and ends crossed in front of tibia and each attached to arch. As wire was tightened the various fragments came together and the bone was reconstituted except for a piece which had been blown away or removed. (Fig. 5B.)

Though the position was, and continued to be, excellent, the septic process advanced and skin and soft tissues below wound became gangrenous, probably as result of ligature of anterior vessels. As there was considerable pyrexia with delirium and sévere toxæmia the leg was amputated on Jan. 11th, but a stereoscopic X ray examination taken just before showed that position of fractured tibia was practically perfect, and that fibula had also come into position. The operative interference for introducing the wire was practically nil and was not the cause of the sepsis or the gangrene which occurred some distance away.

[2] All measurements are taken from anterior superior spine of ilium to tip of internal malleolus, tilting of pelvis being corrected, both legs being in same position of flexion, abduction, and rotation.

I have to thank my colleagues, Captain H. M. Anderson, R.A.M.C., and Lieutenant E. L. Councell, R.A.M.C., for their coöperation and help in treating these cases, and Captain M. H. Watney, R.A.M.C., for many radiographic examinations and photographs.

TREATMENT OF FRACTURE OF THE SHAFT OF THE HUMERUS BY SPLINTS.

BY CHARLES A. MORTON, F.R.C.S. ENG.,

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Need for Fixation to Chest Wall.

THERE is only one way in which a fracture of shaft of humerus can be absolutely fixed, and that is against the chest wall. I have for many years recognised this, and treated such cases by first fixing a splint to side of chest and then the arm on it, or fixing the arm on splints and then fixing these splints to side of chest.

Early in 1917 I treated a case of gunshot fracture of humerus; portion of shaft absent, leaving gap of 1 inch and flail-like arm. After wound had healed arm was so wasted, with ends of bones so prominent, that one quite easily detected any movement. By most careful fixation of limb on an internal angular splint, and of splint to chest wall by strapping, I could not control all antero-posterior and rotatory movements at seat of fracture—indeed, they were possible to quite a marked extent.

It seemed that only fixation by plaster-of-Paris to chest could absolutely fix fragments. I fixed internal angular splint to side of chest with plaster, and then arm and forearm to splint. This gave absolute fixation of fracture. Patient had musculo-spiral nerve paralysis, and it was important to leave extensor aspect of forearm free for massage and electrical treatment. This was easily done, because fixation simply of elbow and wrist on internal angular splint, fixed securely to side of chest, was quite sufficient absolutely to fix the fracture.

After treating the case in this way I was interested to find that Erichsen had held very strong views[1] as to the need for fixation to the chest wall. He recommended fixation by plaster-of-Paris bandages.

[The way in which the fractured ends are often displaced by the position in which the forearm is placed after splints are applied was described.]

Correct Angle for Forearm in Relation to Body.

When the arm lies at rest by the side the intero-anterior surface lies against chest wall—i.e., anterior aspect of elbow does not look directly forwards, but also inwards.

If elbow is flexed the forearm will project forwards at an angle of about 67° (or three-quarters of a right angle), with a plane representing anterior surface of body. Some surgical writers say it should be flexed at a right angle to such a plane, but this means slight rotation out of lower in comparison with upper fragment. If the flexed forearm is brought over front of chest in a sling, as is so often done, rotation *in* is quite marked and the elbow is brought forwards at same time, and upper end of lower fragment displaced backwards and outwards.

The difference between fixation of forearm at 90° and 67° with anterior plane of body is not very serious, but the latter is preferable. If an internal angular splint is used (and this certainly seems to give the best fixation in fracture of shaft of humerus, for it is essential to fix elbow), this angle can only be obtained by having forearm part of splint fixed at an angle of 22° to plane of arm part of splint; this will fix forearm at angle of 67° with anterior plane of body.

Advantages of a Posterior Splint.

If we use the combination of a posterior and an internal splint, fixed together and fixed by plaster to the chest, we provide a stable support for the arm when the patient is sitting up or lying down.

Anterior or outer splints can be added, if thought necessary, and fixed by webbing straps or strips of strapping. The posterior and internal splints should be joined by quite small nails or by quite narrow strips of thin metal, so that no metal lies behind fracture to obscure skiagram. In certain cases hinges might be used, but to unfix a splint for a dressing is never satisfactory.

But if posterior splint is not fixed to internal one in construction of splint it must be fixed to it by firm strapping carried round internal splint on which arm rests, through triangle, and not round patient's body. But it is a decided advantage to have it fixed in construction of splint, especially when we have to place fractured arm on splint in recumbent position (as under an anæsthetic).

I do not think it is needful to carry the posterior splint higher than it is possible to do the internal one, so as to support the upper fragment behind.

[1] Erichsen's Surgery, 1895 edition, p. 590.

The construction of the splint allows a lateral skiagram to be taken. (Fig 1.)

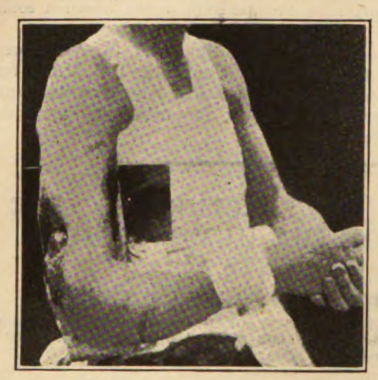

FIG. 1 shows splint fixed to chest wall with plaster bandages. The wrist is fixed to splint with piece of strapping. A skiagraphic plate has been inserted through the triangle to show how a lateral skiagram can be taken with the arm securely fixed to the chest wall. A large gunshot wound on outer aspect of arm is shown. The splint is my original one without a posterior part.

Other Details in Construction of Splint.

The base of triangle should be 4 inches, so as to give a sufficiently large angle at upper end, and this angle must not be filled in. The two pieces of wood which form sides of splint must be so bevelled that junction at upper angle is an angle and not a flat surface, for if it were the fragment might be displaced outwards by thickness of splint at upper angle. (Figs. 2-4.)

The average length of part of splint on which arm rests (outer side of triangle) should be 10 inches (about average length of arm from anterior axillary fold to lower border of bent elbow). In a very short man it was 9 inches, and in a man 6 feet 1 inch it was 11 inches.

If possible it would be best to take exact measurement for construction of splint, but a 10-inch splint would be right for most cases, and if not it would only necessitate fixing forearm either slightly over or under edge of forearm part of splint, and even in a 9-inch arm would adequately support elbow.

But if splint is not made from measurement the forearm part need not be fixed to arm part until it is used. It can then easily be screwed on to it, and will do for either right or left forearm. The triangular part of splint can then be made of full length—11 inches—and forearm part can be screwed on at any level.

Question of Abduction of Arm.

There is no objection to placing the limb in the abducted position if both fragments are equally abducted.

Indeed, in fracture below insertion of deltoid it is a distinct advantage, for the upper fragment is abducted by that muscle.

Some surgeons recommend abduction for treatment of fractures of urgical neck. Even granting that upper fragment may be a little abducted by supraspinatus, it certainly cannot be much, and if we markedly abduct the lower fragment when there is no abduction or only very slight abduction of the upper we shall get angulation at seat of fracture.

It therefore seems to me a great mistake to put up a fracture high up in shaft of humerus (i.e., a fracture higher than an inch below surgical neck) in such extreme abduction as a right angle with the body.

Treatment of Fractures Very High Up in Shaft of Humerus.

We cannot control position of upper fragment of a fractured humerus by a splint, unless it is more than one inch below surgical neck. In such cases the triangular splint cannot be used, for it would abduct lower fragment and could not abduct upper. I think it should be a rule in treating fractures of humerus not to abduct lower fragment unless you abduct upper fragment also, or a skiagram shows that it is abducted. In these cases, of course, no plate can be placed high enough to obtain a lateral skiagram, unless just for a very brief period it pushes up anterior axillary fold.

If the fracture is at this high level we must be content to fix arm in intero-posterior splint with forearm projection, fixed by plaster bandages against chest wall, but the splint must be made of quite thin wood and upper end must be carefully bevelled, so as not to push out lower fragment into abduction, particularly at upper edge, or to abduct upper by pressure of edge against lower end if it reaches high enough to lie just inside lower extremity.

If we have a posterior splint fixed to an internal one, as I think we should, we cannot carry our turns of plaster bandage around internal splint and chest wall unless we have posterior splint interrupted. It will be enough to have two gaps in it, to carry plaster bandages through, to allow of firm fixation to chest wall. In the triangular splint plaster bandages pass through triangle.

In these high fractures without wounds it might be enough to fix arm to side of chest with plaster bandages, but I think a splint is more satisfactory. To simply fix arm against side of chest with strapping or bandages seems quite unsatisfactory.

Extension can easily be applied by carrying side of triangle on which arm rests, or internal splint if no triangle is used, a few inches beyond fracture with forearm projection, and fixing a small piece of wood or metal at right angle to end, and attaching to this a rubber accumulator or spring.

[The treatment of gunshot and other compound fractures of the shaft of the humerus and the modifications in the form of splint required by them were here dealt with.]

Method of Applying the Splint.

The splint is best applied with patient standing, or sitting on stool; he should hold his body as erect as possible and keep shoulders level. I think it would be very difficult to apply plaster bandages in recumbent position. But if any operation on the arm is required when fixed on splint it is not necessary to remove plaster fixation of splint to chest, as it does not fit tightly, but it would be well to cut it through in front with plaster cutters and then put a bandage around it in case of any need for artificial respiration. The plaster case can be made perfect again the next day by a few plaster bandages. If it is necessary to give an anæsthetic to fix the fracture for the first time on the splint, the best plan is to temporarily fix the splint to the chest wall with a binder over it. The whole chest must, of course, be covered with flannel bandages, or a thick vest put on before the splint is fixed to it with the binder.

During the time the splint is being fixed to chest wall with plaster bandages the fractured arm must be very carefully supported on an internal angular splint in abducted position by a nurse or orderly, who give their whole attention to this. And before fractured arm is raised into abducted position the exact level to which upper edge of splint is to come should be marked on chest wall.

The splint is padded on both sides. Several folds of lint (boracic lint is best) are quite enough, and no great thickness must be used between chest wall and splint, nor is this necessary on arm aspect of splint. Upper angle of splint must not be thickly covered.

In applying plaster bandages it is well to take a few turns under splint—i.e., under base of triangle, and over opposite shoulder protected with a thick pad of lint, to hold up splint well. As soon as plaster bandages have set enough to fix splint to chest wall the fractured arm is placed in good position. All that need be done in way of permanent fixation is to secure forearm on forearm splint with pieces of spool strapping around forearm just above wrist and the splint; this fixes elbow and with it lower fragment.[2] The forearm is placed on splint in semi-pronation and need not be covered on extensor aspect (except for one inch above wrist by strapping), so that it is available for massage and electrical treatment in lesions of musculo-spiral nerve. If there is a lesion of this nerve forearm part of splint should extend beyond wrist to allow of hyperextension of that joint; but if no lesion of musculo-spiral nerve it should not be long enough to interfere with wrist movements.

The internal and posterior splints will prevent any angulation at seat of fracture in these directions, and if there is a tendency to it in anterior or outward direction extra splints can be added on either aspect and fixed by webbing straps or strips of spool strapping passed through angle. If triangular splint is not used but the straight one, it is well to place the webbing straps between splint and chest wall before fixing with plaster bandages, so that they may be available for extra splints if required.

If desirable the elbow can also be fixed by a narrow piece of strapping carried obliquely over it and under lower end of internal splint, through triangle, or round arm aspect of upper end of forearm splint where it joins arm portion, if a splint without triangle is used, but this fixation of the elbow is not essential. It is desirable to support forearm portion of splint until plaster has quite set, so that weight of forearm does not drag splint out of position.

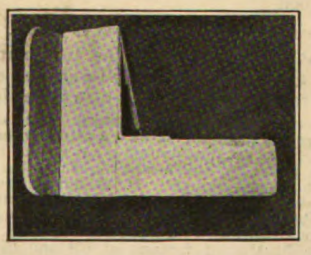

FIG. 2.—The splint I now use. On the left is seen posterior portion attached at right angle to internal portion, which forms one side of triangle, and on this the arm rests. Another side of the triangle—that attached to side of chest—is just seen behind it. The forearm part of splint is seen projecting to the right, from the internal part.

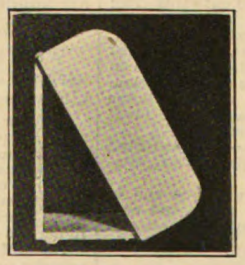

FIG. 3.—The splint, showing the triangle, and a back view of posterior part of splint, which hides internal part on which arm rests. The straight side of the triangle, which is seen in the figure, is fixed to the chest wall.

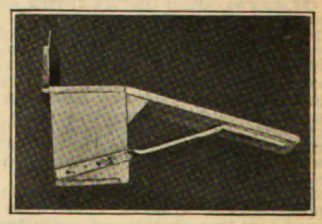

FIG. 4.—The splint viewed from its under aspect to show angle (22°) at which forearm piece is attached to internal piece. The part of the splint to which the metal bar supporting forearm piece is attached is the base of the triangle. This metal bar is not essential. On top of the splint is seen lower edge of posterior piece of splint.

[2] This is all that is absolutely necessary, but I generally put strapping or bandage around the arm as well.

Other Forms of Splint which are Fixed to Chest Wall.

I wrote the first part of this paper in the early part of 1917, but did not complete it until I had had further experience in the treatment of these fractures of the shaft of the humerus.

In the meantime I know that three papers have been published (and probably several more have been which I have not seen) in which splints are described which are fixed to the chest wall.[3]

Captain Wilson advocates fixation of splint to chest wall by plaster bandages, but I should prefer my own splint. I think the arm would be more securely fixed on it than on a rod-and-sling splint, and I do not consider the arm should be brought across the chest.

I should have the same objection to Mr. Pringle's splint—i.e., that the lower fragment is rotated in or out by position in which forearm is placed, and I also see no reason why abduction should be carried to such an extreme as to make it very awkward for the patient to get about when able to do so.

The wire frame method of fixation to the chest wall advocated by Captains Johnston and Buchanan does not seem to me nearly as secure a method of fixation as plaster bandages.

[3] Hogarth Pringle (Glasgow), British Journal of Surgery, July, 1917; Captain G. E. Wilson, THE LANCET, 1917, i., 953; Captain W. H. Johnston and Captain J. S. Buchanan, THE LANCET, 1918, i., 133.

Medical Societies.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

The Cavendish Lecture on the Future of the Medical Profession.

A MEETING of this society was held at the rooms of the Royal Society of Medicine on July 11th, Dr. A. J. RICE-OXLEY, the President, being in the chair, when Major-General Sir BERTRAND DAWSON delivered the second part of the Cavendish Lecture (see p. 83). In the discussion which followed,

Major HENRY DUTCH drew attention to the difficulties of accommodation in the case of hospital clinics. In a suburb of, say, 80,000 there would be about 40 doctors. Each would need his own consulting-room and his own waiting-room. A union of medical men was required, ready to uphold each other and stick together.

Major Sir JOHN BROADBENT said that the greatest drawback to the out-patient centre was that every doctor in the district could not be put on, and those who were not would feel themselves severely ill-treated. All classes of patients would not attend the centre at a fixed time as this would mean a mixed crowd of poor and rich. It was necessary to know the home life of the patients in order properly to deal with diseases, and besides a certain number must be attended to at home. He thought the better plan would be to establish centres in different parts of London, to which specialists (including radiographers, pathologists, &c.) should be attached, and to which the general practitioners could bring their patients and have advice free. At present it was difficult to get such help. Poor people should be attended at the expense of the State, but those attending them should have adequate remuneration. The hardest case was that of the middle class. Attached to the voluntary hospitals there should be paying wards admitting patients according to their means. He disapproved of putting the hospitals under the State or University.

Dr. E. H. M. STANCOMB (Southampton) said that the general practitioner should be educated thoroughly in public health, housing, and town-planning. He should have a full knowledge of local hygiene, especially that of his own town.

Captain W. F. H. COKE asked if the whole population were to come into the scheme. He thought the practice of the country doctor must be essentially as it was to-day, but he should have the assistance of a special opinion when needed.

Major GORDON DILL said that the only people who could reap benefit from our present system of treatment were the very poor and the rich, the latter at great trouble and expense. The resources of medicine should be free to all. The period of gradual change had become a revolution owing to (1) the Insurance Act and (2) the war.

Captain A. E. RUSSELL said the first thing to decide was whether the principle of the scheme was accepted—whether the profession was satisfied with some form of State control. What means were available to bring evidence to show that the profession supported it?

Dr. G. E. HASLIP said that we must look at the matter from the point of view of the health of the nation and make the people of the country healthy, which the present system did not do. Prevention was not considered enough by the profession. The country was governed by permanent officials and not by Parliament. The Ministry of Health Bill was blocked and Parliament was helpless.

Sir ROBERT MORANT said that medical men must take more part in public affairs. At present the Maternity and Child Welfare Bill was being passed through Parliament without any organised assistance or advice from the profession as to how the problem should be handled. The medical profession had no right to say that things were thrust upon them from above when they did not think things out for themselves. It was impossible to get matters properly voiced by the profession. They should get to work to decide as to the particular characteristics the scheme should possess.

Mr. F. G. LLOYD also spoke, drawing attention to the various forms of State service already in existence, such as the Royal Army Medical Corps, the Royal Navy Medical Service, the Indian and Colonial Medical Services, and Sir BERTRAND DAWSON briefly replied.

Reviews and Notices of Books.

MILITARY MEDICAL MANUALS.

I. *Fractures of the Orbit and Injuries to the Eye in War.* By FELIX LAGRANGE, Professor in the Medical School of Bordeaux. Translated by HERBERT CHILD, Captain, R.A.M.C. (T.). Edited by J. HERBERT PARSONS, Captain, R.A.M.C. With 77 illustrations and 6 plates. 1918. Pp. 248. Price 6*s.* net.

II. *Artificial Limbs.* By A. BROCA, Professor of Topographical Anatomy to the Faculty of Paris, and Dr. DUCROQUET, Orthopædic Surgeon to the Rothschild Hospital. Translated and edited by R. C. ELMSLIE, M.S., F.R.C.S., Major, R.A.M.C. (T.F.), Orthopædic Surgeon to St. Bartholomew's Hospital, Surgeon to Queen Mary's Hospital, Roehampton. With 208 illustrations. 1918. Pp. 160. Price 6*s.* net.

London: University of London Press, Ltd.
Paris: Masson et Cie.

I. THIS volume is based on Professor Lagrange's experience of over 2500 wounds involving the eyeball inflicted in the present war, including 609 cases of fracture of the orbit. From this material a selection of case-histories is given and analysed in such a way as to make the work one of value, not only from the standpoint of general as well as ophthalmic surgery. The following examples of original deductions drawn by the author will serve to give an idea of the scope of his work.

Indirect fractures extending from the vault of the cranium to the sphenoidal fissure and involving the orbit should, according to the classic authorities, form a prominent feature in the practice of war surgery, but as a matter of fact these cases are exceedingly rare. In only two out of 609 cases was a fracture of the orbit so caused.

When a projectile passes above the orbit, implicating the frontal bone and the anterior cerebral region, it produces fractures of the orbital vault affecting the sensory, motor, and optic nerves in the region of the optic foramen and the sphenoidal fissure. The eyeball is not involved. ..... When the projectile passes below the eyeball without traversing the orbit and without fracturing it, it produces concussion affecting the eye in the macular region. This is the great cause of diminution or loss of acuity of central vision.

The author's explanation of the frequency of macular lesions in these cases is interesting. The violent air-vibrations caused by the projectile are propagated, he points out, to the orbital contents by way of the pterygo-maxillary fossa and spheno-maxillary fissure; the wave of oscillation tends to toss the eye forwards while the optic nerve holds it back. In this disturbance the fragile macular region at the posterior pole is the most apt to suffer.

Some new light is thrown on what has always been a somewhat obscure subject—viz., hæmorrhage into the sheath of the optic nerve. In no single case in which this condition was presumably present did Professor Lagrange find the ophthalmoscopic picture of retinal ischæmia, and he is therefore inclined to agree with Gonin and Dupuy-Dutemps, who reject this as one of the causes of that condition. Another

observation worthy of note concerns what the author terms traumatic proliferating choroido-retinitis, a condition resulting from hæmorrhage after laceration of the retina and choroid, to be distinguished from ordinary retinitis proliferans, in which the origin of the blood clot is spontaneous hæmorrhage into the vitreous without the implication of the choroid at all.

Among other subjects on which this book throws light we may mention traumatic detachment of the retina (four cases are given where detachment was due to concussion without direct injury to the globe) and traumatic enophthalmos. With regard to the treatment of these serious cases there is not so much said that is new. Professor Lagrange's experience of the rarity of sympathetic ophthalmia agrees with that of all others who have written on the subject during the present war. At the same time he insists that it would be a fatal mistake to ignore the danger, and, while giving rules on the subject similar to those generally taught, lays especial stress on the importance of the earliest stage of the infection. "We say without hesitation," he writes, "that photophobia, lacrymation, fatigue in reading and diminution of visual acuity are the first degree of the affection of which serous iritis is the second degree, and of which iridocyclitis is the third." A chapter on reparative surgery of orbital fractures gives some interesting hints about that difficult subject, restoration of the eyelids, especially about the employment of adipose and cartilaginous grafts, though the size of the book does not allow of these matters being very fully dealt with. We commend the book as concise, interesting, and original. It is very well translated.

II. To assist the surgeon to devise the most suitable apparatus for the individual case of the maimed man who has to be provided with an artificial limb this little book by Professor Broca and Dr. Ducroquet is admirably adapted. The methods used in France are in many respects different from those employed in this country, and the surgeon will find here a greater choice of the most suitable apparatus.

Blood Pictures. By CECIL PRICE-JONES, M.B. Lond. Bristol: John Wright and Sons, Ltd. 1917. Pp. 91. Price 6*s.* 6*d.* net.

THIS little book was written, so the author tells us in his preface, in response to the frequent request by clinicians for some guide to the interpretation of reports on blood examinations, and also for some simple method by which general practitioners can assist diagnosis by making blood examinations. Many general practitioners will welcome this practical answer to the request. The study of the cellular elements of the human blood under conditions of health and disease has received the attention of the best brains amongst medical scientific men in every civilised country of the world during the past 20 years or more. The existing literature on the subject is immense and in its manifold difficulties and complexities the subject is one which may well occupy the whole attention of an expert worker for a life-time. For this very reason, and for the fact that quite definite assistance may be derived from total and differential examinations of the blood cells in many cases, it is opportune that such a guide as the one under review should have come into being. With its aid the general practitioner should be able to appreciate the value of cellular hæmatology in the differential diagnosis of human diseases, especially as the author has not unduly emphasised the reliance which may rightly be placed on laboratory examinations by those in need of general guidance. After defining the normal red and white cells, their types and total and relative numbers in the human blood, the author proceeds to a description of the blood pictures found in bacterial, protozoal, "blood," and malignant diseases. In each case he gives examples of actual cases occurring in his own experience, which serve as illustrative types of the particular picture. The book is well arranged, is agreeably dogmatic, and presents the subject in lucid form. We cordially recommend it to those for whom it was written.

Three Clinical Studies in Tuberculous Predisposition. By W. C. RIVERS, M.R.C.S., D.P.H., Tuberculosis Officer, Barnsley District, West Riding, Yorks. London: George Allen and Unwin, Ltd. 1917. Pp. 272. Price 12*s.* 6*d.* net.

TUBERCULOSIS is a medico-sociological problem the intricacies of which seem to increase in complexity as investigations become more penetrating. There is much still to be learnt regarding the nature, varieties, and conditions of the growth of the tuberculous seed, but in regard to the tuberculous soil we are still merely scraping the surface of things. Dr. Rivers has accomplished a valuable purpose in gathering together into one volume the results of his personal observations and researches regarding certain physical conditions which can be conveniently viewed as predisposing to tuberculous infection or influential in the spread of tuberculous lesions. The first part deals with the supposed relationship between consumption and ichthyosis. The author's conclusion is thus rather curiously summarised:—

"In all three ways, then—from a penetrable skin, especially from diverse internal anomalies, possibly sometimes from naturally feeble constitution—if not in others as well (for the "efficient cause" oftener comprises a plexus of antecedents than it presents only one), existence of ichthyosis may entail liability to consumption. There is thus something of an *a priori* case, which, added to the direct clinical evidence given first, establishes to one judgment at least ichthyosis as a sign of predisposition to consumption."

Part II. provides records of cases and references to literature seeking to establish an association between consumption and squint. Part III. is an elaborate monograph on the connexion between consumption and non-tuberculous nasal abnormality. Here are collected records of a large number of cases with illustrations and a valuable bibliography in the form of footnotes. Although the author's thesis can scarcely be considered established, his material has been skilfully brought together and effectively presented. In Part IV., which is designated "Conclusions: An Examination of Lunatics—Protocol," the author elaborates his main conclusion: "Back to diathesis!" The volume closes with a tabular summary of 500 cases investigated by the author. The volume is a record of much painstaking research and merits consideration as a serious attempt to penetrate into the perplexities of some of those states and conditions which we collectively designate "predisposition." The numerous illustrations add much to the interest of the study.

Burns and Their Treatment. By J. M. H. MACLEOD, M.A., M.D. Aberd., F.R.C.P. Lond., Physician for Diseases of the Skin, Charing Cross Hospital, Royal Flying Corps Hospitals, &c. London: Henry Frowde and Hodder and Stoughton. 1918. Price 6*s.* net.

THE author of this excellent little book states that the manuscript was written originally in order to extend his own knowledge of the treatment of burns, of which severe and extensive examples came under his care in the hospitals of the R.F.C., and elsewhere. To a careful summary of the work of others in regard to burns and their treatment, there is added the author's own ripe experience, and the happy result is a practical text-book; every practitioner who reads it will keep it for reference. The serious disadvantages of the older methods of treating burns by occlusive and greasy applications are pointed out, and the more modern methods are described. The "open method," that of healing under a natural scab while continuously exposed to the air, is regarded as the simplest and in many ways the best for extensive burns, and it has the great advantage that it does not necessitate the terrible ordeal of periodical redressings. Methods of healing under an artificial scab, and especially the paraffin method, have been extensively employed during the present war, and it is gratifying to learn that grafting for large unhealed surfaces is largely avoided under the newer methods of treatment. Applications of X rays or radium have been found of value in reducing unsightly hypertrophic scars, but fibrolysin injections have proved disappointing. The book deals also with other forms of burns than those due to intense heat—namely, with electricity burns, burns from lightning, X ray and radium burns, burns from corrosives, and with sunburn. There is a useful and interesting chapter on dermatitis from high explosives. The value of the work is enhanced by illustrations of different types of burns and of apparatus for methods of treatment, by well-selected references, and by a full index.

The Panel Doctor: His Duties and Perplexities. By T. M. TIBBETTS, M.D., D.P.H. Second edition. London: John Bale, Sons and Danielsson. 1918. Pp. 75. 2*s.* 6*d.*

AS we remarked at the time of its first appearance, Dr. Tibbetts's sketch portrait of National Insurance in the working supplied a want which many must have felt, and the first edition of the book was therefore rapidly exhausted. The author has now brought its subject-matter up to date, while the legal points have been re-examined and corrected.

THE LANCET.

LONDON: SATURDAY, JULY 20, 1918.

The Future of the Medical Profession.

THERE appears to be no doubt in the public as well as in the professional mind that now is the appointed time for placing the medical profession on a more stable basis, both as a calling for its members and as a service whereby the health of the people is to be maintained by the best preventive and curative measures. By Parliament we are promised a Ministry of Health, which will, at any rate, centralise official activities as far as State medicine is concerned, and which, if it is to play a live part in the scientific developments of the future, must break down all such barriers as are unnecessary or artificial between State medicine and the domiciliary care of the people. In many directions groups of medical men are preparing collective opinions to guide the Government in respect of the enormously valuable departure which is contemplated, and simultaneously the lay papers, interpreting, we may be quite certain, the wishes of their readers, are devoting space and thought to the practical ways in which the medical profession can be organised for the public good. It is being allowed that, as medical men will, under every scheme for the promotion and preservation of national health, be the administrative officers, there is sense in allotting fair treatment to them. Thus it would seem that if the Government in their projected legislation give expression to this view everyone will be pleased.

We publish this week three papers dealing with the future of the medical profession, which cover much common ground, even while they are inspired by different ideals and lay stress in marked manner upon different social, professional, and medical problems which call for early solution. Sir BERTRAND DAWSON'S Cavendish Lecture, delivered in two instalments before the West London Medico-Chirurgical Society, will be seen by our full abstract to contain a comprehensive and idealistic scheme for rendering the medical profession of greater value to the State, while demanding of the State more substantial recognition for doctors in their education and their calling than is now granted. The main novelty in Sir BERTRAND DAWSON'S scheme is the suggestion for the endowment of buildings and structures for medical purposes by the State. For an adequate medical service, efficiently staffed, he insists that there should be in each locality adequate buildings and equipment for diagnosis and treatment, and it is, he holds, in the housing of health services generally that grants from the State are most needed. The allocation and distribution of such grants must obviously be controlled by a powerful central body, and Sir BERTRAND DAWSON is in agreement with most thoughtful reformers in believing that the new Ministry of Health will at the beginning be associated in its work with the Local Government Board, as well as with the National Insurance Commission. In no other way could its early activities be developed, and its later utilities depend upon the direction of its start. The picture of an organised medical profession, grouped around local hospitals and clinics, and being at the same time in close relation with the central hospitals placed in the larger centres of the population, is a fascinating one. No doubt in this way the intellectual life of the medical profession would be acutely developed, and as a result preventive medicine and early treatment would work wonderful transformations in the national rates of sickness and incapacity. But these happy things will only come to pass if the medical profession will acquire more influence than it now possesses in the conduct of public affairs.

Professor BENJAMIN MOORE and Mr. C. A. PARKER, as officers of the State Medical Service Association, re-state in full the case for a State Medical Service, pointing out that both lay and medical publics are realising the meaning of the formation of a Ministry of Health. All can see that changes in the relation of doctors to the public must follow on the erection of the new bureau, and that some form of organised medical service will result. The essay by Professor MOORE and Mr. PARKER should be read, because it summarises briefly but fairly the collective views of various bodies, and thus presents in a definite form the headings at least of the questions which require to be settled if the new Ministry of Health is to work from the beginning in close coöperation between preventive and curative medicine, and unhampered by the legitimate resentment of medical men. The advocates of a State Medical Service belong to the "extreme left party," to quote Dr. LAURISTON E. SHAW'S phrase in the opening sentences of his essay on the relations which should prevail between the medical profession and the public; this is the party which sees salvation in the proposal that every medical man to whom the State has granted medical registration shall become the servant of the State. Dr. LAURISTON SHAW does not follow this path, though he is equally opposed to those who think that the medical profession can still prosper, independent of Government control, but deprived also of all the facilities for development which State assistance connotes. Dr. LAURISTON SHAW enjoys the independence of individuality in expressing his thoughts, and in an interesting paper gives a classification of professional functions which will form a useful basis of thought at the present moment. And we cannot too often repeat how necessary it is that medical men should take heed of what may be in store for their calling when the Ministry of Health comes. It is perfectly true that many questions of organisation cannot be discussed until the Ministry has been formed, but it is equally true that the medical profession can play an important part in the new departure from the beginning if they can formulate some general views and expand them on public grounds. If we are at the outset hopelessly divided the Bill in its final stages may bring us sad things—even a humiliating and mischievous dependence.

Annotations.

"Ne quid nimis."

BRITISH AID TO FRENCH WOUNDED

France's Day was celebrated in England last week, and in order to give the public an adequate idea of the extent to which Britain has already come to the aid of French wounded and victims of the war, the British Committee of the French Red Cross issued on the day an excellent compilation from the pen of Mr. Laurence Binyon, entitled "For Dauntless France" (Hodder and Stoughton. Price 10*s*. 6*d*.). The book is not a record of Red Cross work alone, but includes the activities of the English canteens and of the various enterprises undertaken in relief of the devastated regions and the refugees. The British units have received financial support from the French Government as well as the coöperation of many subjects of Allied and neutral countries not included in the scope of the present book, and it should not be forgotten that there is also a French War Emergency Fund in this country which helps to maintain the military hospitals under the Service de Santé. Mr. Binyon opens with a section entitled "The Call and the Answer," in which he surveys the scene in Western Europe from an imagined aerial vantage-point, and describes the working of hospitals and relief agencies as a whole. The first part of the book also includes an account of a sample day's work at the office of the Comité Britannique, which now employs more than 2000 people, and of the early and very valuable work of the French Flag Nursing Corps in placing English nurses at the disposal of the authorities at the very outbreak of the war. These 40 pages should be read by everyone who wishes to understand how slight a barrier *la Manche* has been between English and French coöperation in the work of healing and restoration. The second part of the book is an orderly record of the work, illumined in the third part by the compiler's vivid impressions of it as an eye-witness. A complete alphabetical list of workers is given in Part IV. A frontispiece in colour by Edmund Dulac embodies the dauntlessness which is the keynote of the book, and five other illustrations help the reader who has not crossed the Channel to picture the scenes described. M. Paul Cambon in his preface says that "tout ce que l'auteur a vu et recueilli tend à resserrer entre les deux peuples non seulement la confiance et le respect, mais, mieux que cela, le lien émouvant de la véritable amitié."

ŒDEMA OF THE GLOTTIS IN RHEUMATIC FEVER.

IN the *Journal of the Canadian Medical Association* Dr. L. M. Lindsay has reported a case of rheumatic fever with a very rare complication—œdema of the glottis.

A girl, aged 11 years, was admitted into the Children's Memorial Hospital, Montreal. Three days previously she had been taken ill with what appeared to be an ordinary attack of rheumatic fever, and 4-grain doses of sodium salicylate were given every four hours. On admission she was rather thin and pale. The most striking feature was swelling of the left side of the face and neck which pitted on pressure, and prevented her from closing or opening the eye. Scattered over the body were ecchymoses varying in size from a 5-cent piece to the palm of the hand, deep red, mottled, and sharply circumscribed. The left shoulder and the right knee and elbow were painful, tender, and swollen. The heart was somewhat enlarged, and there was a rough systolic apical murmur, transmitted round the axilla to the back. The tonsils were rather large and the pharynx was congested. The urine was normal. Five grains of sodium salicylate were given every four hours. On the following day she suddenly began to gasp for breath, and in a few minutes her condition became desperate. She was unable to draw her breath and was becoming cyanosed. Tracheotomy was at once performed and gave immediate relief. The œdema gradually diminished, although subcutaneous hæmorrhages continued to appear in crops, chiefly on the legs and thighs. They were much smaller than the original ones. After a week she was greatly improved and the tracheotomy-tube was removed. The temperature, which had usually been over 101° F., was now below 100°. Recovery was slow but steady. Cardiac hypertrophy and mitral insufficiency remained.

The question may be raised whether the purpura and œdema were not due to an idiosyncrasy to sodium salicylate, as this drug is known to produce purpura. Against this view is the fact that when the girl attended as an out-patient with vague pains and slight fever she was given 20 grains daily of aceto-salicylic acid for one week without causing purpura.

THE TREATMENT OF FUNCTIONAL NERVOUS DISORDERS IN THE ARMY.

"H. H." writes:—

"Within the next few months a considerable number of members of the medical profession will be called up to serve with the R.A.M.C. Some will be men of experience attached to the consulting staffs of hospitals in London or the provinces, and many will be anxious, if possible, to do work that has some bearing on the less mechanical aspects of medicine.

Now the present war has revealed a vast field for useful work in the treatment of those functional neuroses usually classed together under the heading of 'Shell shock.' The War Office has initiated a system for dealing with such patients in special hospitals, under the care of officers specially selected for the purpose. Opportunities for instruction in this branch of medicine are given to those who, like the majority of the profession, are unfamiliar with the treatment of the neuroses."

As a certain number of medical men who are interested in, or have had previous experience in, this work may be required, they should send in their names to the War Office, as soon as they are called up, stating their wish to undergo a course of training in this branch of medicine. In this way the treatment of functional nervous disorders in the army should fall into the hands of those competent to give it, and to give it with the necessary sympathy and enthusiasm.

REGISTRATION OF NURSES.

A FORTNIGHT ago we commented on two meetings at which the State registration of the nurse was the central theme, and expressed our confidence in the ability of nurses to settle their own polity in regard to it. In a detailed letter which she has addressed to us Mrs. Bedford Fenwick, who occupied the chair at one of these meetings, while expressing her appreciation of some of our conclusions, desires us to state that the amendment to which we alluded was not accepted by herself as chairman, as it was proposed by a person who was not a member of the society, and was therefore not in order. We accept the statement, adding a regret that no orderly means could have been found for holding out an olive branch. Mrs. Fenwick reproaches us for our unfairness in not allowing her to reply at length. We should have been glad to do so if space had permitted, but as it does not we must refer our readers, who desire further to pursue the controversy, to the *British Journal of Nursing*, where Mrs. Fenwick informs us that she will publish her reply in full.

THE FUTURE OF THE MEDICAL PROFESSION.

(Being an abstract of the Cavendish Lecture delivered before the West London Medico-Chirurgical Society on July 4th at the West London Hospital and July 11th at the Royal Society of Medicine.)

BY MAJOR-GENERAL SIR BERTRAND DAWSON, G.C.V.O.,
PHYSICIAN TO THE LONDON HOSPITAL.

I.—AN EFFICIENT MEDICAL SERVICE.

THE lecturer attributed the changes which are now impending to a growing appreciation of the fact that much disease is preventable, a growing sense that health is of supreme interest alike to the State and the individual, and that the best means for preserving health and curing disease should be available for every citizen by right and not by favour. He pointed out that the growth of knowledge made measures for prevention and cure of disease more complex, so that they were no longer within the power of individual effort. If organised measures were to be put within the reach of all it followed that an efficient medical service could not be self-supporting. Its provision implied not only men, but equipment, and both must be distributed according to the needs of the community. He drew a parallel between provision for education and for health. Education was at one time patchy, unorganised, and dependent on voluntary effort. Since 1870, when Parliament stepped in, the State service had gradually overgrown the voluntary system, because it was recognised that education should be available for all; that the State was responsible for this matter, and that the cost was too great to be borne by fees or by voluntary effort alone. Health organisation had followed a similar development, though tardily, and at a distance; yet health was a more fundamental need than education. The lecturer thus reached the conclusion that the medical services must have some kind of State aid and central control, and that for their efficiency coördinated effort or team work in specially equipped institutions for diagnosis and treatment was needed. He contended, further, that curative and preventive medicine could no longer be separated in accordance with any sound principle, and should be brought together in thought, teaching, and organisation.

Insufficiency of Present Organisation.

These propositions were neither revolutionary nor new, and the direction of recent progress had conformed to them; what was needed was their wider recognition and systematic application. Taking as concrete instances the history of the diagnosis and treatment of phthisis and venereal disease, he showed how team work had gradually displaced individual effort; and the same was true of heart affections and gastro-intestinal maladies. But the need for such advantages had far outstripped the provision. For the masses the few voluntary hospitals were wholly inadequate; the middle classes of moderate means fared worse; and even the rich suffered because the investigations were not carried out in a clinic, where results could be placed side by side and a collective judgment given. A recent and striking example of organised team work was afforded by the orthopædic centres set up by the Army Medical Service under the inspiring leadership of Sir Robert Jones.

Looking to the future it was certain that investigations would become more and more technical and collective, and treatment would become increasingly specialised, with the result that the home would become less and less suitable for the sick. The insufficiency of the present organisation denied to the general practitioner the opportunities he should have for doing the best work. Hence he was apt to get disheartened and to deteriorate, as would a workman without the best tools or an adequate workshop. Team work and organised equipment should be available to provide him with the means to help himself, for the general practitioner was a central pillar of any scheme of reconstruction. In order to attract the best type of brain and character to the profession of medicine opportunities must be provided for doing good work; for observation, self-improvement, and research; for adequate repose and adequate remuneration.

The general practitioner—taking the wider outlook—should concern himself with the maintenance of health as well as the curing of disease. He must be brought into the position of a rightful leader and skilled adviser in all that appertained to the social life and welfare of his district. This implied that his education must give more heed to preventive medicine and social service.

For an adequate medical service, efficiently staffed, there must be in each locality adequate buildings and equipment for diagnosis and treatment and for the housing of health services. Here State aid and central control were needed.

Outlines of Scheme.

Sir Bertrand Dawson next sketched the lines along which such development should proceed, first discussing the provision of hospitals and clinics, and the organisation of the local machinery of health. In each community the health organisation and the intellectual life of the doctors should be brought into close relationship; this would lead incidentally to closer coöperation among the doctors and greater freedom for recreation and repose. The local hospitals and clinics should be grouped in relation to central hospitals in larger towns, which would provide consultants and specialists for the district. Round the central hospital should be gathered health services, both preventive and curative, more amply provided with equipment and personnel than those of the local hospitals; and the central hospitals might, in turn, be subordinate to a still larger provincial hospital.

Dealing broadly with administration the lecturer held that the buildings and equipment of hospital clinics and laboratories should be constructed and maintained by the health authority. Professional and technical questions must be determined solely by the doctors; administrative questions by a health board, which should be composed of lay and medical members, in no case chosen from an area smaller than a county or large borough. In larger questions of policy the health boards should be controlled by the Ministry of Health. Whatever the actual plan, the principle must be maintained that technical matters were decided by medical men, thus putting right one of the errors of the Insurance Act. The skilled must be no longer under the control of the unskilled. Whilst the clinics and institutions should be controlled by doctors, it was clear that the doctors should be subject to an expert court of appeal; there should be a system of medical administration and appeal right up to the central body advising the Minister. The relationship of this scheme to the administration of the Insurance Act was discussed in general terms. Insured persons would be on the panel of their chosen doctor as heretofore, but would have the right of all citizens to the advantages of the buildings and equipment of the medical services. The insurance authority should be represented on the local health board, but it should not directly control the local clinics and hospitals. For a high standard of professional work it was essential that doctors should treat their own cases in the local hospital, with access to specialists when necessary.

From all this it would follow that more of a doctor's earnings would be by salary and less by fees; in fact, it would be a part-time salaried service. A full-time salaried service for all doctors, with the abolition of private practice, would be gravely detrimental to the best interests of both patients and doctors. Medicine stereotyped under such a system would become a soulless machine. Under the service which he proposed the lecturer anticipated that the public health would be guarded, and the beginnings of disease detected and dealt with at a stage when treatment was likely to be effective. The means of collective investigation and institutional treatment would be at hand. Further, the trusted medical man of the patient's choice would be more efficient because of the opportunities for self-improvement given to him. With regard to remuneration, justice demanded reform; adequate payment and reasonable conditions should be afforded to medical men so that they might do good work and live a reasonable life without anxiety. On the other hand, the number of patients whom a doctor undertook charge of should be more strictly limited. So long as huge panels were allowed pecuniary reward went too much to the man with physical endurance and plausible tongue, and too little to the man with brains and conscience.

Ministry of Health.

Turning to the proposal for a Ministry of Health, the lecturer regarded the setting up of a central authority to guide, inspire, and control the activities of the medical service as the most pressing of all reconstructive needs. The

political difficulties in the way of creating an independent department were great; expediency therefore suggested administrative association of the new Ministry with the Local Government Board and the Insurance Commission; but if this plan merely aimed at convenience of organisation without implying a wider outlook for the new Ministry than that of the Board and Commission, then the suggestion must be opposed. The Ministry would need to draw to its councils representatives from all departments of medicine, and these councillors must have real power with direct access to the Minister. The profession for its part must realise the weight of its responsibility, close its ranks, work out a sound policy, and improve its organisation for expressing its views. Thus it would secure that proper influence in public affairs which it now lacked as a collective body.

II.—THE TEACHING HOSPITALS.

The lecturer said that the primary function of the teaching hospital was education and research rather than the serving of the clinical needs of the district in which it was situated. The local or central hospital belonged to its town or county, and should be under the new health authority; the teaching hospital belonged to the nation, and should be affiliated to a university or the Ministry of Education. Attached to the teaching hospitals would be various institutes where the domains of medicine and social service would meet, such as maternity care, infant welfare, school hygiene, trade and occupational diseases, tuberculosis, venereal diseases, &c., and be directed by distinguished specialists who would be on the staff of the hospitals. These institutes would give post-graduate training to doctors and instruction to nurses and social workers. No doctor would be eligible for a post at a health clinic without evidence of special study and knowledge.

The Staff.

Elections to the staff of a teaching hospital should not be exclusively in the hands either of the staff or the administration of that hospital. An academic council, carefully selected by the university, should also have powers of recommendation. The numbers of physicians and surgeons should not always conform to a fixed standard, nor should it be a necessity forthwith to fill a vacancy. The distribution of beds into a fixed number per member of the staff should cease, and when a physician or surgeon resigned the exact number of beds allotted to him should not of necessity descend to his successor. All members of the staff should have beds, beginning with a few; then if there grew up a man of promise and reputation his clinic would be developed and his beds increased; in this way a clinic would grow up round a man instead of a man being sought out to inherit a clinic. Each hospital should develop those departments which corresponded to the talents of its teaching staff. A junior member of the staff proved to possess one or more commanding talents should be given increasing opportunity and equipment, and there would grow up a great department and clinic round *the* man. There would not only be beds for medicine, surgery, and special subjects, but beds would be available for collective investigation; he would allocate roughly half the beds to provide each member of the staff with a fixed minimum and the remaining half to strengthen the clinics above referred to and for collective investigation. By such a plan power would go to the most efficient, and the intellectual life of the hospital would be led and inspired by a few men of outstanding abilities. He did not advocate the appointment of a professor of medicine and of surgery with complete control in his department; these had become subjects too big to be compassed by the brain of one man.

Terms of Service in Teaching Hospitals.

He was opposed to the universal application of a whole-time principle to teaching hospitals, for it would produce a narrow caste of academic men aloof from the problems and difficulties presented by disease in the world of action, and so unsuited for the training of general practitioners; further, it would be unwise to eliminate entirely the unconscious stimulus to effort which the earning of professional income affords. On the other hand, many a promising man had been spoilt by the combined effects of unpaid hospital routine and the early struggles for consulting practice. He thought a limited application of the principle was sound. For the first five years after his appointment every member of the staff should be a whole-time officer and forbidden private practice; he should live in or near the hospital and be paid an adequate salary. During this time he should apply himself to training, teaching, and research; he would discover his bent, and make manifest his worth. For the succeeding ten years he should give half his time to the service. Members of the staff whose gifts were entirely academic should have facilities provided by which they could remain whole-time workers at a salary. To avoid staleness and parochialism, members of the staff should be sent away periodically for three to six months on tours of study. The old-fashioned line of demarcation between the work of the physician and surgeon should cease. Half of their beds should be common to both of them, corresponding to the idea that a large number of diseases have both medical and surgical aspects.

Radiographers and laboratory workers should be brought into closer contact with the wards. Each member of the staff should have attached to him, besides his resident officer, two or more clinical assistants, men who had distinguished themselves as residents in some teaching hospital. They would be whole-time workers, devoting themselves to work in their chiefs' wards, to teaching and research, at least one-third of their time being free for study and research work of their own.

Salaries should be adequate but not lavish, according to the amount of time and energy each member of the staff gives to the hospital, and guided by the consideration that junior men require more help in proportion than senior men. It was obvious that some State aid would be necessary. This on a small scale was now in being, grants being paid by the Education Ministry, the Local Government Board, and the Medical Research Committee. No doubt the Health Ministry would subsidise health clinics. Such a policy of State subvention was elastic and compatible with the continuance of voluntary support combined with adequate central control. Teaching and research in England were still starved.

The scheme he outlined, whilst modifying methods, upheld the ideals of English medicine, the essential principle of which was that the student should be taught his profession in the wards by personal contact with the sick, learning to observe, inquire, and understand, being trained in knowledge and sympathy, and training his powers of intuition, without which he could never reach the best in clinical medicine.

Post-Graduate Teaching.

Post-graduate study should be encouraged, and doctors should be given "study leave" periodically, during which their salaries should be continued. He looked forward to a comprehensive scheme of post-graduate study, coördinated with similar schemes in allied countries, whereby we should widen our mental horizon and constantly extend our knowledge.

Early Diagnosis: The Beginnings of Disease.

The more early the diagnosis the more preventive and successful became the treatment. We needed the early diagnosis of the clinic, followed by the preventive treatment of the sanatorium and the spa, which were especially needed to combat the effect of "strain" which was produced by the increased speed of modern life. "Strain" might manifest itself in several forms. 1. It might affect the arteries, producing eventually aortic disease, arterio-sclerosis, and cerebral hæmorrhage. 2. It affected metabolism, producing gout or nephritis. 3. Or it might show itself in the plain muscular fibre of the body, producing atonic dyspepsia and constipation, and leading later to such conditions as intestinal stasis, visceroptosis, and colitis. For these repose and regimen were necessary.

Sanatoria and Spas.

On the outskirts of a big city there should be organised *sanatorium* treatment, with provision of a sanatorium, open-air bungalows, equipment for physical culture, baths and other forms of hydrotherapy, games and mental diversion, the whole organised and controlled by a highly trained medical staff. In such an institution patients would live for a time (say six weeks); each would eat his prescribed diet, pursue his exercises and games, take any baths or other treatment prescribed, and his mental surroundings would be restful yet cheerful. Such treatment would often be compatible with, and indeed aided by, the pursuit of his usual employment. He would be shown how to keep health and prevent disease, and such an organisation would afford

opportunities for research and study into the beginnings of diseased processes.

The spa was another application of the same idea but on a larger scale, where the patients rest from their ordinary avocations. Natural waters were a useful adjunct, but were quite subsidiary to the climate, position, and careful organisation of régime and environment, mental and physical. Many of the most successful spas in Europe were those whose waters had no special qualities. Amongst the features needed were the following: good natural position—the whole resort planned so as to present the various treatments efficiently though pleasingly and in an environment of beauty and repose; physical culture in its various forms, with ample accommodation for games which, though remedial, would be attractive; baths and all forms of hydrotherapy; electrical treatments; music and other entertainments which rest and divert, but do not excite, the mind; suitable dietaries so arranged as to be attractive and not irksome. Natural waters, though advantageous as an addition, were in no way a substitute for the foregoing necessities. The running of such a spa presupposed guidance and control by the doctors, acting in conjunction with a far-sighted municipality ready to spend adequate capital in laying out its resort on generous and comprehensive lines, and hotels designed and administered for those in search of health. Spas needed clinics, special hotels, and sanatoria, all working together for a common object. The need and opportunity were great, with many of the continental resorts henceforth closed to us. Resorts fulfilling the conditions laid down for city sanatoria had a great future of usefulness and should be brought within the reach of all classes. They would repay their cost many times over from the increased health and robustness of those visiting them and on account of their wide usefulness.

THE CASE FOR A STATE MEDICAL SERVICE RE-STATED

BY THE PRESIDENT AND HONORARY SECRETARY TO THE STATE MEDICAL SERVICE ASSOCIATION,

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THE suggested Ministry of Health has aroused considerable interest amongst the public in matters affecting the health of the nation, and it has vividly brought before the medical profession the great question as to how it can best serve the community as guardian of its health and physical well-being.

Both lay and medical men are realising that with the formation of a Ministry of Health changes in the relation of doctors to the public must quickly follow, and it is recognised that some form of organised medical service will be called for. Just as in the past there has been a hopeless multiplicity of Government departments concerned with matters of health, leading to waste of energy and money and a lack of efficiency, so has there been a similar want of organisation in local administration and in the various services rendered to the public by the medical profession.

All are agreed that organisation is called for centrally, locally, and amongst individual members of the profession, and at the present time much discussion is going on as to the particular lines such organisation should follow. Under the circumstances it is not surprising that suggestions for a State Medical Service should receive their share of attention, and it may be of some use to state the case for such a service once again and to see how far other opinion is leading towards that solution.

The Five Essentials.

In order to build up a system of preventive and curative medical treatment which will secure to *all* the maximum measure of health the following reforms are essential:—

1. A Ministry of Health with a president of Cabinet rank, assisted by an advisory medical board.
2. A Medical Research Service.
3. A widened and improved Public Health Service.
4. Close coöperation between the preventive and curative medical services.
5. A Public Clinical Service.

There is very little disagreement of a serious nature in the medical profession regarding the first three suggestions, and as regards the third it is now generally recognised that in the future there must be a much closer coöperation between the Public Health Service, which serves the community, and any clinical service which will serve the individual. The scope and aim of preventive medicine should embrace much of what is now differentiated as curative medicine, and clinical medicine should include much preventive work. The higher development of scientific medicine is to prevent disease in communities rather than to cure it in individuals, and therefore both the preventive and clinical services should work together for this end.

The necessity for a better organised clinical service is also now widely admitted on general principles, but there is considerable divergence of opinion as to the nature, extent, and functions of such a Public Clinical Service. Before stating the views of the State Medical Service Association it will be well to epitomise those of some other associations of medical men.

Views of the British Medical Association.[1]

The British Medical Association is in favour of a Ministry of Health the administrative functions of which should be carried out by members representing on an equal footing the preventive and clinical sides of medicine, and in each administrative area there should be whole-time administrative medical officers for both clinical and preventive purposes.

In each local area the medical staff should be of the following classes: (*a*) exclusively for administration and inspection; (*b*) resident medical officers to institutions and those in charge of special clinics; (*c*) pathologists; (*d*) those engaged in giving advice and treatment to individual persons otherwise than under (*b*). Class (*a*) should be whole-time salaried officers; (*b*) and (*c*) should be salaried officers, either whole-time or part-time; whilst (*d*) should not be salaried officers, but should be remunerated either for actual items of work done or for the number of persons for whom they accept responsibility.

There should be hospitals, clinics or treatment centres, and pathological laboratories within each area, with possibilities of consultations open to all who are entitled to the advantages of the public scheme. Voluntary hospitals would be necessary and should be encouraged. Visiting practitioners and consultants at both public and voluntary hospitals should be paid for their services in proportion to the number of patients coming under the public scheme for whom they accept responsibility.

Views of the Panel Medico-Political Union.[2]

The Panel Medico-Political Union is in favour of a Ministry of Health, but against any form of whole-time State medical service for general practitioners. It would support any improvement of the present State service in any direction which would conduce to the public welfare. It favours a large extension of hospitals and the formation of public clinics and treatment centres. It sees no reason why consultants, specialists, and pathologists should not be salaried officers, whole-time or part-time. It insists that the principle of free choice of doctors and free choice of patients is one of vital importance and must at all costs be retained. If it can be properly safeguarded, the union has no quarrel with a whole-time salaried State service confined to its proper sphere.

Views of the London Panel Committee.[3]

The London Panel Committee is in favour of a comprehensive scheme of coördinated provision of preventive and curative treatment of disease for all classes of the community. Under the local authorities there should be established two distinct departments of the medical services, the one dealing with the public health services, the other with individual health questions, both preventive and curative, with close coöperation between the two services. It desires to see the public health services improved.

With regard to the clinical service, it is opposed to any system of whole-time medical officers except administrators, resident medical officers, and practitioners specially devoting

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[1] "A Ministry of Health," The British Medical Association.
[2] The Medical World, March 1st, 1918.
[3] The Medical World, March 8th, 1918.

themselves to limited sections of professional work. It considers that medical assistance in the home should be given by a part-time service of general practitioners remunerated by capitation grants and assisted by a part-time service of consultants and specialists.

Finally, as regards institutional treatment it would have municipal hospitals established with general practitioners on the staff, such hospitals to be linked up with the voluntary hospitals, thus leading to the easy transference of patients from the one hospital to the other.

Views of the Society of Medical Officers of Health.

The Society of Medical Officers of Health, being of opinion that many forms of treatment (as for tuberculosis and venereal diseases) are in reality preventive measures, claim that all such measures come under the heading of preventive medicine, and that they can be best dealt with by an extension of the powers of existing Public Health Departments.

Points of Agreement and Disagreement.

It is thus seen that all these bodies are in favour of some form of clinical service so coördinated as to bring within the reach of all such patients as would come under the public scheme the benefit of easy access to consultants and specialists and of institutional treatment. The importance of "free choice of doctor" is insisted upon, whilst a salaried service of general practitioners, either whole-time or part-time, is opposed. All schemes imply some limit to those entitled to the benefits of the service, presumably by means of an income limit.

Views of the State Medical Service Association.

The State Medical Service Association is in entire agreement with these bodies as to the necessity of a complete and well-organised clinical service, including general practitioners, consultants, specialists of all sorts, and pathologists.[4] It would go further and also include within the organisation of the service dentists, midwives, nurses, and dispensers. Differences of opinion, however, occur when it comes to part-time medical officers remunerated by capitation grants and to the question of excluding patients whose incomes are above a specified limit; for advocates of a State Medical Service are of opinion that no permanent system of medical service can be satisfactory that is not free and open to all and that is not officered by whole-time salaried practitioners. The reasons for these views may be briefly summarised.

A Free and Open Service.

The Public Clinical Service should be free and open to all:—

1. Because health is of national importance, and likewise disease is a national danger. The health of the individual is consequently of national concern.

2. Because health and not the purse is the factor determining the needs of the individual. Disease being no respecter of persons, science in dealing with its prevention and cure cannot afford to be so.

3. Because a service organised for the poor is bound to be unpopular and inefficient, even as the Poor-law service has been in the past.

4. Because modern methods of diagnosis and treatment are becoming so elaborate and costly that people of even considerable means are quite unable to afford them.

5. Because an enormous amount of disease remains undetected and untreated, as shown by medical inspection of school children and medical examination of recruits.

6. Because the service should be in a position to seek out disease in its beginnings and to watch over contacts in cases of infectious diseases, which is impossible under any system of private practice in which the doctor has to await the call of the patient, who may be far advanced in illness before he thinks fit to send for him.

A Whole-time Salaried Service.

The service should be a whole-time salaried service in order—

1. To secure the fullest possible coöperation and mutual help between all practitioners in any given area. This is impossible under a system of remuneration by fees or by capitation grants.

2. To secure a good distribution of practitioners according to the needs of a locality. A comparison has often been made between Bermondsey and Hampstead to show the present inequalities.

3. To secure some regulation of the hours of work and regular holidays. With general practitioners all working together in a given area it would be possible for each of them to have certain hours "off duty" every day and generally one day a week and a regular annual holiday.

4. To secure that every practitioner should have, say, three months' education leave every third year.

5. To secure that men of age and experience shall not waste their time on work that might equally well be done by junior assistants or even trained nurses under supervision, time which might be employed in the more highly skilled departments of medicine and surgery.

6. To secure that there shall be no divided interests between a doctor's public and private work.

7. To secure freedom to all practitioners to give unfettered support to matters of importance to the public health. With members of public health committees or influential offenders against public health interests as private patients this is at present difficult.

8. To set the practitioner free from the competitive struggle and so enable him the better to devote his time to the advancement of knowledge.

Incidentally a whole-time salaried service would have further advantages. Practitioners would be relieved of a great deal of vexatious clerical work, of book-keeping, of sending out bills, and of haggling with patients over fees. There would be no bad debts and no necessity for debt-collecting agents. Salaries would be secure and regularly paid and doctors who have served the community would be entitled to a pension on retirement.

Central and Local Administration.

The scheme suggested by the State Medical Service Association would be centrally controlled and kept up to a high standard of efficiency by the Ministry of Health. It would be administered locally by the county and county borough councils and by the councils of the larger boroughs and urban districts. Hospitals for the use of the service would be greatly increased in number, partly by taking over and re-modelling the Poor-law infirmaries, partly by utilising many of the present military hospitals after the war, and partly by new construction.

The voluntary hospitals should be given the option: (*a*) of being taken over entirely by the Ministry of Health or the local authorities; (*b*) of receiving grants from the public authorities provided they were maintained at a proper standard of efficiency; or (*c*) of remaining on an entirely voluntary basis.

The local administering bodies would be responsible for the cost of their medical services, assisted by substantial "grants-in-aid" from the Ministry of Health according to the completeness and efficiency of the service.

The Service and Free Choice of Doctors.

The work of the clinical service would centre round the hospitals or treatment centres in close touch with the hospitals, and general practitioners would share the clinical work and form an integral part of the staff of the hospitals, so giving opportunities for specialisation. They would work in groups, the number in a group depending on the size and character of the locality to which it was attached. There would be senior assistant and junior assistant practitioners in each group, and promotion would be determined partly by merit and partly by length of service.

Patients residing within the area would ordinarily have the free choice of any of the doctors belonging to the group. In the best interests of both patients and medical staff it would be necessary to devise means for preventing an uneven distribution of work, and also for dealing with objectionable and frivolous patients. This could be accomplished by having a Committee of Assignment of doctors and patients, which would allow, as far as possible, free choice of doctors by patients and of patients by doctors, and this would give as much freedom of choice as there is in private practice at the present time.

In addition to the various grades of practitioners just mentioned, there would be junior to them such posts as clinical assistants, resident medical officers, and medical and surgical registrars, and senior to them there would be

[4] The S.M.S.A. includes, of course, within these categories women as well as men, and considers that the former should stand on an equality with the latter in every respect.

many central and local administrative medical officers, to all of which posts practitioners should be eligible.

No Bureaucracy.

It will be of the utmost importance to make sure that the Public Clinical Service of the future shall not be organised and managed in any bureaucratic spirit, which might not only make the conditions of service intolerable, but might tend to stamp out individuality and initiative. There will be three interested parties—the tax-payers, the patients, and the doctors—all of whom must have a say in the administration of the service. The tax-payer must have a voice in the expenditure of public moneys, the patients must have a court of appeal if dissatisfied, and the doctors must be left to manage all purely medical matters and must be given the predominating voice in determining the conditions under which they will serve the community. The function of the central organisation must be to stimulate and suggest and see that an active progressive spirit is maintained, but freedom must be left to each local authority and medical group to expand and develop its plans.

The Transition Stage.

Whilst a service such as that indicated above is thought to be ultimately in the best interests of the public and of the medical profession, it is fully recognised that it would be impossible and unfair to existing interests to force it suddenly on to the profession by Act of Parliament. There must be a transition stage during which considerable latitude must be given to men and women now in practice.

It has already been suggested in many quarters that the medical benefits of the National Insurance Act should be extended to all dependents of those now insured and to all Poor-law patients. This may be the line eventually adopted, though it will be regrettable unless drastic amendments to the National Insurance Act be previously made. Later on, by gradually raising the income limit, the scope of the service could be widened more and more until at last no one would be excluded from the benefits of the service.

At first, therefore, it may be necessary and probably beneficial, in order to avoid one medical service for the rich and another for the poor, to have part-time medical officers of the Public Clinical Service. On the passing of any Act of Parliament establishing a public service all registered medical practitioners might be given an option, to be exercised within a reasonable time, of becoming either a part-time or a whole-time medical officer, but anyone qualifying and electing to join the service after the passing of the Act should be accepted only as a whole-time salaried officer. In this way there would gradually be built up a whole-time salaried medical service.

As regards the method of remuneration of those electing to serve as part-time medical officers, it may be either by salary or by a capitation grant, only in the latter case the number of panel patients allowed should be strictly limited, as the practitioner's time would be partly occupied in private work. Those electing to devote their whole time to public work should be paid by salary, which should be based upon their previous professional status, and they should be guaranteed a pension and some compensation for the capital value of the practices which they abandoned. The latter could take the form of a capital sum on retirement or an increased pension.

Even when the public medical service became free and open to all, there would probably always be a few patients who would prefer not to avail themselves of it, and similarly there may always be a few medical men who would prefer not to enter the service. There would be no objection to the latter competing for the former in private practice, provided always that they conform to all laws passed on behalf of public safety and national health.

Now is the Time.

In conclusion, it may be pointed out that there are several reasons why a Public Clinical Service should be considered at the present time.

In the first place, the war is depleting the ranks of the medical profession by death and disablement, and at the same time conscription is so denuding the medical schools that there must be a serious shortage of doctors in the near future which it will take many years to make good, and the evils of which can only be overcome by organisation and coöperation.

Alongside the shortage of doctors, the work which must be undertaken is likely to increase. There will, unfortunately, be a large number of soldiers permanently disabled for whom medical supervision will be necessary, and there will be many widows and orphans unable to pay doctors' fees, but whose health must be preserved for the sake of the rising generation. Again, it is not improbable that there may be outbreaks of bacterial disease introduced into this country by the home-coming Army.

Again, some 10,000 medical practitioners have left their peace-time work and joined the R.A.M.C., and, in spite of the good intentions of their colleagues who have remained at home, their practices, to all intents and purposes have passed into other hands. A practice can be left in charge of a colleague for six months or so without very serious damage, but not so for three or four years. When the men of temporary rank in the R.A.M.C. return they will have little heart to set to work to rebuild their lost practices, but they will probably be ready and willing to continue to serve the community by administering to the needs of the civil population under conditions of work not unlike those under which they have served the military forces.

Lastly, at the end of the war there will be a great number of well-equipped temporary hospitals, nursing staffs, and a large accumulation of motor ambulances, motor-cars, surgical instruments and appliances, and pathological and X ray outfits which could be utilised with great economy for the establishment and maintenance of a Public Clinical Service, and for special hospitals and sanatoria required by the preventive branch of the National Service.

Some form of Public Medical Service is bound to come in the near future, with whole-time salaried medical officers, if only because from the administrative point of view it will be so much less complicated and so much more economical than any form of part-time service. It is therefore urgently necessary that all practitioners should unite to ensure that when it does come it shall be a service that shall be honourable to the best traditions of the profession and of the greatest possible service to the community.

MEDICINE AND THE STATE.[1]

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THE proper relationship which should subsist between the State and the profession of medicine is a question in which a constantly increasing number of medical men as well as of the general public is beginning to take an active interest.

Present State of Opinion.

At the time of the introduction of the Insurance Act the medical profession, so far as it had given thought to the matter, was roughly divided into three parties holding diverse views upon this subject.

An extreme right party held that beyond securing the proper education of registered practitioners, and providing from amongst them a service of sanitarians to safeguard our system of drainage and to control epidemics of disease, the State should leave the medical profession a free hand to carry out its beneficent work in absolute independence of all Government control.

An extreme left party saw salvation in the proposal of the Fabians that the State should become the direct employer of every medical man to whom it granted registration, and should make itself responsible for seeing that its medical servants faithfully carried out its instructions in offering to, or forcing upon, each member of the community such medical ministrations as the State deemed necessary for the maintenance of his physical health.

Between these two sections was a larger central party who, recognising the impracticability, whatever they might think of the idealism of these extremists, held that the time had arrived for the State and medicine to enter into an honourable partnership in order to secure that the benefits of our rapidly advancing medical science should be made available for the population as a whole as well as for each individual, irrespective of wealth or social position.

[1] An address to the Southwark Panel Practitioners' Association, May 31st, 1918.

Four years of war have altered our views of the nature and urgency of many problems, as well as of the best ways of dealing with them. There still remains a small army of devoted individualists in medicine prepared to die in the last ditch before they will surrender the smallest outpost of professional liberty. On the other hand, our experience of the efficacy in war-time industry of substituting coöperation with, in place of control over, workers of all kinds is leading many medical men and others formerly devoted to the State service ideal to join hands with the central party in endeavouring to formulate conditions under which the profession and the State can jointly work as equal and friendly partners for the national welfare.

The schemes for the formation of a Ministry of Health put forward by various organisations, lay or medical, are tentative proposals for preparing the way for such a partnership, but I do not here criticise any of these schemes in detail, but discuss certain general principles of governmental and professional organisation which must be borne in mind if any permanently successful coöperation between medicine and State is to be forthcoming.

A National Medical Council.

Some of the most interesting proposals for industrial reconstruction recently suggested are contained in the Interim Report on Joint Standing Industrial Councils prepared by the subcommittee, of which Mr. J. H. Whitley, M.P., was chairman. (Cd. 8606. Price 1*d*.) Although these proposals are primarily intended for the promotion of cordial relations between, and efficient joint output by private employers of labour and their workpeople, they are clearly equally applicable where the State or a local authority is jointly engaged with professional men in rendering any sort of service to the community.

The majority of Government departments seem to have failed to recognise the applicability of the recommendations of the Whitley Committee to the large class of activities in which they themselves play the part of the employer. But already there are indications that these departments will have to give way under the stress of public opinion, and that joint councils of representatives of Government employees and of the officials of the Government departments concerned will be constituted on the lines of the Whitley Report.

In order to secure an effective partnership between medicine and the State the establishment of a Joint National Council based on these principles is probably one of the most important steps. Its existence at the present moment would be of great benefit to the country. To such a body would naturally be referred the many difficult problems which have for so long held up the establishment of a Ministry of Health.

Such a Council would be an entirely different body and would have quite different functions from the General Medical Council. It would be a joint medical and lay body, regard being paid, so far as the medical representation is concerned, to the "various sections of the industry and the various classes of labour employed"—to quote the words of the Whitley Report. It is now the duty of the medical profession to consider and decide how the due representation of all classes of the profession shall be secured upon such a National Medical Council and to persuade the Government to arrange for due representation of appropriate lay interests.

Functions of a National Medical Council.—Such a Council, "meeting at regular and frequent intervals," should be of great national advantage in securing the constant progress of medicine and the constant application of such progress to the common good. Not only would such a Council assist coöperation between the Government and the profession, but it would also help to solve the many difficult problems involved in the proper relationship between the various Government departments interested in health questions.

Let it not be thought that such a National Medical Council can undertake the duties of the General Medical Council, or the British Medical Association, or the Royal Society of Medicine, or the Panel Practitioners' Medical Union, or the Association of Panel Committees, or any other of the many purely professional bodies promoting or safeguarding professional interests, educational, economic, and scientific. It can no more undertake these duties than it can become a substitute for the Insurance Commission, the Local Government Board, or the Ministry of Health. Its duty is to form a connecting link between the profession and other bodies concerned, in order to look out for all possible channels of progress and to promote smooth working by ensuring thorough mutual discussion of economic and administrative problems as they arise, and even before they arise.

Constitution.—Having regard to the importance of such a National Council's work the profession must jealously guard its status and its representative character. Definitely brought into being to safeguard general national interests, it must not be regarded as an instrument of any particular Government department. It must not be a mere advisory committee to the Ministry of Health. The non-medical members must not consist solely of representatives of the Civil Service, nor of the political party or parties for the time being constituting the government.

Independent men of high standing in science, commerce, and philanthropy should have due representation on such a Council not as nominees appointed by the Crown, but by direct election by such bodies as the Royal Society, the British Association, or the British Hospitals Association.

So far as the medical representation is concerned the profession should stand firmly for the right to elect directly its own representatives. Basing its claim on the Whitley Report it should demand that different classes of the profession should have adequate representation, and above all that the general medical practitioner upon whom ultimately falls the chief burden of safeguarding the public health shall be entitled to send to the Council a due proportion of men experienced in this special class of work. Joint councils, similarly constituted, should also be established in local health areas throughout the country.

A Ministry of Health.

The war has given a great impetus to the demand which has for many years been made by the medical profession that a special department of the Government should be established to control and coördinate the activities of the State in connexion with health problems. The immense number of the population who have been found to be physically unfit to take their due part in fighting or in any other work of national importance has brought home to us our serious neglect in protecting our people against preventable health deterioration. We have learnt by practical experience that the health of the individual is a vital consideration in all human activity, as interesting to the nation as to the individual himself.

When we come to look into the matter we discover that practically every Government department has gradually set up for itself a separate organisation for dealing in some way or other with the ill-health which, unprevented or unchecked, becomes a serious bar to its effective work. At all conferences where health problems have recently been discussed attention has been drawn to the multiplicity of Government agencies which may at the same time be dealing with the prevention or cure of disease in the same community, in the same family, and often in the same individual. It is well that this condition should be brought home to our legislators, for the overlapping, waste of energy, and positive harm to health that may be induced by this confusion calls urgently for reform.

Relationship of a Ministry of Health to the Health Work of other Government Departments.—A first step in the direction of such reform is undoubtedly the establishment of a Government department whose primary and sole preoccupation shall be the maintenance of national health. To this end every assistance should be given by all members of the profession towards the promotion of a Ministry of Health. But it must not be imagined that such a Ministry can be made responsible for all Government activities in which health problems are of importance. We are beginning to recognise that no Government department can afford to disregard the effect of its work upon national health or the effect of national health upon its work, any more than it can disregard the interdependence of its work upon national and individual finance. We shall shortly be compelled to appreciate in matters of health that our new Ministry of Health will have to bear towards all other Government departments a relation similar to that which in matters of finance the Treasury at present bears to other departments of the State.

The Ministry of Health must not be handicapped by dealing with matters outside its proper province merely

because it may be urged that such matters are intimately bound up with questions of health. It must not deal with local government merely because local authorities have great health responsibilities. It might equally be urged that the Ministry of Health should manage the Army and the Navy, because no troops can carry on a successful campaign unless their health is properly safeguarded. The Ministry of Health must not be responsible for the general details of the housing problem, although the national health is vitally concerned with its proper solution. It might equally be urged that it should be made responsible for the work of the Board of Agriculture and Fisheries, because without proper and sufficient food no nation can be healthy.

The care with which Parliament has restricted the work of the Treasury to purely financial problems, though allowing it to intervene indirectly in the work of other departments sinning against the principles of sound finance, must be equally exercised in restriction of the scope of the work of the new Ministry.

The Primary Classification of Professional Functions.

Assuming the establishment of a Ministry of Health with properly defined functions and with properly arranged relations to other Government departments, its success will very largely depend on its effective use of the professional material at its disposal. It is quite certain it will have no superfluous material to use extravagantly if it sets out to provide the amount of medical service which public opinion demands shall be provided in order to maintain the high standard of national health to which all look forward. Economy of doctor-power, seriously depleted by the war, will demand a careful division of labour and a classification of professional functions.

Domiciliary and Institutional Treatment.—The present chaotic condition of professional organisation has led to erroneous views as to the primary classification of the work of medical practitioners, which if they be not set right at the outset will inevitably lead to extravagance and inefficiency. A common error is to assume an initial division into practitioners engaged in domiciliary, and practitioners engaged in institutional, treatment. Such a classification is particularly unfortunate. It has no value whatever, so far as professional experience and training are concerned. The same patient, with the same disease of exactly similar severity, may at one time require for his condition institutional, and at another time domiciliary, treatment. The most unimportant variation in his home conditions or in his momentary financial circumstances may determine the need for one or other form of treatment. It may fall to the duty of the same medical practitioner to treat the same patient at one time in his home, at another in the hospital.

It is highly desirable that all medical practitioners engaged in domiciliary treatment should also have opportunities of undertaking institutional work, so that a classification such as has been suggested would be directly detrimental to extension of desirable professional experience. It is probable that our social conditions after the war will greatly increase the amount of institutional treatment required for cases of slight severity owing to the difficulty of securing domestic service in the homes of the middle classes. From every point of view such a classification is unscientific, and therefore unsatisfactory.

Preventive and Curative Medicine.—Another equally erroneous classification of the profession is that into practitioners of preventive and practitioners of curative medicine. The idea that this is a natural division of our professional functions is even more widely held than the erroneous idea already referred to. At first hearing it sounds plausible, but if acted upon in carrying out any large scheme of professional reorganisation it would lead to disastrous results.

Nothing is more important for professional progress than that every medical practitioner, whatever the actual scope of his work, should have always in mind that prevention is better than cure, and that every curative measure he may employ should be considered from the point of view of its ultimate effect in the prevention of further recurrences of disease and the maintenance of the patient's future health.

The intellectual interest in the diagnosis of diseased conditions, the spiritual joy of rendering help to the suffering, and the natural pleasure of watching the immediate effects of one's therapeutic efforts have always led the profession to take a greater interest in the curative side of its work. The call of the sick to be made healthy has always been more insistent than the call of the healthy to be kept from becoming sick. Even amongst the angels there is more joy over one sinner that repenteth than over ninety and nine just persons who need no repentance.

The natural logic of events has always laid the profession open to the taunt that it was more interested in disease than in health. A reorganisation of the profession based on the idea that a large section of its personnel should be definitely ear-marked as set apart for curative work only would crystallise a condition which all who have given thought to the matter regard as wholly undesirable.

Basis of Classification.—The natural and scientific classification of professional functions that must form the basis of the professional reorganisation to be promoted by the Ministry of Health is a division of the profession into medical men undertaking the prevention and cure of disease by regulating the conduct and environment of the community as a whole, and those undertaking the same functions for the individual units of which the community is composed —medical officers of public health and medical officers of private health.

The whole outlook, training, and mode of attacking their special problem by these two great branches of professional workers are as different as their ultimate aims are identical. Each branch must constantly keep before itself the greater advantage of attaining their end by preventing conditions which if they cannot prevent they will ultimately be called upon to remove. But the medical officer of public health must work by official regulations, sanitary laws, and compulsory powers, whilst the officer of private health must always rely on individual influence, education in personal hygiene, and patient persuasion.

Whatever may be the extent to which the public will submit to sanitary laws instituted for the protection of the community as a whole, any attempts to secure by compulsion submission to laws of personal hygiene necessary in order to maintain individual health are foredoomed to failure. A Ministry of Health setting out to assist the profession in coördinating its work for the national advantage must recognise this initial classification of professional functions if it is to avoid confusion, overlapping, extravagance, and inefficiency.

Conditions of Service.—Having thus defined the scope of the work of these two great branches of the profession, it is necessary to recognise the resulting implication as to the conditions of service of the medical men composing them. The medical officer of public health whose duty it is to assist in securing a common obedience to national sanitary laws must be the direct servant of the State. On the other hand, the officer of private health must be as free as possible from State control and be placed in the closest relation of trust and confidence to the patient who voluntarily submits his health and life to his medical attendant's judgment and control.

The necessary means of securing these indispensable relations between the medical officer of private health and his patient need not be dealt with here. They are well known to medical practitioners. It is enough to indicate that by most practitioners it is now agreed that, failing the maintenance of completely independent private practice, which is no longer possible, the system set up under the Insurance Act, with certain modifications and improvements, would appear to be the most satisfactory way of meeting the necessities of the case.

The Subdivision of the Work of the Primary Branches of the Profession.

Having established a primary division of the profession into those responsible for public and those for private health, it remains to consider a rational subdivision of these primary groups.

Specialisation as a means to efficiency by subdivision of labour is an essential feature of all modern organisation. In recent years medicine has shown to an extraordinary degree this general tendency. It has also given very striking illustration of the fact that mere subdivision of labour without considered coördination will never secure the best results. The introduction of a Ministry of Health and the definite institution of a partnership between medicine and the State should afford a fitting opportunity for a careful consideration of the most effective use of professional specialisation.

So far as the *medical officers of public health* are concerned the problem is not a difficult one. The introduction of a National Service of such officers, or of local services dealing with areas of adequate size, will provide a staff sufficiently numerous to allow its individual members to take up work in the various departments of public health already recognised, and in those new departments which will inevitably be gradually instituted. Places upon such a staff will easily be found for experts specialising in epidemiology, bacteriology, chemistry, microscopy, dietetics, and all other sciences forming the basis of sanitary science generally. The principles governing the inter-relationship of such workers will not be difficult to define.

It is when we come to the *officers of private health* that difficulties will arise, difficulties which will be all the more acute because of the want of system in specialism as it exists in ordinary private practice to-day. Difficult as the task may be, it must be grappled with if the nation is to profit from State intervention in professional organisation. It is impossible to deal with the whole question here. Some general principles only can be touched upon, but they are of great importance. Is there a primary classification of the functions of the section of the medical profession dealing with individual members of the community analogous to the primary classification of the profession as a whole which has already been laid down? Undoubtedly there should be.

The classification clearly cannot be made on the mere question of seniority. This was the method once adopted and even now not entirely discarded by the Army, and it obviously does not work. To assign certain medical duties to a practitioner because he has attained to the rank of major and others to another because he is merely a captain is not a feasible principle of organisation.

Nor is it desirable to classify medical attendants as the doctors of the rich and doctors of the poor. This would be as disadvantageous to the rich as to the poor and as detrimental to the public as to the profession. Nor should we make a primary division of the duties of medical practitioners based on a classification into hospital doctors and non-hospital doctors. Everyone hopes that one of the effects of reorganisation will be to secure continued hospital experience for all medical practitioners.

The essential classification of medical attendants in order to secure efficient division of labour must be a primary division into *general practitioners and specialists*. But to be effective such division must be complete. It will not be altogether popular with either section of the profession, nor, perhaps, in the first instance, with the public. But in the national interest it must be secured. Without it confusion, overlapping, and inefficiency are inevitable.

The rôle and ambition of the general practitioner should be to know something of everything, the rôle and ambition of the specialist to know everything of something. Each must recognise the advantages and limitations of his position. The work of each is of vital necessity to the community. Neither must encroach upon the other's province. The general practitioner only must undertake independent practice. The specialist must frankly accept the position of the consultant to the general practitioner.

Need of coördination.—It is impossible under any scheme of professional organisation for which the State accepts joint responsibility with the profession to permit a continuance of the competition between these two classes of practitioners which exists at present. The State must endeavour to replace such competition by coöperation. Competition and coöperation cannot go hand-in-hand. The general practitioner cannot be expected to make free use of the specialist's services if by so doing he is helping a competitor to compete with him more successfully and ensuring the ultimate destruction of his own practice.

Fortunately for those whose duty it may be to introduce this system of division of labour and coördination of work into the profession of medicine, there already exists in a sister profession an example of the process in full working order. The relations between the barrister and the solicitor which exist in this and some other civilised countries afford a satisfactory precedent for the conditions which must ultimately prevail in medicine. For all practical purposes it may be said that no barrister undertakes independent work for a client. He acts always as a consultant for a solicitor.

A primary division of medical attendants which would establish two classes of practitioners bearing to each other the relations existing between barristers and solicitors would be a big step towards ensuring to the community the advantages that should accrue to them from specialisation in medicine, advantages which, under present conditions, are undoubtedly denied to the largest sections of the population.

If the State and medicine are to work successfully together for the common good each must be willing to concede something to the other. The State is learning that in complicated technical industries it must allow the workers a fair measure of liberty and independence if high ideals and progress are to be given opportunities of development. Industries are learning that they cannot effect the fullest national service without receiving some measure of State assistance necessarily involving a certain degree of State control. These general principles must be recognised by the Government and the profession if the highest aims of medicine are to be attained.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions and donations to the Fund have been received during the week ending July 15th:—

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Dr. J. Kirk	1	1	0
Dr. J. Farmer	1	0	0
Dr. F. C. Wood	1	1	0
Mr. W. E. Morris	0	5	0
Dr. H. D. Harthan	1	1	0
Dr. F. de Havilland Hall	5	0	0
Sir R. Murray Hyslop	5	5	0
Dr. Thos. Baker	2	2	0
Anonymous	5	0	0
Mr. E. D. Telford	5	5	0
Dr. W. B. Hunter	2	2	0
Dr. R. E. Lord	1	1	0
Mr. S. H. Campion	0	10	0
Dr. E. M. Johnstone	5	0	0
Mr. C. G. Trinder	1	0	0
Dr. J. B. Hurry	1	1	0
Mr. Fergus F. Stewart	0	5	0
Mr. E. J. Foulkes	2	0	0
Fleet-Surgeon E. O. B. Carbery, R.N.	1	0	0
Dr. Thomas Eastes	1	10	0
Dr. W. P. Dickson	1	1	0
Dr. H. Mallins	1	1	0
Dr. Charles S. Simpson	1	1	0
Mr. Roger Beck‡	5	5	0
Mr. Frederick Williams	0	10	0
Messrs. Westmacott and Son	2	2	0
Miss Harriet M. Jones	0	10	0
Dr. G. A. Grierson	2	2	0
Miss S. M. Ross, M.D.	1	1	0
Dr. Jas. Henderson	2	2	0
Sir John Broadbent	5	5	0
Dr. W. Camac Wilkinson	5	0	0
Dr. Ernest Thomson	1	1	0
Mr. A. Wright	0	5	0
Dr. J. E. Moorhouse	2	2	0
Dr. J. W. Roberts	1	0	0
Dr. W. J. Dewar	2	0	0
Mr. Norman Smith	0	5	0
Dr. A. D. Hughes	1	1	0
Well-wisher	0	5	0
Mr. J. R. Wretts	3	3	0
Dr. W. B. Whitmore	5	0	0
Capt. Russell Steele, R.A.M.C.	1	1	0
Capt. E. D. Gairdner, R.A.M.C. (T.)	3	3	0
Sir R. Hampden Smith	5	0	0
Dr. J. Walker	2	2	0
Mr. G. H. Dawson	5	0	0
Mr. A. F. Burnett	1	1	0
Dr. Bernard Relton	1	1	0
Dr. J. F. Stockwell	5	0	0
Dr. H. M. Rainsford	3	0	0
Surg.-Gen. F. J. Lilly, R.N.	1	1	0
Mr. A. J. Phillips	3	3	0
H. H. E.	5	5	0
Dr. J. Tremlett Wills	5	5	0
Mr. E. S. Upton	0	10	6
Dr. Chas. Lathbury	1	1	0
Lieut.-Col. E. Hobhouse, R.A.M.C. (T.)	3	3	0
Dr. H. J. Wheeler	5	0	0

* Per Dr. Des Vœux. † Per Sir Thomas Barlow. ‡ Per Sir Rickman Godlee.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

SOUTH LONDON HOSPITAL FOR WOMEN.—The anniversary of the opening will be celebrated to-day (Saturday), July 20th, when the hospital will be open for inspection from 3 to 6 P.M., and a concert held at 3.30 P.M. Tickets (including tea), 1s. each, may be obtained from the secretary, South Side, Clapham Common, S.W.4. A street collection on the same day will take place in Clapham, Balham, Tooting, and Streatham.

Correspondence.

"Audi alteram partem."

THE CULTIVATION OF PFEIFFER'S BACILLUS.

To the Editor of THE LANCET.

SIR,—The paper by Captains Little, Garofalo, and Williams, in THE LANCET of July 13th, is interesting in that it records the recovery of a hitherto unrecognised cause of "influenza" in a series of cases of the present epidemic. But their conclusions that the epidemic is not caused by Pfeiffer's bacillus are at least open to question.

Hitherto it has never been suggested, as far as I am aware, that Pfeiffer's bacillus will grow on a medium devoid of blood, except in symbiotic relationship with other organisms, notably xerosis and staphylococcus, and perhaps after many subcultures. Serum alone is of no use, the bacillus must have blood or derivatives of blood. Captain Little and his fellow workers also rely on not recognising Pfeiffer's bacillus in direct smears, but in the case of such a minute organism as influenza bacillus the evidence derived from direct smears is apt to be fallacious. The fact that no leucocytosis was observed is taken as evidence that the infection was due to some organism other than Pfeiffer's bacillus, whereas it is generally held that the reverse is the case; indeed, in most text-books influenza is usually coupled with typhoid fever as a cause of leucopenia.

The authors lay emphasis on the fact that they have fulfilled two of Koch's postulates, but they have neglected the elementary precaution of demonstrating that the diplococcus referred to is not to be found in normal individuals under the same conditions as their "influenza" cases.

My experience of a smaller number of cases than those examined by Captains Little, Garofalo, and Williams is that I have recovered Pfeiffer's bacillus in every case, a result partly attributable perhaps to the use of an improved medium, an account of which I hope to publish in the immediate future.—I am, Sir, yours faithfully,

Wimpole-street, W., July 14th, 1918. JOHN MATTHEWS.

EPIDEMIC ENCEPHALITIS.

To the Editor of THE LANCET.

SIR,—May I be allowed the briefest comment on Dr. F. G. Crookshank's letter in THE LANCET of July 13th *à propos* of my paper on epidemic encephalitis? It is well known that occasionally epidemics of acute poliomyelitis occur at other times of the year than summer and autumn, that occasionally cases like those of the present epidemic of encephalitis are met with during poliomyelitis epidemics, that occasionally meningeal symptoms are prominent in epidemic encephalitis, and so on. What I did was to compare the average case of acute poliomyelitis with the average case of epidemic encephalitis and point out the distinctions, and these distinctions are not invalidated by citation of the exceptional cases in either group.

I am, Sir, yours faithfully,

Harley-street, W., July 15th, 1918. S. A. KINNIER WILSON.

QUICK DIAGNOSIS IN MENINGOCOCCUS INFECTION.

To the Editor of THE LANCET.

SIR,—The article, "A Quick Method of Diagnosing the Type of Meningococcus in Cases of Cerebro-spinal Fever," by Major A. S. Gordon Bell and Miss I. M. Harmer, in THE LANCET of July 13th, is strikingly important from the clinical as well as the laboratory point of view, enabling the physician to exhibit the homologous serum at least 48 hours earlier than has been the case with the ordinary method of "type agglutination."

There is one point, however, on which I do not feel clear, and in regard to which perhaps the writers will enlighten me. Is it not possible that the results obtained were due to antibodies contained in the curative serum which was administered intrathecally, and that these antibodies had found their way into the blood stream?

I am, Sir, yours faithfully,

A. E HODGSON, M D.,
Captain, R.A.M.C.

Bacteriological Laboratory, Military Hospital, ——, N. Wales, July 15th, 1918.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Died.

Capt. R. A. Sillar, Australian A.M.C.

Wounded.

Lieut. G. Hull, New Zealand A.M.C.
Capt. H. M. Drake, R.A.M.C.
Capt. F. H. Goss, R.A.M.C.
Lieut.-Col. A. H. Moseley, D.S.O., Australian A.M.C.
Lieut. W. S. Gross, R.A.M.C.
Major J. A. Pridham, M.C., R.A.M.C.

Missing, believed Drowned (through the Torpedoing of the Canadian Hospital Ship "Llandovery Castle").

Lieut.-Col. T. H. MacDonald, Canadian A.M.C.
Major G. M. Davis, Canadian A.M.C.
Capt. W. J. Enright, Canadian A.M.C.
Capt. A. V. Leonard, Canadian A.M.C.
Capt. G. L. Sills, Canadian A.M.C.

Missing.

Capt. W. A. Rees, R.A.M.C.

Previously reported Missing, now reported Prisoners in German Hands.

Lieut. J. Findlay, R.A.M.C, attached Worc. Regt.
Capt. J. M. McKenzie, M.C., R.A.M.C., attd. Northd. Fus.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualty among the sons of medical men is reported:—

Capt. N. C. Swift, D.S.O., M.C., East Lancashire Regiment, youngest son of Dr. H. Swift, of Adelaide, South Australia.

FOREIGN DECORATIONS.

Belgian.

Croix de Guerre.—Capt. F. D. Annesley, R.A.M.C., S.R.; Temp. Capt. A. Climie, R.A.M.C.; Temp. Capt. R. A. H. Fulton, R.A.M.C.; Lt.-Col. H. C. R. Hime, D.S.O., R.A.M.C.; Temp. Capt. G. D. Maclean, R.A.M.C.; Col. C. C. Manifold, C.B., C.M.G., I.M.S.; Capt. (acting Lt.-Col.) W. Tyrrell, D.S.O., R.A.M.C., S.R.; Col. A. E. Ross, C.M.G., Canadian A.M.C.; Maj. J. H. Wood, Canadian A.M.C.; Capt. C. C. Simson, M.C., Australian A.M.C.; Lt.-Col. J. H. Neil, New Zealand M.C.

MEDICAL PRACTITIONERS AND AN APPEAL AGAINST GRADING.

The position of the medical practitioner who is not satisfied with his grading by a National Service Medical Board is practically that of any other man liable to military service. He may make an application to the Appeal Tribunal for the district in which he lives for leave to be re-examined and graded by the Medical Assessors. The application is required to be made not later than five clear days after the date on which written notice of his grading by the National Service Medical Board is given or sent to him, unless the Appeal Tribunal, for good reason shown, allow an application to be made after that period.

Such examination is, however, quite different from re-examination by a National Service Medical Board. If a practitioner desires to be re-examined by a National Service Medical Board the Ministry of National Service is usually willing for this to be done upon application being made to that department.

AUXILIARY R.A.M.C. FUNDS.—The usual quarterly meeting of the committee was held at 11, Chandos-street, W., on July 12th, Major Ewan Maclean being in the chair. Amongst other members present was Major-General T. H. Goodwin, Director-General Medical Services. From the benevolent branch for the relief of children of officers of the Auxiliary R.A.M.C. who died as a result of the present war grants were made in three cases. The amount granted was £176. Grants from the relief branch for the relief of the widows and orphans of the rank and file of the Auxiliary R.A.M.C. were also made. Subscriptions and applications for relief from either branch should be made to the honorary secretary, Auxiliary R.A.M.C. Funds, 11, Chandos-street, Cavendish-square, W. 1.

THE LANCET, VOL. I., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of June 29th is in preparation. Owing to the increasing shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a *post-card* (which is more convenient for filing purposes than a letter) to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

Medical News.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful:—

FINAL EXAMINATION FOR THE DEGREES OF M.B., CH.B.

William Peach Taylor.

Part I. only (including Forensic Medicine and Toxicology).—Frederick Viel Jacques.

DIPLOMA IN PUBLIC HEALTH.

Alan Gabriel Bodman.

SECOND EXAMINATION FOR DIPLOMA IN DENTAL SURGERY.

Edward James Tucker.

UNIVERSITY OF LIVERPOOL.—The following degrees were recently conferred upon the undermentioned:—

DOCTOR OF MEDICINE.

Mikhail Azer, Clement Alston Hughes, Isaac Jacob Lipkin, Thomas Glynn Morris, Jaffir Rumjahn, and Rattan Chaud Watts.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Victor Isadore Levy, Frank Atkinson Prosser, and George Seymour Swan.

At recent examinations for the Diploma in Public Health (D.P.H. Liverp.) the following candidates were successful:—

E. H. T. Cummings, G. H. Darlington, J. Drummond, I. J. Lipkin, H. E. Middlebrooke, K. J. Rustomjee, and R. C. Watts.

UNIVERSITY OF DUBLIN, TRINITY COLLEGE, SCHOOL OF PHYSIC.—At examinations held recently the following candidates were successful:—

INTERMEDIATE MEDICAL EXAMINATION.

Part II., Applied Anatomy and Applied Physiology.—*Cecil Emrys McQuade, George Hall Davis, *John Henry Brenell Crosbie, Isaac Levy, and Mary Horan.

FINAL MEDICAL EXAMINATION.

Part I., Medical Jurisprudence and Hygiene, Materia Medica and Therapeutics, Pathology.—*James Sinclair Quin (high marks), Thomas Donald Gordon (high marks), Harris Cohen (high marks), William Theodore Micks (high marks), Henry Alfred Burridge (high marks), *Charles John de Vere Shortt, William James Alexander Russell, Eileen Hilda Dowse, Christopher John Lawrence Brock, William Burton Fox, Samuel John Laverty, Richard Esmonde Murphy, Jessie Gilbert, and Olive Baile.

Medical Jurisprudence and Hygiene, Materia Medica and Therapeutics.—James Alexander Acheson, Samuel Reginald Hill, *Gerald FitzMaurice Keatinge, and *Frederick William Robertson.

Part II., Medicine.—Arthur Leslie Gregg, Percy Crowe Parr, John William Scharff, Lindley Albertyn, Jason Grant Bird and *Stanley Cyril Mitchell (equal), Louis John Patrick Murphy, *William James McClintock, *David Shields Prentice, Eric Reginald Tivy, Charles Going Ambrose, Benjamin Damer Merrin, Kenneth McGregor Greer, and Eric James Lyndon and Margaret Wolfe (equal).

Surgery.—John William Scharff, Edward Francis Wilson, Robert Meade Daly Devereux and Ernest Edward Rollins (equal), *William James McClintock, Rita Henry, James Edward Jameson, *Victor Millington Synge, and Benjamin Damer Merrin.

Midwifery.—Mary Christina Sheppard, Lindley Albertyn, Ethel Marjorie Luce, *Frank McGregor Ferguson, Robert Meade Daly Devereux, and Eric Reginald Tivy.

DIPLOMA IN PUBLIC HEALTH.

Part I.—James Beckett and Edgar Ormond Bowie.

Part II.—Robert Arthur Keane.

* Formerly Surgeon-probationer in the Royal Naval Medical Service.

The following awards have been made:—Fitzpatrick Scholarship: Harry Lee Parker. Medical Scholarships: Anatomy and Institutes of Medicine, Eric Henry Cooke Allen; Botany, Zoology, Chemistry, and Physics, David Sheridan Spence. Dr. Henry Hutchinson Stewart Scholarships: Anatomy and Institutes of Medicine, Adrian Johannes Louw Snyman and Essie Stuart Smyth (special, for two years); Botany, Zoology, Chemistry, and Physics, Dorothy Alice Daly. John Mallet Purser Medal: George Hall Davis. Cunningham Medal: Edith Florence Willock.

UNIVERSITY OF ABERDEEN.—The following degrees were conferred at the recent Graduation ceremony:—

DOCTOR OF MEDICINE (M.D.).

Alexander William Hendry.

BACHELOR OF MEDICINE (M.B.) AND BACHELOR OF SURGERY (CH.B.).

Joseph Alexander, William Buchan, William Adams Coutts, *John Alexander Dawson, *Alexander Mathieson Dugan, †George Septimus Escoffery (first-class honours), Isabella Ferguson, Alexander Campbell Hill, Mabel Gordon Lawson, Robert Douglas Lockhart, Alexander McKenzie, James Wallace Mann, John Morrison, Alexander Cowie Paterson, John Alexander Ross, *Agnes Loudon Semple (second-class honours), James Charles Sleigh, Sophia Kent Grant Stuart, and Gwendolen Jean Elmslie Wilson.

DIPLOMA IN PUBLIC HEALTH (D.P.H.).

Henry Reah.

* Passed Fourth Professional Examination with distinction.

† Passed Fourth Professional Examination with much distinction.

The John Murray medal and scholarship were awarded to Dr. George Septimus Escoffery.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A quarterly meeting of the Council was held on July 11th, Sir George Makins, the President, being in the chair.—The President reported the result of the meeting for the election of four members of Council on July 4th, as already published in THE LANCET of July 13th. He further stated that Mr. Lynn Thomas, being fourth on the poll, became substitute member for Sir William Watson Cheyne until July, 1925.—Sir John Bland-Sutton, Mr. W. G. Spencer, Mr. Lynn Thomas, and Mr. Hey Groves were introduced, made declarations in the terms of the oath prescribed by the Charter of 1800, and took their seats in the Council.—Lieutenant-General Sir Arthur Thomas Sloggett, K.C.B., K.C.M.G., K.C.V.O., A.M.S., was introduced, and after signing the by-laws and making the required declaration, was admitted a Fellow of the College.—Sir Berkeley Moynihan, C.B., was congratulated by the Council on being made Knight Commander of the Most Distinguished Order of St. Michael and St. George.—Diplomas of Membership were granted to three successful candidates.—It was resolved to grant, jointly with the Royal College of Physicians of London, diplomas in public health to six successful candidates.—A letter was read from Mr. Edward A. Dunn thanking the Council for their resolution of condolence on the death of his brother, Mr. L. A. Dunn.—The President reported that in pursuance of a suggestion which had been made to him he had taken steps to transmit the following message of greeting to the French nation *à propos* of the celebration of "France's Day" on July 12th in London, and on July 14th in Paris:—

From the President and Council of the Royal College of Surgeons of England.

"Brothers in Arms, we greet you! Bound by ancient ties of blood and by the memories of many a gallant contest in the past, to-day we stand as one nation united in a sacred cause. We have before us a sacred presage from the past. As the united efforts of Pasteur and Lister have laid low the tyranny of disease, so shall France and Britain conquer a tyranny still more remorseless. Our future brightens and shall endow Gaul and Briton with a common birthright to remain a splendid heritage for all time."

The following professors and lecturers were appointed:—

Hunterian Professors:—Arthur Keith: Six lectures on Hunter's Chief Discoveries; Gordon Taylor: Abdominal Wounds of Warfare; A. J. Walton: The Surgery of the Spinal Cord in Peace and War; David Ligat: The Significance and Surgical Value of Certain Abdominal Reflexes; T. B. Layton: The Surgical Aspects of the Collection and Transport of Wounded; Alexander Fleming: The Power of Chemical Antiseptics and of the Natural Physiological Processes in Septic Wounds; E. G. Schlesinger: The Treatment of Compound Fractures and other Severe Injuries of the Upper Limb.

Arris and Gale lecturers:—E. M. Corner: The Nature of Scar Tissue and Painful Amputation Stumps; E. M. Cowell: The Initiation of Wound Shock and its Relation to Surgical Shock; J. C. Briscoe: The Mechanism of Post-Operative Collapse of the Lungs.

Arnott Demonstrator:—Arthur Keith: Six demonstrations on the Contents of the Museum.

Sir George Makins was re-elected President and Mr. Haslam and Sir John Bland-Sutton were elected Vice-Presidents.

EPSOM COLLEGE.—The Council of Epsom College announce that there will be a vacancy for an Entrance Salomons Scholarship of £50 at the beginning of the Michaelmas term. The conditions of holding the scholarship are that the candidate shall show an adequate standard of education for his age and that his financial position is such as to make it impossible or difficult to obtain an education at the College without the help of the scholarship. Applications should be sent to the secretary at the office of the College, 37, Soho-square, W. 1, by July 29th.

DONATIONS AND BEQUESTS.—The late Miss Grace Ross Cadell, L.R.C.P. & S. Edin., has left by will £150 a year for life to each of her four foster-children, with remainder as to the capital sum to their children, or, failing issue, the capital in respect of the two female children to be paid to the University of Edinburgh for the medical education of women there, and in the case of the boys to the Edinburgh Medical Department. She also left, among other bequests, £2000 to the Edinburgh Hospital for Women and Children; £1000 to the Queen's Nurses in Scotland; £300 to the Leith Branch of the Queen's Nurses; and £100 to Leith Hospital. The residue of the property to be equally divided between the University of Edinburgh to help in the medical education of women and the Edinburgh Hospital for Women and Children.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Asylums Officers' Superannuation Bill.

Mr. BRACE, the Under Secretary to the Home Office, on July 16th introduced a Bill to make further provision for the application of the Asylums Officers' Superannuation Act, 1909, to officers in certified institutions for defectives and to provide for the aggregation of service in asylums and in such institutions. It was read a first time.

Medical Treatment of School Children.

After the Education Bill had passed its report stage in the House of Commons on Tuesday, July 16th, it was formally recommitted in respect of Clause 2 (development of education in public elementary schools). An amendment was agreed to which provided that it should be the duty of a local education authority amongst other things "to make adequate and suitable arrangements under the provisions of paragraph (*b*) of subsection (1) of Section 13 of the Education (Administrative Provisions) Act, 1907, for attending to the health and physical condition of children educated in public elementary schools." By the rules of the House it was found impossible to make an alteration of this kind imposing a public charge during the report stage of the Bill, and this is the reason for the formal recommittal in order to carry out the pledge regarding the medical treatment of school children.

Midwives Bill.

The Midwives Bill has been read a third time in the House of Lords.

HOUSE OF LORDS.

WEDNESDAY, JULY 17TH.

A Ministry of Health.

Lord WILLOUGHBY DE BROKE called attention to the desirability of establishing a Ministry of Health without undue delay; and moved "That this House urges His Majesty's Government to introduce at an early date a Bill to constitute a Ministry of Health." He made a long speech urging the necessity of coördination of the health functions of the various Government departments, and pressed the establishment of a Ministry of Health as a matter of war emergency.

Viscount HALDANE seconded the motion.

Viscount PEEL, in his reply for the Government, pointed out that the separation of the functions of local government from health questions would present many difficulties. The problem was extremely complex. He admitted that he felt some difficulty in giving a precise reply upon the motion because the matters which it concerned were now under the very close consideration of a Government Committee. That Committee was sitting again on the following day (Thursday), and if it had come to a decision his task would have been very much easier. If he did not offer resistance to the motion it must be understood that the words "at an early date" would be given a very large and liberal interpretation.

The motion was agreed to.

HOUSE OF COMMONS.

WEDNESDAY, JULY 10TH.

Indian Medical Service.

Colonel YATE asked the Secretary for India whether he had considered the representation submitted by officers of the Indian Medical Service, and whether he could make any statement on the subject.—Mr. MONTAGU replied: Through the courtesy of my honourable and gallant friend I have seen the paper to which he refers, and I have also received numerous other representations regarding the position of officers of the Indian Medical Service. The other day I received a deputation from the British Medical Association on the same subject. I recognise the importance to the Government and the people of India of an efficient and contented medical service, and I have undertaken to give the questions which have been raised in this connexion careful and prompt consideration. I am in communication with the Government of India on the subject.

Medical Officers at Malta.

Mr. R. MCNEILL asked the Under Secretary for War how many Army doctors were quartered at Malta; what had been the average number of patients in hospital there during the last 12 months; whether any of the doctors in Malta had been there for more than 18 months without coming home on leave; and, if so, whether he would arrange that doctors who had been in Malta for such a period should now come home on leave and be then employed on duty at home or in France.—Mr. MACPHERSON answered: Medical officers stationed at Malta have the same privileges as regards leave as other officers serving abroad. It is not proposed to bring home officers who have served for 18 months at Malta, but applications for transfer will receive consideration.

Treatment of Discharged Men in the West Riding.

Colonel ASHLEY asked the Pensions Minister whether he was aware of the lack of institutional accommodation for discharged men needing treatment; that in the West Riding alone there were some 792 men who were unable to obtain treatment owing to lack of accommodation; and what steps he proposed to take to remedy this state of affairs.—Mr. HODGE answered: I am aware that there is still in some parts of the country a lack of accommodation for the treatment of discharged men, and various measures to meet the need are being taken. The reports from the local War Pensions Committee show the need in the West Riding to be particularly marked.

Treatment of Tuberculosis in London.

Mr. BOOTH asked the President of the Local Government Board whether he had received a copy of the resolution passed by the London Insurance Committee in June making certain stipulations as to the practicability of a comprehensive scheme for the treatment of tuberculosis in London; and whether he had summoned a conference of representatives of the committee to meet those of the County Council.—Mr. HAYES FISHER replied: The answer to both parts of the question is in the affirmative. The conference was held this morning.

THURSDAY, JULY 11TH.

Panel Practitioners and Medical Certificates.

Mr. ALBION RICHARDSON asked the representative of the National Insurance Commissioners whether he was prepared to make arrangements to enable a man summoned to appear before a medical board, who could not afford to pay a fee to his panel doctor for a certificate stating his medical history, to obtain such a certificate free of charge.—Colonel GIBBS (on behalf of Sir E. CORNWALL) replied: The furnishing of such a certificate as is referred to in the question would, of course, be entirely outside the scope of a medical practitioner's agreement for services under the National Insurance Acts, and he would therefore be under no obligation to furnish it. Moreover, it is a fundamental principle that any information as to the state of health of an insured person which may come into the possession of a doctor by whom he is attended under the provisions of the National Insurance Acts is strictly confidential, and is to be used for national health purposes only. In these circumstances it does not appear possible that such arrangements as the honourable Member suggests should be made under National Health Insurance, nor be paid for from National Health Insurance funds.

Mr. ALBION RICHARDSON: Will the honourable and gallant gentleman make representations to the Government as to the great injustice which this causes to poor men who cannot afford to pay for a medical certificate in being deprived of their only opportunity of laying their medical history before the medical board, and put in a much worse position than those who can afford to pay for a certificate?—Colonel GIBBS: Perhaps my honourable friend will put down a question to the Minister of National Service.

Mr. ALBION RICHARDSON: I will put it to the Prime Minister.

Medical Students.

Mr. HOLT asked the Minister of National Service how many male medical students under 28 years of age there were in the United Kingdom; and what steps were being taken to provide a supply of male doctors in the immediate future.—Sir AUCKLAND GEDDES said in reply: I regret that I cannot state how many male medical students under 28 years of age there are in the United Kingdom. There are, however, at present 5380 male medical students and 2250 female medical students at work in the schools and hospitals. The male students freshly registered in 1917 numbered 1378, as against 1366 in 1914.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: J. A. L. Cook, G. Blarton, G. B. Lowe.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel G. G. Delap relinquishes the temporary rank of Colonel on re-posting.

To be acting Lieut.-Colonels (while specially employed): Major R. V. Cowey, Temp. Major J. C. Davies (while in command of Medical Units), Capt. (acting Major) C. H. Denyer, Capt. J. Rowe, Temp. Capt. G. D. Hindley.

Relinquishing the acting rank of Major on re-posting: Lieut. (temp. Capt.) H. A. Rowell, Temp. Capts. T. Russell, H. F. Sheldon.

To be acting Majors: Capts. F. S. Tamplin, C. McQueen, M. O. Wilson, W. Mathieson, H. W. Carson, M. White, F. G. A. Smyth, W. L.

Webster, G. S. Parkinson, G. O. Chambers, R. Gale, E. C. Beddows, R. E. Todd, A. D. Stirling, A. L. Robertson, T. I. Dun, W. V. Corbett, S. M. Hattersley, J. C. A. Dowse, A. H. Heslop, T. H. Balfour, O. W. McSheehy, S. D. Large, F. G. Thatcher, F. R. Laing, E. B. Marsh, T. J. Kelly, N. Cantlie, J. H. Pendered, C. de W. Gibb; Temp. Capts. M. Bates, J. I. P. Wilson, W. J. J. Arnold, C. L. Spackman, W. H. D. Smith, N. I. Sinclair, W. H. Sheffield, J. W. C. Gunn, R. H. Strong, E. E. Chipp, G. Stiell, A. R. Muir, E. R. D. Maconochie, E. B. Smith, L. ap I. Davies, T. F. Saunders, R. Massie, P. W. Hampton (whilst specially employed), M. P. Paton, E. J. Selby, L. R. Broster, F. B. Winfield, L. Meakin, B. Whitehead, W. H. Alderton, L. Anderson, J. R. M. Whigham, D. E. Crosbie, A. H. Spicer, A. E. Knight, G. Rankine, A. P. Saint, A. S. K. Anderson, A. K. Cosgrove, R. M. Handfield-Jones, H. B. G. Russell, W. S. S. Berry, H. G. Kilner, J. Biggam. C. J. H. Sharp, R. S. Dickie; Lieuts. (temp. Capts.) W. T. Hare, M. B. King, D. Pottinger, A. E. Richmond, J. W. O'Brien, C. Russell, L. G. Bourdillon, H. A. Rowell, E. Catford.

D. Cairns, late temporary Captain, is granted the honorary rank of Captain.

Temp. Hon. Lieut. H. Halsted to be temporary Honorary Captain.

Lieut. H. C. Hinwood, Spec. Res., to be temporary Lieutenant.

Officers relinquishing their commissions: Temp. Capts. A. F. Mavety, B. N. Murphy, C. S. Glegg, W. R. Hodge; Temp. Hon. Capts. E. V. Jones (on ceasing to be employed with Welsh Hospital, Netley), S. McC. Boyd (on ceasing to be employed with British Red Cross Society in France); Temp. Lieuts. A. H. Collins, C. Murray, W. Smith; Temp. Hon. Lieut. H. D. Havard.

Canadian Army Medical Corps.

Temp. Major P. K. Menzies to be temporary Lieutenant-Colonel.

To be temporary Captains: W. J. Grant, K. M. B. Simon, D. E. S. Wishart.

SPECIAL RESERVE OF OFFICERS.

Major (temp. Lieut.-Col.) J. Mackinnon to be Lieutenant-Colonel.

Captains to be acting Lieutenant-Colonels whilst in command of a Medical Unit:—(Acting Major) C. N. Gover, W. H. L. McCarthy.

F. Jefferson relinquishes the acting rank of Major on re-posting.

Captains to be acting Majors: A. R. F. Clarke, A. B. Mitchell, J. H. Beverland, D. S. Martin, P. Walsh, J. A. Hill, J. M. Darling, M. W. Paterson, W. F. McLean, D. C. MacDonald, J. G. McCutcheon, J. Walker, A. J. Clark, J. Vallance, G. F. P. Gibbons, G. Dalziel, K. K. Drury, A. J. Gibson, A. Wilson, D. Dougal, E. A. Mills, H. G. Penny.

Capt. E. R. Chambers and Capt. B. Shires to be acting Majors whilst specially employed.

Capt. H. M. Clarke is seconded for service overseas.

TERRITORIAL FORCE.

Lieut.-Col. E. A. Wraith to be an Assistant Director of Medical Services, and to be temporary Colonel whilst so employed.

Capt. (temp. Major) H. F. W. Boeddicker relinquishes his temporary rank on alteration in posting.

Capt. B. Robertshaw, from T.F. Res., to be Captain.

Capt. J. E. W. MacFall relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Major.

Capt. W. C. Hodges to be acting Major whilst specially employed.

Capt. (acting Major) W. C. Hodges relinquishes his acting rank on ceasing to be specially employed.

Capt. (temp. Major) F. Philip to be Major.

Lieut. C. D. Mathias to be Captain.

Capt. (acting Major) H. J. Gorrie relinquishes his acting rank on ceasing to be specially employed.

Captains to be acting Majors whilst specially employed:—G. B. Eadie, H. Duguid, G. B. Gill, G. E. J. A. Robinson, S. S. B. Harrison, J. Dundas, S. J. C. Holden, F. E. Withers (and remain seconded), F. L. A. Greaves, B. M. Footner, R. Fullarton, W. H. Rowell, A. Ramsbottom, D. J. Scott, H. M. Calder, F. W. C. Brown, S. S. Greaves, A. G. Hebblethwaite, S. J. Clegg, W. H. Davison, J. Dale, J. M. Hamill, L. R. Tosswell, O. W. D. Steel, W. D. Frew.

Capt. (acting Major) H. J. A. Longmore, relinquishes his acting rank on ceasing to be specially employed, and remains seconded.

Capt. (acting Major) J. H. P. Fraser to be acting Lieutenant-Colonel whilst commanding a Field Ambulance, and remain seconded.

Surg.-Maj. H. Skelding, from Yeomanry, to be Major.

Major (Brevet Lieut.-Col.) F. E. A. Webb to be acting Lieutenant-Colonel whilst specially employed.

Capt. (acting Major) T. W. S. Paterson relinquishes his acting rank on ceasing to be specially employed.

Captains to be acting Majors whilst specially employed: J. G. Cooke, M. S. Doubble, A. W. Berry, A. P. Thomson, E. V. Connellan, A. Jones.

Capts. (acting Majors) A. W. Berry and A. Jones relinquish their acting rank on ceasing to be specially employed.

Capt. (acting Major) H. A. Macmillan to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. G. A. Auden is restored to the establishment on vacating the appointment as Deputy Assistant Director of Medical Services.

Lieutenants to be Captains; F. J. E. China, L. Hawkes, H. L. Robinson, T. M. Ormiston.

Capt. R. O. Sibley is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services.

Capt. (acting Major) G. E. St. C. Stockwell to be Major.

Capt. A. W. Harrington is seconded for duty with a General Hospital.

Capt. (temp. Major) A. Don relinquishes his temporary rank on ceasing to be specially employed.

Capt. H. L. Gregory to be Major.

Capt. J. Saffley, from T.F. Res., to be Captain.

TERRITORIAL FORCE RESERVE.

Lieut.-Col. W. A. Benson, D.S.O., from R.A.M.C., to be Lieutenant-Colonel.

Major C. W. Edwards, from R.A.M.C., to be Major.

Capt. H. J. Wheeler, from R.A.M.C., to be Captain.

Capt. W. E. Falconar, from R.A.M.C., to be Captain.

ROYAL AIR FORCE: *Medical Branch.*

Lieut. N. F. Stallard to be Captain.

Granted temporary commissions:—As Major: A. Paling. As Captains: J. B. Guthrie, C. S. Dowdell. As Lieutenants: E. L. Bunting, A. Read.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The first article in the June number of this journal is a report from the Hygienic Department of the Royal Army Medical College by Major A. G. R. Foulerton on the Pathology and Treatment of Poisoning by Trinitrotoluene (T.N.T.) and on the Action of Certain other Poisons which Affect Metabolism. His measures for the protection of the worker from undue exposure to the action of the poison include the avoidance of fatty foods and their replacement in the dietary as far as practicable by sugars; and the elimination of any trinitrotoluene already fixed in the fatty constituents of the skin by frequent baths, followed by brisk friction of the skin.—In Malaria in Macedonia, with Especial Reference to the Use of Prophylactic Quinine, Captain C. H. Treadgold concludes that small doses of prophylactic quinine, not too long continued, are of proved utility to the natives of malarial countries, both in the absence of anti-mosquito measures, and when such measures are incomplete, and that quinine may be given with advantage to immigrants under certain conditions, but, speaking generally, he holds that quinine prophylaxis in the absence of protection against mosquito bites is little more than a pious fraud perpetuated from one generation to the next, because public opinion has not been sufficiently enlightened to encourage the working out of the problem on scientific lines.—Captain F. B. Chavasse discusses "Myalgia" (a term originally introduced in order to rescue a certain class of case from the heading "rheumatism"), its Diagnosis in Forward Areas; Captain W. Waddell deals with Post-Dysenteric Diarrhœa; and Lieutenant-Colonel Gordon Holmes continues his paper on the Symptoms of Acute Cerebellar Injuries as Observed in Warfare.

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital for Genito-urinary Diseases, S.W.—H.S.

Birmingham, Erdington Infirmary and House, and Selly Oak Infirmary and House.—Locums. £7 7*s.* per week.

Birmingham University.—Sen. Demonstrator of Anatomy. £250.

Bristol Royal Infirmary.—H.P. and H.S. £120.

Bromley Education Committee.—Temp. School M.O.

Bury and District Joint Hospital Board.—Asst. Med. Supt. £450.

Bury Infirmary.—Jun. H.S. £200.

Dudley, Guest Hospital.—Asst. H.S. £120.

Great Northern Central Hospital, London, N.—H.S. £100.

Hospital for Consumption and Diseases of the Chest, Brompton.—Asst. Res. M.O. £100.

Hospital for Sick Children, W.C.—H.S. £100.

Kensington and Fulham General Hospital, S.W.—Res. M.O. £250.

Leeds, Neurasthenic Hospital for Pensioners, Allerton Hall.—M.O. £400.

Liverpool, Township of Toxteth Park, Poor-law Institution and Infirmary.—Asst. Res. M.O. £300.

Manchester County Asylum, Prestwich.—L.T. £7 7*s.* per week.

Metropolitan Hospital, Kingsland-road, E.—L.T. £5 5*s.* per week.

Pinewood Sanatorium, Wokingham, Berks.—Asst. M.O.

Queen's Hospital for Children, Hackney-road, E.—M.O. for Elect. Dept.

Reading, Royal Berkshire Hospital.—H.S. £250.

Royal Air Force.—Female M.O. 24*s.* a day.

St. Albans, Herts County Asylum.—Temp. Asst. M.O. 7 guineas a week.

Scottish Women's Hospitals (N.U.W.S.S.).—Female Chief M.O. for Camp Hospital in Macedonia. £400.

Sheffield City Education Committee.—Asst. School M.O. £400.

Sheffield Royal Hospital.—H.P. £140. Also Cas. O. £135.

Sheffield Royal Infirmary.—H.S. £120. Also H.P. £120.

South London Hospital for Women, S.W.—Female Temp. Asst. P.

Stoke-on-Trent County Borough.—Asst. Tuberc. O. £360.

Walsall Education Committee.—L.T. Sch. Med. Insp. £400.

Wilts County Council.—Oculist and Asst. School M.O. £400.

York County Hospital.—Female H.S. £200.

Births, Marriages, and Deaths.

MARRIAGES.

STEVENS—EARLE.—On July 10th, at St. Peter's, Belsize Park, London, N.W., John Barr Stevens, M.D., Major, R.A.M.C.(T.F.), to Mabel, only daughter of the late Major-General W. H. S. Earle, Bengal Staff Corps.

VICKERY—JOHNSON.—On June 27th, 1918, at Lisburn Cathedral, by the Reverend Canon Carmody, Captain Edward Percival Hadden Vickery, R.A.M.C., youngest son of Dr. and Mrs. Vickery, Kinsale, to Gladys Ruth, third daughter of the late Mordecai Johnson, of Greystones.

DEATHS.

CONSTABLE.—On July 6th, in a nursing home in London, Samuel Constable, L.S.A. Eng., son of the late Rev. J. Nicolson Constable, B.A.T.C.D., Rector of Swinford, Co. Mayo, aged 62 years, of West Green, N., and Ballyglasheen House, Clonmel, Co. Tipperary, deeply lamented by his wife and family.

GAUNTLETT.—On July 3rd, at Cilfynydd, Pontypridd, Owen Binns Gauntlett, M.R.C.S., L.R.C.P., aged 40.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

AMERICAN MEDICAL ASSOCIATION.—Sir James Mackenzie, Sir W. Arbuthnot Lane, and Colonel Herbert A. Bruce attended the recent annual meeting of the Association at Chicago as representatives of the British Government. Addresses on the part played by the medical profession in the war were given to large audiences at Cincinnati, Chicago, Toronto, Boston, and other cities. Sir Arbuthnot Lane delivered an address, reported in full in the *Chicago Evening American* of June 13th, on the treatment of facial injuries, describing the work of the Queen's Hospital at Sidcup.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of Post-Graduate Course were given in issue of June 29th.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.

THE THROAT HOSPITAL, Golden-square, W.
MONDAY, July 22nd.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

BRITISH ORTHOPÆDIC ASSOCIATION, at the rooms of the Medical Society of London, 11, Chandos-street, W.
FRIDAY, July 26th.—10 A.M., President's Address:—Mr. E. M. Little. 10.30 A.M., Discussion on the Indications, Technique, and End Results of Tendon Transplantation in Gunshot Injuries of Nerves (opened by Capt. T. P. McMurray). 2.15 P.M., Mr. J. J. Clarke: Demonstration of Special Instruments for the Open Operation for Congenital Dislocation of the Hip. Major S. A. Smith: The Preparatory Treatment of Amputation Stumps. Other Short Communications by members of the Association.
SATURDAY.—Discussion on the Abbott Treatment of Scoliosis (opened by Mr. D. M. Aitken).

ROYAL SANITARY INSTITUTE, in the Council Chamber, Town Hall, Ipswich.
SATURDAY, July 27th.—11 A.M., Discussions:—Housing, from the Point of View of Economy in Planning and Construction (opened by Sir Henry Tanner), and on the Provision of Maternity Homes (opened by Dr. A. M. N. Pringle). 2 P.M., Visits to the Public Health Office, Sanatorium, Fever Hospital, Electricity Station and Destructor, Small-pox Hospital, and New Water Works.

EDITORIAL NOTICES.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.
Offices: 423, STRAND, LONDON, W.C. 2.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. G. R. Anderson, Southport; American Red Cross Institute for Crippled and Disabled Men, New York, Director of; Mr. R. B. Atkinson, Cambridge.
B.—British Orthopædic Association, Lond., Hon. Sec. of; Capt. G. Ball, R.A.M.C.(T.); Major A. S. G. Bell, R.A.M.C.; Dr. W. Langdon Brown, Lond.; British Drug Houses, Ltd., Lond.; Dr. N. D. Bardswell, Lond.; Rev. P. Brocklehurst, Giggleswick; Dr. W. A. Brend, Lond.; Sir J. W. Byres, Belfast; Mr. J. Barcroft; Lieut.-Col. G. S. Buchanan, R.A.M.C.
C.—Mr. G. E. Cottrell, Lond.; Mr. J. Cabburn, Lond.; Mr. T. E. Coulson, Templecombe; Dr. E. L. Collis, Lond.; Dr. J. B. Christopherson, Khartoum; Dr. E. Chichester, Colchester; Dr. H. R. Carter, Lond.
D.—Dr. H. Dutch, Lond.
F.—Mrs. Bedford Fenwick, Lond.; Capt. F. Fraser, R.A.M.C.
G.—Dr. H. J. Gauvain, Alton; Mr. R. T. Glazebrook, Teddington; Capt. F. Golla, R.A.M.C.
H.—Major H. Hemsted, R.A.M.C.; Mr. W. F. Higgins, St. Margaret's-on-Thames; Hospital Sunday Fund; Dr. H. Head, Lond.; Major W. E. Home, R.A.M.C.; Prof. I. W. Hall, Bristol; Sir T. J. Horder, Lond.
I.—Italian Æronautical Mission.
J.—Mr. G. J. Johnston, Lond.; Mr. C. J. Jones, Lond.
K.—Dr. H. C. Kidd, Bromsgrove.
L.—London Fever Hospital, Sec. of; Dr. C. E. Lea; Mr. J. B. Lamb, Lond.; Dr. C. Lillingston, Peppard Common.
M.—Dr. N. Macleod, Shanghai; Mr. John D. Marshall, Lond.; Dr. E. McIntyre, Mitcham; Mr. F. S. Miles, Hove; Mr. G. Mayall; Mrs. F. McQuiban, Torquay; Dr. J. C. Matthews, Lond.; Capt. E. P. Minett, R.A.M.C.; Dr. H. H. Mills, Lond.
N.—Prof. G. H. F. Nuttall, Cambridge; Mr. J. O. Newman, Lond.
O.—Dr. Isabel Ormiston, Lond.; Sir William Osler, Bart., Oxford.
P.—Mr. J. Penoyre, C.B.E., Lond.; Capt. A. H. Priestley, R.A.M.C.; Dr. P. N. Panton, Lond.; Sir A. Pearson, Lond.; Mr. R. H. A. Plimmer, Lond.; Dr. O. F. Pedroso, Lond.; Mr A. J. Patrick, Lond.; Polytechnic Touring Association, Lond.
R.—Dr. J. L. Roux-Berger, Paris; Royal Medical Benevolent Fund, Lond., Sec. of; Major H. M. Rashbrook, R.A.M.C.; Mr. J. C. Russell, Edinburgh; Royal College of Physicians of Ireland, Dublin, Registrar of; Royal Sanitary Institute; Dr. R. J. Rowlette, Dublin; Royal Society, Secs. of.
S.—Prof. W. Stirling, Manchester; South London Hospital for Women, Sec. of; Major J. J. M. Shaw, R.A.M.C (S.R.); Société de Biologie, Paris; Society of Apothecaries, Lond.; Mrs. K. Senter, Edinburgh.
T.—Capt. W. J. Tulloch, R.A.M.C.; Mr. A. Thornton, Marlborough.
U.—University of Aberdeen, Sec. of; University of Liverpool; University of Dublin, School of Physic, Registrar of.
V.—Mr. S. K. Vaidya, Lond.
W.—Dr. C. H. Whiteford, Plymouth; Dr. F. Wyatt-Smith, Lond.; Dr. Neville Wood, Lond.; Dr. E. Ward, Paignton; Dr. L. D. Weatherly, Bournemouth; Mr. S. Webb, Lond.; Asst.-Surg. H. F. Warren, U.S.N.; Col. W. H. White, A.M.S.; Miss H. Wyldon, Bideford.

Notes, Short Comments, and Answers to Correspondents.

TRIPLEX GLASS.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Jan. 12th you published a letter on triplex glass written by me, and I can now supplement the account then given with illustrations which speak for themselves.

Fig. 1 shows the result of a trial which I myself made by shooting from a distance of 30 yards at glasses fixed on a board. The glass is starred and its surface broken into small pieces, but there are no splinters and no shot went through. The illustration shows the glasses made up into spectacles.

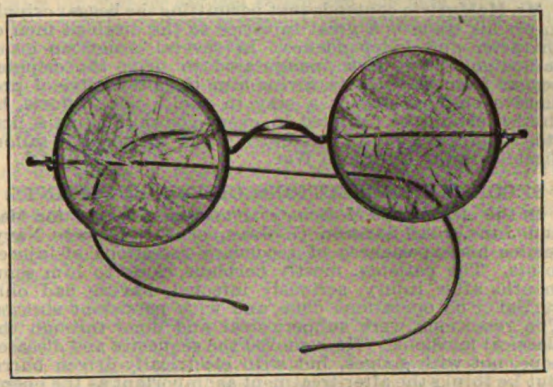
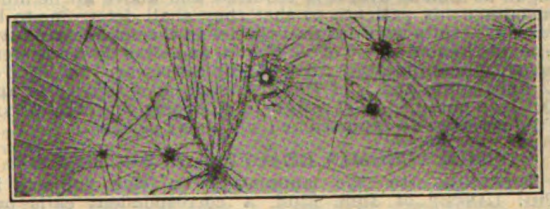


Fig. 2 shows the wind-screen of a motor-car struck by nine shrapnel bullets from a shell which burst quite near. Only one bullet perforated the glass, and this did not travel beyond the hole which it made.



Triplex glass is now being widely used for eye protectors for our fighting men, but as yet its use for glasses designed to correct anomalies of refraction has not become general; indeed, it is almost confined to private practice. I am in the habit of advising everyone who has to wear glasses for going about to have them made of triplex glass. The lenses are said to be more difficult to grind and the expense is greater, but the immunity from injury is quite worth the extra outlay. Opticians tell me that the difficulty in grinding is slight, except in the case of deep curves, and, as I pointed out in my previous communication, this can easily be overcome by fixing a flat plate of triplex in front of the lens of ordinary glass remedying the anomaly of refraction. There is more difficulty when it is required to grind lenses on the glass of protectors. This takes an enormous amount of time, and can only be done by a highly skilled workman. But it is unnecessary. There is no difficulty whatever in wearing protectors over the glasses used for visual purposes, in the same way as a lady who wears glasses pulls her veil down over them.

Difference of opinion exists as to the best colour for protective spectacles in Eastern countries. I have tried blue, neutral, chlorophyll, and Stokes's, without finding any difference whatever in the acuity of vision, even when the darkest shades were used. I have experimented on myself and found no difference in looking at test types or distant objects. I could see just as well through coloured glasses as without, but darkest chlorophyll shade was the most comfortable to the eyes. Some attempt is being made to determine which is the most suitable dye to use. Would it not be better to find out which dye can be procured at once and in sufficient quantity, and to use it?

I am, Sir, yours faithfully,
CHARLES HIGGENS, F.R.C.S.

Brook-street, W., July 13th, 1918.

CRIPPLES AND BEGGARS.

THE American Red Cross Institute for Crippled and Disabled Men calls attention to the prevalent confusion in the public mind between the idea of a cripple and that of a beggar, with resulting injury to the cause of the self-respecting disabled man who is regarded as a subject for charity rather than for trade training and employment. A recent report of the London Mendicity Society states that many thousands of pounds are squandered every year on street beggars in London alone, and crippled beggars seem also to be in evidence in New York streets, for Mr. Douglas C. McMurtrie, director of the Institute, writes:—

We have seen many cripples at street corners, making public exhibition of their deformity or amputation and soliciting alms of the passers-by. The number of these beggars is small in comparison to the great body of physically handicapped men who are usefully employed, but the few have vigorously advertised, have made a considerable impression on the susceptibilities of the community, and have reaped a profitable harvest. A bank teller reported recently the case of a crippled street beggar who deposited in a savings' account, after paying his living expenses, 40 dollars weekly.

Mr. McMurtrie contends that permitting the beggar cripple to ply his trade is a great injustice to the disabled men of character and independence. In several American cities campaigns have been inaugurated to drive the crippled beggar from the streets, giving him the alternative of productive employment or a stay in gaol. Such efforts, he thinks, should be imitated in every community as a first step in preparation for the return of the soldiers and sailors disabled in the European War.

SECONDARY RESECTIONS OF INJURED JOINTS.

IN the *Archives de Médecine et Pharmacie Navales* for May and June, Staff-Surgeon G. Jean, of the French Navy, relates his experiences of secondary resections of injured joints. The patients, mostly Serbians, came to him some months after injury, seriously infected, having had only partial or no operations done, and with persistent sinuses. The resections were subperiosteal and done through the classical incisions. He removed the sequestra and diseased bone, not with gouges, but with electrically driven burrs. But he thinks the after-treatment as important as the operations. The surgeon must do the dressings himself, must himself adjust and watch the plaster splint, taking care it is not too soon removed from a leg or too long left on an arm. Especially must he see that passive movement is begun as soon as ever it is required, and above all he must encourage his patients so that they shall determine to be cured. Results were naturally better in the upper extremity. Nine of 11 shoulders, 9 of 11 elbows, and all of 3 wrists were saved from amputation: 8 of the hip cases were lost, but 5 of 12 knee-joints and 5 of 7 ankles made good recoveries, and Dr. Jean obtained good results in 16 operations on the foot. The cases are all reported and will repay perusal.

THE ALBUMIN REACTION IN SPUTUM.

REFERRING to the annotation on this subject in THE LANCET of June 22nd, a correspondent calls our attention to the fact that since the French Navy does not issue microscopes to ships albumin reaction is used as their *discrimen*. The test is a good one for this purpose. It does not distinguish pneumonia from tubercle, but it does differentiate either from mere bronchitis.

A THERMOMETER FOR THE BLIND.

UP to the present time no thermometer has been invented that can be read by the tactile sense. The matter is of practical importance, as many blind men have entered on occupations in which it is necessary to know the exact temperature record. The Association Valentin Haüy pour le Bien des Aveugles (9, rue Duroc, Paris) is therefore offering a prize of 1000 francs for the best apparatus enabling the blind to read temperatures.

RATS AND PLAGUE.

AT a recent conference, held at Ipswich, of representatives of the sanitary, military, and naval authorities in East Suffolk Dr. G. I. T. Stewart, county medical officer of health, stated that although the regular examination of rats had been discontinued owing to the circumstances of the war, an outbreak of plague had been anticipated by the sanitary authority and the Local Government Board. On behalf of the Board Colonel Edmund Wilkinson pointed out the need for systematic destruction and examination of rats throughout the county. An Order had been issued by the Board to this end, and all except two of the local authorities in the county were carrying out the Order. For the Sampford district it was pointed out that 108,000 rats had been destroyed in a single year, and for the Woodbridge rural district 16,000 since last Christmas. The conference concluded by passing a resolution in favour of a vigorous and concerted campaign for the destruction of rats and the closest possible coöperation for this purpose between the civil, naval, and military authorities.

DELPHINIUM POISONING.

"Delphinium poisoning" was returned as the cause of death by a coroner's jury at Brentwood in the case of an inmate of the Essex County Asylum who died after eating part of a delphinium plant in the asylum airing court. It was stated at the inquest that owing to a fatality last year hollyhocks had been removed from the grounds, but it was not considered that delphiniums were dangerous.

This plant, with its tall spikes of generally pale blue flowers, is a common garden flower. Delphinium, or larkspur, as it is called, produces seeds which yield delphinine for destroying lice. The name of delphinium is derived from a fanciful resemblance of part of the flower to a dolphin, and the name of larkspur from the spur-shaped formation of calyx and petals. In popular parlance the name larkspur is confined to the smaller varieties. Delphinium is included by the Germans in their "Giftpflanzen" or poisonous plants under the name of "Scharfer Rittersporn," besides being called "louse-seed." In THE LANCET of Oct. 29th, 1887, a note on delphinine appeared, of which the following is an excerpt:—

The plant yields four alkaloids, of which the chief one, delphinine, occurs as an amorphous powder of yellowish colour and resinous aspect, and having the chemical formula $C_{29}H_{35}NO_6$. The parts of the plant usually employed therapeutically are the seeds, which contain the great part of the active principles. The seeds have for a long time been employed against psoriasis and as a vermifuge. Delphinine acts chiefly on the nervous system, and first upon the bulb, next upon the sympathetic. It produces at first a functional excitation, then, by graduated attenuation, a diminution and complete but transient abolition of sensation. It is said to be preferable to aconitine, because it is so much less toxic. On the motor nerves delphinine has no action in physiological doses, but in toxic quantity their functions are entirely abolished, causing incoördination with ataxia. The alkaloid acts also on the heart, accelerating the cardiac movements, until finally arrest occurs in diastole.

IMPROVED NOVARSENOBENZOL PREPARATIONS AND APPARATUS.

WE have received from Messrs. Modern Pharmacals, of 48, Mortimer-street, London, W.1, specimens of (1) an outfit for the concentrated intravenous injection of novarsenobenzol (914), and (2) an apparatus for the intramuscular injection of glucarsenol, a solution of novarsenobenzol in glucose with stovaine and guaiacol. The former outfit consists of a special vial of novarsenobenzol, an ampoule of distilled water sterilised and deprived of air and a suction filter. The technique is simple and conveniently carried out in a few minutes in the apparatus provided. The injection is prepared by pouring the contents of the ampoule of water into the vial containing the novarsenobenzol. The solution is drawn into the syringe by means of a small glass tube containing a filter of sterile gauze which fits on the syringe. This outfit is known as the "coneosan" outfit.

The glucarsenol is supplied in an ampoule syringe ("ampsyring") containing a sterilised solution. Glucose, it is stated, furnishes a liquid of thicker consistency than the aqueous solution, and, though slowly, is surely absorbed. It is said to produce no pain, and the slowness of absorption diminishes the pain due to the arsenical drug, the analgesics, guaiacol and stovaine, assisting. In addition, glucose is a reducing agent, and thus to some extent protects against oxidation.

FRANCO-AMERICAN SURGICAL APPLIANCES.

WE have received a brochure of 90 pages dealing with the apparatus manufactured by the *Comité Franco-Américain contre les Impotences Fonctionnelles* (at 17 Rue Boissonade, Paris) and supplied gratuitously to the sanitary formations of the French Army. President of the managing committee is the hospital surgeon, M. Paul Reynier, who states in a prefatory note that 18 months after outbreak of war, almost all the Paris orthopædists and surgical instrument manufacturers having been requisitioned by the State, no source of supply was available for apparatus urgently required in cases of contracture, nerve paralysis, resection, and such conditions. On referring to the American Ambulance at Neuilly he obtained the services as technical director of Miss Grace Gassette, a Chicago artist of much mechanical ingenuity who had gained her experience in splints and bandaging at the Ambulance. Mrs. John F. Bass and Mr. E. Norman Scott, of Chicago, coöperated in finance and administration with the result that the production of surgical appliances on a large scale was rapidly brought to a high degree of efficiency. In the brochure Médecin Aide-Major G. Houzel describes the apparatus with abundant illustrations. Many of the splints are of familiar type, but the whole brochure forms an admirable survey of the field, and will well repay study by surgeons who have to deal with injured limbs and the correction of deformities. All the types of apparatus provided by the Comité are stated to be *déposés* or *brevetés*.

R. B. A. appears to have been misinformed.

Remarks
ON THE
PATHOLOGY OF WAR NEUROSES.

An Address given to the Officers at the Lord Derby War Hospital, Warrington,

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GENTLEMEN,—I appreciate very highly your kindness in asking me through Lieutenant N. Morris to give an address at one of your medical meetings, and let me take this opportunity to express to you my indebtedness for the hospitality and kindly welcome you have always given me on my Saturday visits. The choice of a suitable subject has been difficult because I wished to select one which would be of interest to representatives of each of the three great departments into which this large hospital is divided—viz., mental, medical, and surgical. It occurred to me that many of the so-called functional neuroses and also the reflex nervous disorders caused by injury have been observed by all of us, and that therefore it might be of interest to review our knowledge regarding at least some of them. These disorders, which have been very prevalent during the present war, were previously well known to us in civil practice; the difference is one of frequency rather than of kind.

The symptoms of the neuroses are: mental confusion, stupor, headache, irritability, loss of memory, insomnia, nightmares, hallucinations, obsessions, disorders of the special senses, disorders of speech, disorders of motor functions (such as tremors, convulsions, contractures, and paralysis), and disorders of sensation.

"FUNCTIONAL" AND "ORGANIC" NERVOUS DISORDERS.

At the outset let me say a word as to the difficulty of giving any precise definition of the terms "functional" and "organic."[1] These are commonly used in a pathological sense, being understood to imply the presence or the absence of some definite visible changes in nerve-tissue. But visibility is a relative term, it depends on our eyesight and the powers of our microscopes, and to some extent on staining reagents. Our methods of investigating nerve tissue are not infallible, and we must admit the possibility that even an emotion such as fear may produce minute changes in some of the cortical neurons.

If on grounds of convenience the terms "functional" and "organic" are retained, two points should be clearly recognised—(1) the term "functional" ought to mean not the absence of morbid changes but only the absence of detectable changes; and (2) it ought not to be taken for granted that a disorder which has no known structural changes will run a more favourable course than one in which such changes are apparent. The lesions underlying paralysis agitans, epilepsy, and dementia præcox are unknown to us, yet we can scarcely regard these diseases as curable. Death may result from a profound chemical disturbance of the atoms and molecules of nerve tissue which leaves no visible trace, and between such changes and those which are conspicuous there must be every gradation both in size and nature.

Such gradations are well illustrated by the results of a study of "war neuroses." These neuroses may be produced in at least three ways: (1) by the breathing of poisonous gases, especially carbon monoxide; (2) by concussion of the central nervous system the result of aerial compression caused by the explosion of a shell; and (3) by emotional disturbance. Frequently the neurosis is the result of a combination of these agents.

POISONOUS GASES.

First, with regard to carbon monoxide, Colonel F. W. Mott[2] has pointed out that if a man is buried under sandbags in a heavily shelled trench or dug-out, or if for any other reason he is confined in a small space in which the gas produced by an explosion collects, he will be rendered unconscious if he is not already unconscious as a result of concussion. In two fatal cases Mott found miliary punctiform hæmorrhages in the white matter of the brain, the result of inflammatory stasis and thrombosis of small arteries. If consciousness is regained the man appears dazed and stupid and may suffer for a long time from headache, loss of memory, mental confusion, disturbances of speech, and tremors.

CONCUSSION OF THE BRAIN OR COMMOTIO CEREBRI.

Apart from injuries received from fragments of a shell or from impact of the body against the ground or other solid substance, mere proximity to an exploding shell may be sufficient to cause detectable changes in the central nervous system.

In some cases the changes are severe enough to cause instantaneous death, probably owing to sudden arrest of the vital centres in the medulla from the enormous aerial compression; the force generated by 17-inch shells has been estimated as equal to 10 tons to the square yard. In other cases the changes are less severe and the man survives, but is subject to various symptoms indicating disorder of the nervous system. In many cases of shell shock the cerebro-spinal fluid withdrawn by lumbar puncture shortly after the shell explosion has shown increased pressure and has been found to contain evidence of the presence of blood, indicating that hæmorrhage had occurred.

Recently Mott[3] has published a report of the examination of the brains in two cases of death from commotio cerebri without visible external injury and without the punctate hæmorrhages indicative of gas poisoning. His description serves to explain sudden death in shell shock as well as the clinical symptoms which persist for some time in non-fatal cases.

One of his cases was that of a captain who for six months prior to his fatal attack had suffered from much nervousness, which, however, he had kept under control. Later he was in an area which was subjected to an intense bombardment during which no gas shells were used; this lasted about four hours. On the following day six shells came over. He was not buried or gassed. One shell burst about two feet behind him. His symptoms were coarse tremors of the limbs, inability to walk or to do anything, together with crying and other hysterical manifestations. On the evening of the same day he was admitted to the field ambulance in a state of acute mania. He was quieted with morphine and chloroform and slept all night. The next morning he woke up apparently well and suddenly died.

The brain was extremely congested and there were a number of minute punctiform hæmorrhages at the terminations of the smallest vessels on the surface of the brain, but there were no intracerebral hæmorrhages. The cerebro-spinal fluid was blood-tinged. On microscopical examination minute scattered subpial hæmorrhages were found almost everywhere. In the white matter of the corpus callosum, the internal capsule, the pons, and medulla there were congested vessels and hæmorrhage into their sheaths with occasionally extravasations of blood corpuscles into the adjacent tissue. The cells of the central nervous system showed early chromatolytic changes.

From a study of these changes Mott assumes that the cells of this man were in a state of commencing nerve exhaustion; some nuclei of the cells were more markedly affected than others—for example, the cells of the vago-accessorius nucleus. Mott correlates the maniacal excitement during life with the marked venous congestion of the cortex and the subpial hæmorrhages; the sudden death with the changes in the vago-accessorius nucleus, and the congested state of the medulla with hæmorrhage into the sheath of a vessel in the median raphe of the medulla. He thinks that the cerebral anæmia which was present and the chromatolytic changes in the nerve cells may explain many of the symptoms of sufferers with true shell shock—namely, headache, giddiness, insomnia, stupor, mental confusion, and terrifying dreams—symptoms which are so common in recent cases.

The group of symptoms is similar to that which we have all observed in civil practice from concussion of the brain as a result of blows or falls on the head. In both cases there is a contused condition of the cerebral cortex. In many respects the symptoms resemble those of severe non-traumatic neurasthenia.[4] But I think that certain differences may be observed. Instead of an uncontrollable tendency to discuss their symptoms in detail, sufferers from a bruised brain are dull and apathetic and show a tendency to drowsiness and stupor rather than to insomnia. The neurasthenic is able to commence work and to do it accurately for a time, but he soon tires, he lacks concentration, and exhibits indecision in all his actions. But the patient with a bruised brain is unfit to follow any employment; he is too apathetic, as a rule, to show signs of worry or anxiety, and when his cortical lesion is severe and extensive apathy may be associated with profound loss of memory and other signs of mental deterioration.

EMOTIONAL DISTURBANCE.

Thirdly, as to the effects of emotional disturbance apart from those of concussion or of the inhalation of poisonous gases. It is difficult for those of us who live quietly at home to visualise fully the terrifying conditions under which our comrades live at the front. When we think of the physical and mental strain of life in the trenches, of the shocks to the nervous system from the detonation of high explosives, together with the terror caused by the horrible sights of death and mutilation around, we are not surprised to find that the strongest nervous system may be exhausted or even shattered. How much greater and more frequent must be the effects of such terrifying surroundings on soldiers whose nervous systems, in consequence either of some previous illness or injury, or of an inborn neuropathic or psychopathic taint, offer less than normal resistance to emotional stress. As Hubert Norman [5] remarks: "The exciting factor is important, but still more important is the condition of the organism upon which it acts."

In this class of neuroses and psychoses the most careful examination of the patient, both soon after his breakdown and later at a base hospital, reveals no evidence of organic disease of the nervous system. It is, however, scarcely conceivable that great emotions should not produce some bodily change; recent experimental work, indeed, shows that definite changes do occur.

Effect on Sympathetic Nervous System.

The surface manifestations of pain and of great emotions, such as fear and horror, are well known to us. For example, "the contraction of blood vessels with resulting pallor, the pouring out of 'cold sweat,' the arrest of saliva so that the tongue cleaves to the roof of the mouth, the dilation of the pupils, the rising of the hairs, the rapid beating of the heart, the hurried respiration, and the trembling and twitching of the muscles, especially those about the lips."

But, as shown by the researches of Walter Cannon [6] and others, states of intense feeling are attended by disturbances not only in the superficial structures but also in deep-lying organs. These disturbances are similar to those brought about by great muscular exertion, and depend on nervous impulses to the sympathetic nervous system. Some of these impulses passing along the splanchnic nerves to the suprarenal glands lead to a pouring out of adrenalin into the circulating blood, which powerfully reinforces the action of the sympathetic nerves.

The result is that the vessels to the abdominal viscera are constricted, the blood pressure is raised, and the blood is driven from the abdominal viscera to the heart, lungs, brain, and skeletal muscles. Another effect of adrenalin is to transform the glycogen in the liver into sugar, which circulating in the blood gives renewed strength to the muscles. Moreover, adrenalin brings about a rapid recovery of muscle after its irritability has been lowered by fatigue, and it tends to neutralise or destroy the toxic substances produced by muscular or nervous work. During strenuous muscular action, especially if associated with emotional excitement, the respirations become rapid and forced in order to draw in more oxygen and to get rid of the excess of carbon dioxide. This ventilation of the lungs is much aided by the action of adrenalin in relaxing the smooth muscles of the smaller bronchial tubes.

In these various ways, then, muscular action is rendered more efficient by the changes in the viscera brought about by emotion. The shifting of blood from the abdominal organs to the organs immediately essential to muscular exertion—namely, the lungs, heart, and central nervous system—the increased vigour of the heart, the quick abolition of the effects of muscular fatigue, the mobilising of energy-giving sugar in the circulation, all help to render the organism more effective in the violent display of energy which fear or rage or pain may involve. Reservoirs of power are called forth which enable a man to perform feats of strength and endurance far beyond his normal capacity.

If the various energising substances—adrenalin, sugar, and probably also thyroid secretion—the products either of fear or of the fury and excitement of battle, are not worked off by muscular action it is conceivable that their presence in excess in the blood may lead to pathological effects; in other words, the cessation of physical exertion while strong emotions are dominant may be followed by a disordered action of both mind and body, which later, as when the soldier reaches a base hospital, is expressed by tremors, by tachycardia, by starting at the slightest noise, and by terrifying dreams of the horrors he has witnessed.

In severe cases the continued over-action of the suprarenal, and probably also of the thyroid glands, may produce a clinical picture similar to that of Graves' disease. Sometimes sugar is present in the urine. There is, indeed, clinical evidence that occasionally glycosuria and even diabetes may be originated by emotional disturbance. Schultze believes that the amount of glycosuria depends on the degree of mental depression, and that the greatest excretion of sugar occurs in the fear-psychoses.

Psychic Effect.

Now, the effects of emotional shock can scarcely be limited to the changes which, as we have seen, appear to be due to stimulation of the sympathetic nervous system. Surely, they must also produce some change in the neurons of the central nervous system. The exact nature of such change is unknown to us, and is not likely to be revealed by a microscopical examination of dead neuronic tissue. It is only by researches on the living neuron that we can expect to obtain any satisfactory knowledge.

Crile [7] has demonstrated by laboratory experiments that "in an animal driven strongly by emotion" there is a "mobilisation of the energy-giving compound in the brain cells, evidenced by a primary increase of the Nissl substance and a later disappearance of this substance and the deterioration of the cells." He says that the cell-changes due to the emotions are "so similar, and in extreme conditions approach so closely to the changes produced by disease, that it is impossible to say where the normal ceases and the abnormal begins." We have also to consider the association and dissociation of neurons which may occur, and which may be due to attraction and retraction of their dendrons. How, then, can we divide cases clinically into functional and organic?

In a consideration of the various agents that may originate and maintain a neurosis one factor—namely, repression—must not be overlooked. Fear must affect every soldier at some time or other during his life at the front. With many men, especially those who are highly strung, the fear of being afraid is always before them—the fear that they may fail at the critical moment to do what is required of them. (An interesting case is related by Professor G. Elliot Smith.[8]) The almost incessant efforts to repress such fear must have an injurious effect on the mental and bodily functions and tend to prepare the way for a nervous breakdown.

The result of repression of the emotions is often seen in men under treatment in home hospitals. The voluntary process of an attempt to remove painful memories and thoughts out of the field of attention, instead of being beneficial, may take an active part in accentuating the mental distress, in maintaining the neurosis, and also in the development of new symptoms. In some patients there is an attempt to banish from the mind feelings of shame due to their having broken down; in others grave apprehensions about fitness for further service, which are repressed owing to the idea that such thoughts are equivalent to cowardice, or might be so interpreted by others.

Rivers [9] points out that the advice usually given to such patients is that they should try to banish all thoughts of war from their minds, and they are instructed to try to think of other things such as beautiful scenery and other pleasant aspects of existence. Now, although there is much soundness in this policy, and although no one would advise the patient to concentrate his thoughts on painful memories or brood upon feelings of regret and shame, much harm may be done by an attempt to banish them wholly from the mind. If in place of thrusting aside such distressing thoughts the patient faces them boldly and talks openly with his doctor about them his general health is much more likely to improve, his power of sleeping to be increased, and his sleep to be less disturbed by terrifying dreams of warfare.

But for further discussion of this important subject and for records of suggestive cases I must refer you to Rivers' very interesting and valuable paper.

HYSTERIA.

Hitherto we have been mainly dealing with what I may call the pathogenesis of war neuroses. Now we may ask regarding the symptoms which we observe, Can they all be adequately explained by such bodily changes as I have mentioned; or have we to introduce other factors, especially

that subtle psychical condition which we call Hysteria? The subject of hysteria is very complex, and there are many views regarding the nature of this disorder. One of the most important is that of Babinski, who regards hysteria as essentially a matter of suggestion. He defines it as a pathological state manifested by symptoms which it is possible to reproduce exactly by suggestion in certain subjects, and which can be made to disappear by the influence of persuasion or counter-suggestion alone.

All the facts bearing on the development of hysteria have been admirably discussed by Babinski and Froment.[10] They review their own observations during peace and war, as well as the accounts given by trained observers who were present at times of great emotional stress, such as earthquakes, railway accidents, shipwrecks, and heavy bombardments at the front. They conclude—

"That emotion alone, however intense it may be, does not produce hysterical disorders, and although emotions may prepare the mind to submit to suggestion, they nevertheless exclude suggestion for the time being, and when they are intense they prevent the development of hysterical disorders or even cause them to disappear. When the human soul is shaken by a profound emotion there is no room left in it for hysteria."

One account which they quote is by Clunet, who was travelling on the transport *La Provence* at the time when she was torpedoed:—

Clunet saw no hysterical symptoms during the 17 minutes which elapsed before the boat sank, nor during the 18 hours he spent on a raft. There were manifestations of extreme emotion in the boat and of physical suffering on the raft, but it was not until they were picked up by a destroyer that some of the men showed paralysis, mutism, and other hysterical symptoms, all of which Clunet cured within a few hours by vigorous counter-suggestion, with such success that no relapse occurred during the eight following days whilst they remained under observation.

Similarly, real hysterical manifestations are rarely met with at the front. Emotional symptoms are common enough, men reaching the aid-posts weeping and tremulous, with rapid pulse and respiration. It is only at the base and in home hospitals that hysterical symptoms are common, the reason being that there has been time for suggestions to enter the mind during its recovery from a state of confusion. The particular symptoms that develop—whether paralysis, anæsthesia, mutism, or deafness—depend on the mental impressions received by the patient in consequence either of some morbid sensation of his own or of some circumstance attending the method of examination by his doctor.

The old conception of hysteria as held by Charcot and his contemporaries was very wide, and included a large number of disorders which are now known to have a different pathology. Babinski has done good service by trying to narrow this conception, and without attempting to discuss his theory of suggestion it will be useful to consider whether certain manifestations of these war neuroses which are still often regarded as hysterical may not be explained by physical rather than by psychical agency.

REFLEX NERVOUS DISORDERS.

I will limit my remarks to certain contractures and paralyses which develop after injury and which in their character, distribution, and associations present a close resemblance to the condition known as arthritic muscular atrophy. The fact that inflammation of a joint is almost invariably attended by rapid wasting of the muscles that cover the joint was first described by John Hunter. He recognised also that the atrophy is not the result of default of movement, for he says when the other limb is examined it is seen that the muscles there have preserved their volume, although they have not been more moved than the muscles of the diseased limb. He also noted that the muscles were sometimes paralysed, even when they were not atrophied.

Ollivier in 1869 was the first, I believe, to suggest the reflex nature of the phenomenon. Subsequently many theses and articles were published, including one by Charcot, who describes the condition with his usual lucidity and dramatic force. About 30 years ago I was much interested in this subject and in a published paper reviewed our knowledge concerning it.[11] Let me give a simple example.

A man injures his knee; it becomes painful and swollen; in a short time the muscles of the affected limb become weak and wasted, but both weakness and wasting are most marked in the quadriceps extensor. A measurement taken a week after the injury may show a difference of an inch between the girths of the thighs. The knee-jerk is exaggerated, and sometimes also on the unaffected side.

Other examples are: the wasting of the interossei and the muscles of the forearms in rheumatoid arthritis of the hands, of the deltoid in injuries of the shoulders, of the glutei in hip disease, and so on.

In explanation of these symptoms no better hypothesis than that of Charcot has yet been advanced—namely, that the nutrition of the motor cells in the spinal cord is damaged in a reflex manner, morbid influences being conveyed to them by the joint-nerves, and that their derangement or torpor determines the changes in the muscles. That the process is reflex was indeed shown by Raymond, who found that a previous division of the posterior spinal roots prevented the wasting of the muscles. In some cases the atrophy is persistent, and may spread to other muscles of the limb. I have seen cases which suggest that occasionally progressive muscular atrophy may be initiated in this way.

Now, curiously enough, these reflex nervous disorders, which may follow not only joint affections but also slight wounds to a limb or its injury by frostbite or in other ways, have been overlooked or discredited, and in many modern text-books on medicine there is little or no reference to them. The discredit into which the old views had fallen is largely due to the exaggerated development of the idea of hystero-traumatism—that is, to attribute to hysteria almost all the nervous disorders following traumatism and not due to a definite lesion of the nervous system. In their book Babinski and Froment have published important observations on these reflex neuroses and have given a full description of the atrophic paralysis and spasms which occur, and also of the other symptoms that may be associated with them—namely, increased excitability and slow contraction of muscles on mechanical stimulation, disturbances of sensation, of temperature, and of vaso-motor control as shown by coldness and cyanosis of the affected part, and, lastly, trophic changes in the bones and skin.

Several instances of these reflex disorders have come under my care during the present war. In Babinski and Froment's book will be found a number of completely new observations, as well as a discussion of the diagnosis of these disorders from other paralyses and contractures, whether they be of hysterical or of organic origin.

CONCLUSION.

In conclusion, I would emphasise the importance of recognising the gradual transitions that occur, both as regards symptoms and pathology, between emotional disorders and serious disease of the central nervous system. Think only of a convulsive seizure. Can the most experienced neurologist who watches it closely always tell whether it is due to malingering, to hysteria, or to epilepsy?

I would also draw attention to the similarity in symptoms that may be sometimes observed in functional and organic diseases. Cases of concussion of the central nervous system from shell explosion have been described which presented the symptoms of disseminated sclerosis, of cerebellar disease, or of general paralysis of the insane. Major Eager of this hospital, who has had such a large experience of mental disease, has told me that he is much impressed with the striking resemblance between the symptoms of some cases of shell shock and those of general paralysis. This suggests that similar groups of cortical cells are deranged in the two diseases; in the one by a specific poison which ultimately will lead to their complete destruction, in the other by the results of concussion or of profound emotional disturbance the effects of which may be expected entirely to pass away.

Lastly, we must remember the frequency with which hysterical manifestations may be grafted on to a basis of organic disease, and therefore the importance of making a thorough examination of every case which appears to be hysterical, in order that no sign of structural change may escape our notice.

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GUNSHOT WOUNDS OF THE PERIPHERAL NERVES.

BY C. NOON, F.R.C.S. ENG.,

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BETWEEN June, 1915, and March, 1918, 364 cases of injuries of the peripheral nerves have been admitted to the surgical division of the Norfolk War Hospital. 250 cases have come under my observation, and of these 102 cases have required operative treatment.

Pre-operative and Post-operative Treatment.

The operative treatment in these cases should be looked upon merely as an incident in the treatment of the case. The most skilfully performed operation on an injured nerve is doomed to failure, and can accomplish little if the pre-operative and post-operative treatment is insufficient or neglected. The treatment in these cases should extend over a period of many months. The results can only be good when treatment is commenced early, and is conducted with great perseverance both on the part of the patient and on the part of those who are responsible for his treatment. It is often difficult or impossible in these cases to prevent complications and trophic lesions making their appearance, but if no attempt be made to prevent and overcome these conditions irreparable damage will supervene, damage which no amount of surgery can be expected to correct. It is most essential to try to make the patient realise the importance of treatment, and to make him understand how much he can do for himself to promote his recovery.

The treatment can be considered under the following headings:—

1. Postural treatment.
2. Electro-therapeutic treatment, including electric treatment, massage, and exercises.

Much has been written with regard to the positions which should be maintained after a patient has suffered a lesion of a peripheral nerve, but it must not be considered that everything has been done when the patient's hand or leg has been fixed in the orthodox position by some splint. It often happens that these cases are complicated by some injury to the bones of the limb. A splint is applied, fixing the whole limb. Of the many inventions for the treatment of fractures, and especially those complicated by nerve lesions, all are bad which hinder the easy movement of the phalanges of the thumb and fingers. If the hand or the foot is left fixed in any one position for long periods and passive movements are not frequently performed, disaster is certain to follow. It is quite as important to remove a splint often as it is to apply it at all.

The nutrition of the muscles must be preserved as much as possible by massage and electrical treatment. Vaso-motor lesions are of common occurrence in these cases, and it is often noticed that the limb affected is cold and clammy. It is most important to keep these limbs warm; especially is warmth important when electrical stimulation is being used as a method of treatment. It is futile to apply electrical stimulation to cold and blue extremities. The limb should previously be wrapped in warm cotton-wool, or immersed in hot water for a few minutes.

Joints must be prevented from getting stiff by passive movements, which should have been begun as early as possible. Cases of stiff joints will often be much benefited by hot-air baths.

The condition of the skin itself must not be neglected, but must be suitably protected from any injury. In short, every tissue innervated by the injured nerve must have due consideration and treatment. Treatment should be regular and continuous. If operative treatment becomes necessary massage should again start as soon as possible, and in the upper extremity every attempt should be made to prevent stiffness and contraction of the hand and fingers occurring.

A position of relaxation should be maintained in all nerve injuries.

In median nerve injuries the muscles supplied by the nerve are relaxed when the fingers and hand are flexed, and the thumb abducted and flexed, the arm being slightly rotated. Good results in this hospital have been obtained in cases of simple uncomplicated lesions of the median nerve without the application of splints.

In ulnar nerve injuries the muscles supplied by the nerve are relaxed, when the fingers are spread apart; the first phalanges flexed, the second and third extended, and the thumb abducted. Every attempt has been made to prevent contraction, and to maintain a position of relaxation in lesions of the ulnar nerve, by means of splints and appliancess, but more success has been obtained by massage and passive movements than has been obtained by methods of fixation.

In lesions of the musculo-spiral nerve, by means of a Jones's "cock-up" splint, or some modification of it, the hand is hyper-extended, the thumb abducted, and the arm put in a position of supination, so relieving the extensor muscles of all strain. Operations on the musculo-spiral nerve are doomed to failure if the paralysed muscles are allowed to become over-stretched and lengthened by allowing the wrist to be in the flexed position of "drop" wrist. If the wrist is kept in good position injuries of the musculo-spiral nerve are among the most favourable for treatment.

It is useful before leaving the question of massage, electrical and postural treatment, to answer the question: What can these methods of treatment do for a patient who has suffered a nerve lesion, and how long should such treatment be continued? Massage, electrical, and postural treatment can prevent joints becoming stiff. It can prevent muscular contraction to some degrees, and it can maintain the tone of the muscles; in other words, it can enable the parts to be kept in the most favourable condition for the resumption of their functions.

It can do little in late and neglected cases. One often sees hopelessly contracted limbs with paralytic deformities, and with muscles the seat of degenerated changes, sent to the massage and electrical department as a last resource. These cases should have been sent to this department for the prevention of these calamities, not for their relief, for the best massage and electrical treatment is often almost a waste of time in these cases.

It is difficult to lay down any definite rules and say how long treatment should be continued. Most cases show some improvement within six months. Massage and electrical treatment should be continued for at least six months after the operation on a nerve has been performed. It is unlikely that treatment for more than a year will give rise to much improvement.

Operation.

The operative procedure may be considered under the following headings:—

1. Skin incision.
2. Isolation of nerve trunk above and below site of lesion.
3. Freeing of nerve at actual site of lesion.
4. Passing the sutures and exact co-aptation of ends of divided nerve.
5. Formation of a sheath at site of lesion.
6. Suture of deep fascia and closure of wound.

An operation having been decided upon, it should be performed under general anæsthetic. The whole arm or leg to be operated upon should have been previously prepared with the utmost care, any lesion of the skin being an absolute contra-indication to the operation. It is a great advantage to have a third assistant, whose only duty it is to control the position of the arm or leg and hold it in any desired position. This is especially advantageous when operating upon such nerves as the musculo-spiral. The operation is best performed without the application of an Esmarch bandage. Any hæmorrhage which may occur is easily controlled by the application of forceps, and the wound, when closed, is left dry, there being much less risk of the development of any hæmatoma, a very undesirable complication.

The skin incision should be of ample length; for instance, in operating on the ulnar nerve in the forearm it is best to make an incision from just below the elbow to just above the wrist; the skin having been divided its edges are protected by thin rubber sheeting or gauze attached by means of clips. If possible the skin incision should be planned so that it avoids the old scar or the scar should be excised. Excision or freeing the scar should always be practised wherever possible, the deep fascia is next divided, and any bleeding points controlled.

The nerve trunk is sought above and below the point of severance, and it is traced downwards and upwards to the lesion. In doing this the tissue surrounding the nerve should

be dissected away from the nerve, and the nerve itself should be handled as little as possible. On exposure of the injured part of the nerve a bridge of fibrous tissue is usually found joining the ends together; it is best to dissect this quite free before attempting to determine whether the nerve has been divided or not, so that when the nerve has been completely freed its continuity has not been divided during the operation. The fibrous tissue is then dissected off the nerve, and a decision arrived at as to the pathological condition present. When the conclusion is arrived at that the nerve has suffered anatomical division, and its ends are only joined by a fibrous band, one very fine silk suture is passed vertically through healthy parts of the upper and lower ends of the nerve to be joined. This suture is a great aid in maintaining the exact co-aptation of the nerve, when suturing it after removal of the intermediate fibrous tissue. Different bundles of the nerve have different functions, so it is most important to bring the corresponding bundles together in the suturing. The nerve at the site of the suture should be handled as little as possible.

After the primary suture has been inserted, the supposed fibrous band is divided, and sections are cut from its distal and proximal ends until nerve fibres are seen. The primary suture is then tied, bringing the ends of the nerve into exact apposition; a series of sutures unite the nerve-sheath. It is most important to avoid tension.

I use the finest silk and the finest needles for suturing the ends of divided nerves. Catgut is the material usually recommended. It appears to me that the exactness and security of the junction are more important than the suture material used to perform and make it.

The necessity of the formation of a sheath at the site of junction has next to be considered. The nerve after suture should be placed in a bed of healthy tissue; if this can be done it will not be necessary to surround it with any foreign tissue.

Much has been written with regard to the surrounding of sutured nerves with some material supposed to have protective virtues—a piece of fat, a piece of vein, Cargile membrane, a piece of peritoneum from a hernial sac, have all been recommended. A piece of fat of moderate thickness cut from the patient's own thigh, and loosely sutured round the nerve so as to protect the site of suture, makes an ideal covering and bed when much scar tissue is present.

If the operation is done aseptically the procedure has everything to recommend it. It is advised by many surgeons and condemned by others, but the researches of Bittorf appear to prove that it is a sound and scientific procedure. It is doubtful if the aseptic introduction of a piece of the patient's own fat can ever be harmful; it is almost certain that it is often of great service.

On completion of the suture any bleeding points are carefully tied with catgut and the wound thoroughly irrigated with warm saline solution. The deep fascia is carefully sutured with catgut and the wound closed without drainage. The arm or leg is then carefully bandaged. The limb should be placed in the best position to relieve the nerve from tension, and it should be fixed in such a position by splints and bandages. Massage for the hand should be started two or three days after the operation.

Complications.

The chief complications met with in this series of cases have been:—

1. Those due to septic infection of the wounds, extensive destruction of the soft parts, and severe injuries to the bones.

2. Extensive destruction to the nerve, resulting in a gap in its continuity, making end-to-end suture impossible.

1. Drainage and rest for the inflamed parts have been relied on chiefly to overcome the septic complications. With thorough drainage the wounds have usually healed well and given rise to little trouble. In a certain number of cases of severe infection, associated with marked swelling and œdema of the limb, it has occasionally happened that owing to the pain it has been impossible to prevent some stiffness of the fingers, due probably to the inflammation spreading to the tendon sheath. In such cases, after all the signs of inflammation have disappeared, it will be found that much benefit will be derived from gentle but firm movements of the parts under an anæsthetic.

In cases associated with compound fractures very careful treatment is necessary if necrosis with the development of a persistent sinus is to be avoided, which may delay the suture of the nerve for many months. These cases should be thoroughly drained at the earliest possible date, and all loose pieces of bone which have not firm attachment to periosteum removed. A healed wound must be obtained at the earliest possible time in cases of compound fracture, complicated by nerve lesions. Carrel-Dakin treatment or continuous irrigation should be used as a method of treatment when necessary.

2. Extensive destruction of the nerve, resulting in a gap in its continuity, making end-to-end suture impossible.

End-to-end suture is the operation of choice. It should be done whenever possible, It will usually be found possible to perform end-to-end suture after considerable pieces of nerve have been destroyed, if sufficient attention be paid to the following points:—

(1) The incision should be of ample length, so that the nerve may be separated from the surrounding structure, both above and below the lesion. (2) In lesions of the ulnar nerve it can be displaced in front of the internal condyle of the humerus. (3) During and after the operation the position of the limb should be put in that of maximum relaxation, so that all tension is taken off the nerve.

When it has been found impossible to perform end-to-end suture a variety of procedures have been attempted and advised, but it would appear that up to the present time authorities have not been able to determine the values of these operations, but from various writings it would seem that their value is not great, and that for a few successes there are many failures. Some of the procedures would, on general principles, seem quite useless. The operation for uniting the ends of nerves by cutting flaps has been condemned as useless, but I have observed this method is sometimes followed by success.

Under certain circumstances nerve suture may be replaced or supplemented by tendon transplantation—namely: (1) when nerve suture is impossible; (2) when the functional result attained by nerve suture is unsatisfactory. The most favourable cases in which to prepare tendon transplantation are those of injury to the musculo-spiral and posterior interosseous nerves. The transplantation of the tendon of the flexor carpi radialis through and into the tendons of the extensor longus pollicis, the extensor brevis pollicis, and the extensors of the fingers, is an operation followed by such good results that it should always be done in cases when it is considered likely that the musculo-spiral nerve will not recover. "Complete restoration of function may be expected in four weeks—an enormous saving of time compared with the year which must elapse before recovery after nerve suture" (Murphy).

Conclusions.

From a study of these cases the following are the conclusions arrived at:—

1. That the diagnosis of an injury to a peripheral nerve ought to be made at the earliest possible time.
2. Successful recovery depends upon early, correct, and continuous treatment.
3. Primary suture should be considered and practised whenever possible.
4. That there should be no unnecessary delay in exploring a nerve if there is sufficient evidence that it has received some injury resulting in a macroscopic pathological lesion.
5. It is almost certain that some macroscopical lesion is present in cases which show no signs of recovery after four months' treatment.
6. That operations on injured nerves should only be done in well-equipped general hospitals, and by those surgeons who have ample experience of such cases.
7. That sufficient attention is not usually paid to the early pre-operative and post-operative treatment, and that paralytic deformities and shortened muscles are often the result of ignorance and neglect.
8. That the extreme gravity of an injury to a peripheral nerve is not sufficiently realised by the general profession.

I wish to acknowledge my indebtedness and appreciation to Colonel T. H. Openshaw, consulting surgeon to the Eastern Command, for his advice in some of the more difficult cases; and I also desire to thank Major A. J. Cleveland and his staff in the electro-therapeutic department of the hospital for numerous suggestions in the treatment of the cases.

GUNSHOT WOUNDS OF THE THORAX: THEIR LATER STAGES.

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SOME of the men who receive gunshot wounds of the thorax die on the field of battle, some in hospitals abroad; others filter through these hospitals and reach the hospitals at home. Those who come home include the less serious cases. The following table and notes deal with 50 of these cases—that is, with the later or terminal stages. On an average the cases were admitted 18 days after being wounded. Wounds of entrance: chest 19, back 12, shoulders 8, sides 7, neck 4.

No.	Non-penetrating.	Penetrating.	Through-and-through.	Hæmothorax.	Aspirated.	Resected.	Metal removed.	Metal still in.	Pneumonia.	Discharged to duty.	Employments III.	Medical boarded.	Died.
1	—	1	—	1	—	—	—	1	—	—	—	1	—
2	—	1	—	—	—	1	1	—	1	—	—	1	—
3	—	1	1	1	1	1	—	—	—	—	—	1	—
4	—	1	—	1	—	—	—	1	1	—	—	—	1
5	—	1	—	—	—	—	—	1	—	1	—	—	—
6	—	1	1	1	—	—	—	—	—	1	—	—	—
7	—	1	1	1	—	1	—	—	1	—	1	—	—
8	—	1	1	1	—	—	—	—	—	1	—	—	—
9	—	1	—	1	—	—	1	—	1	1	—	—	—
10	—	1	—	1	—	—	—	—	—	1	—	—	—
11	—	1	1	1	1	—	—	—	—	1	—	—	—
12	—	1	—	1	—	1	1	—	—	—	—	1	—
13	—	1	1	1	—	—	—	—	—	1	—	—	—
14	—	1	—	1	1	1	—	1	—	—	—	1	—
15	1	—	—	—	—	—	1	—	—	1	—	—	—
16	—	1	—	1	—	—	1	—	—	1	—	—	—
17	—	1	—	1	1	—	1	—	—	1	—	—	—
18	—	1	—	—	—	—	—	1	—	1	—	—	—
19	—	1	1	—	—	—	—	—	—	1	—	—	—
20	1	—	—	1	—	—	1	—	—	1	—	—	—
21	1	—	—	1	—	—	1	—	—	1	—	—	—
22	1	—	—	1	—	—	1	—	—	1	—	—	—
23	—	1	1	1	—	—	—	—	—	1	—	—	—
24	—	1	1	—	—	—	—	—	—	1	—	—	—
25	—	1	1	1	—	—	—	—	—	1	—	—	—
26	—	1	1	1	—	—	—	—	—	1	—	—	—
27	—	1	1	1	—	—	—	—	—	1	—	—	—
28	—	1	—	—	—	—	1	—	—	1	—	—	—
29	—	1	—	1	—	—	1	—	—	1	—	—	—
30	—	1	—	1	1	—	1	—	1	—	—	—	1
31	—	1	—	—	1	—	1	—	—	1	—	—	—
32	—	1	—	—	1	1	1	—	—	—	—	1	—
33	1	—	—	—	—	—	1	—	1	—	1	—	—
34	—	1	—	1	1	—	1	—	—	—	—	1	—
35	—	1	1	1	1	1	—	—	—	—	1	—	—
36	—	1	—	1	1	1	1	—	—	1	—	—	—
37	—	1	—	1	—	1	1	—	—	—	—	1	—
38	1	—	—	—	—	—	—	—	1	—	1	—	—
39	—	1	—	1	—	—	1	—	—	1	—	—	—
40	—	1	—	1	—	1	1	—	—	—	1	—	—
41	—	1	—	1	1	—	—	1	—	—	—	1	—
42	—	1	1	1	—	—	—	—	—	—	—	1	—
43	—	1	1	1	—	—	—	—	—	—	—	1	—
44	—	1	—	1	—	—	—	1	—	—	—	1	—
45	—	1	—	1	1	—	—	1	—	—	1	—	—
46	—	1	—	1	—	1	1	—	—	—	—	1	—
47	—	1	—	1	1	1	1	—	—	—	—	1	—
48	—	1	1	1	—	—	—	—	—	1	—	—	—
49	—	1	—	1	—	1	1	—	—	1	—	—	—
50	1	—	—	1	—	—	—	—	—	1	—	—	—

Non-penetrating.—Seven cases of wounds of thoracic wall did not penetrate pleura. Two of these had hæmoptysis, 4 had hæmothorax; of latter 2 manifested pleuritic friction. One had a small swelling over ribs due to incarceration of piece of cloth; here also pleuritic friction was heard over adjacent area. This came on late in course of illness, probably due to extension of inflammation. One developed pneumonia and another a persistent form of basal congestion or bronchopneumonia. Thus, concussion may cause hæmoptysis, hæmothorax, or pneumonia.

Penetrating wounds.—Most of these had hæmoptysis, some for several days after they were wounded. Several state quite definitely that they did not spit blood and yet they presented physical signs of effusion. In 8 cases ribs were broken, in 4 scapula, in 2 humerus (1 requiring amputation at shoulder), in 1 clavicle. In 1 vertebræ were damaged; in 1 œsophagus was slightly damaged. In 3 pleura had been sewn up, in 1 diaphragm. In 16 cases the wounds were through-and-through; some of these had only short tracks through lungs. Several did not present any physical signs of hæmothorax. In 13 cases resection of rib was done for empyema. Several had physical signs of contralateral disease of lung or pleura, conditions very well described by Sir J. R. Bradford.[1] Several cases with the physical signs of effusion were not aspirated, as there were no indications of sepsis; physical signs gradually disappeared. Pleuritic friction was frequently heard in the later stages.

Twenty-eight, or more than half, returned to duty in from 2 to 4 months; 6 were discharged to Employments III. and 14 from the Army by medical boards, 6 in consequence of empyema, 4 in consequence of still having metal in lungs, and 4 because of disabilities due to other injuries. One man had a sinus two inches deep between lower ribs, left by some operative procedure, and into this iodoform and bismuth paste was injected; immediately coughing was provoked, and within a few seconds he coughed up pieces of paste size of pea. Sinus healed in a few days. Two patients died from septic pneumonia.

1. Came in with small wound above left clavicle. X rays revealed ragged piece of metal deep in neck, probably in apex of lung.
2. Gunshot wound in back, caused by piece of metal striking glancing blow near inferior angle of scapula. When admitted—four weeks later—right lung was dull and crepitant. Sputum blood-stained. Died three weeks after admission from double septic pneumonia.

Both these cases had septic flesh wounds other than those over the lungs. This association is suggestive of danger.

The operations required at this hospital were performed by Major G. Sichel, now in France, but then senior surgeon.

[1] Brit. Med. Jour., August 4th, 1917.

ABSTRACT OF A PAPER ON

CAPSULATE MUCOID FORMS OF PARATYPHOID AND DYSENTERY BACILLI.

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(From the Laboratory of the University War Hospital, Southampton.)

DURING routine examination of excreta of two chronic paratyphoid carriers I have met with some curious capsulate bacilli which form large mucoid colonies on Endo's fuchsin-sulphite-agar, totally unlike those of *B. paratyphosus B*, but which proved to be a variety of that organism. I have also encountered similar organisms in a case of infection with *B. aertryck*, and in convalescents from dysentery of the mannite-fermenting group.

I have not found them in typhoid, paratyphoid A, or in dysentery of Shiga type. Such cases have been few in number, and possibly they may yet be found; indeed, Professor Tanner Hewlett has suggested to me that all the members of the coli group may have this Proteus-like power of disguising themselves, and he has drawn my attention to a paper by Cecil Revis.[1]

Revis found that when a sample of soil contaminated with human fæces was first sterilised and then inoculated with a certain culture of *B. coli* "very large, jelly-like, clear colonies," quite unlike ordinary *B. coli*, developed at the end of four months. These colonies gave the usual fermentations of *B. coli*, and "on microscopical examination the bacteria were seen to be embedded in a cementing substance." When they were subcultured it was found that "the typical form and the new type seem to be quite dynamic, passing readily from one to the other."

I have had no opportunity of conducting experiments on animals, but I am publishing this account without waiting to do so, because it is important they should be recognised. In addition to Professor Hewlett, I am indebted to Lieutenant-Colonel D. Harvey, Major F. W. Andrewes, and Captain A. C. Inman for examining several of the cultures, to Dr. Doris MacKinnon and Miss Gertrude Long for drawings and charts, and to Dr. Alex. Hill for allowing me to make photographs at the Southampton University College. I shall be most happy to supply other workers with subcultures.

Paratyphoid Mucoids.

In the spring of 1917 the fæces were examined daily of a number of soldiers from whom paratyphoid bacilli had been isolated during convalescence, to determine if the place of the pathogenic bacilli is taken by any special organism, or group of organisms. I hoped that, if the paratyphoid bacilli were crowded out during convalescence, such an organism might be of benefit in treating carriers; a forlorn hope, one must admit.

Pte. S., a chronic paratyphoid carrier, was taken ill at end of August, 1916. His excreta were examined many times. When an emulsion was plated direct on to Endo's fuchsin-sulphite-agar from

[1] Centralblatt für Bakteriologie, 1910, 26

51 to 100 per cent. of colonies were paratyphoid. 116 samples of fæces had been examined; the 116th sample gave 100 per cent. of paratyphoid colonies. In the 117th percentage dropped to 10; a new type of colony appeared, consisting of large, slimy, white, mucilaginous colonies which I have named "Mucoids." During the next 11 days the fæces were examined seven times; average percentage of paratyphoid colonies only 11; mucoids were present in large numbers on each occasion. On twelfth day no mucoids found on plate; percentage of paratyphoid colonies rose once more to 50. (See Chart.) The mucoids

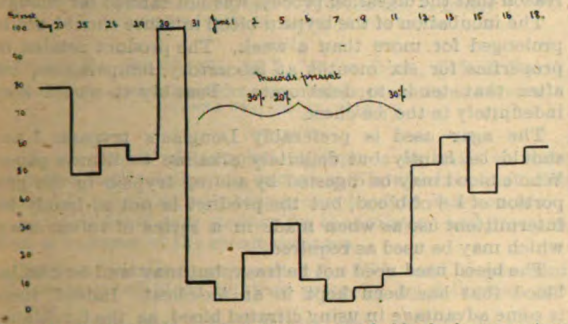

Chart showing percentage of ordinary paratyphoid colonies present on Endo plate and the fall in percentage when mucoids were present. The proportion of mucoids is given for those days on which it was recorded.

were not found again in seven subsequent examinations, and the paratyphoid colonies were as numerous as ever. The sum percentage of mucoids and paratyphoids is approximately equal to percentage of paratyphoid colonies usually seen when no mucoid organisms are present.

Subcultures were made and usual media inoculated. The organism reacted in same fashion as *B. paratyphosus B*. When first isolated the organism was not agglutinated by a paratyphoid serum, but it did absorb the agglutinins from it. When this strain of mucoids was re-tested eight months later it agglutinated slowly and imperfectly in low dilutions.

One day, when I had wished to prepare a fresh culture from a single mucoid colony, I plated out some peptone-water inoculated five days before. The result was a mixture of mucoids with ordinary paratyphoid colonies. I thought I was working with a contaminated culture. Further investigation proved that the paratyphoid colonies had originated from the mucoid form. If a culture of the mucoid be inoculated into peptone-water and plated every day there will be a few ordinary paratyphoid colonies on plate made on third day; on fifth day they will be in majority. The mucoid colonies give rise to ordinary paratyphoid bacilli.

[Experiments undertaken to test purity were here described.]

with them, like ground glass. If the latter be subcultured several times they will give rise to the luxuriant large mucoids once more.

I have never yet succeeded in obtaining mucoids from the ordinary form. Cecil Revis, it will be remembered, found that his "jelly-like" *coli* colonies passed readily from one form to the other.

In mucoid colonies 24 hours old many of the bacilli measure from 1·5 to 2·5 μ; there is a large number of small coccoid forms 0·75 to 1 μ in diameter. The general appearance of a film made from one of the paratyphoid colonies derived from the mucoids is very different. These derived bacilli are, for the most part, larger; the small coccoid bacilli, so numerous in mucoid films, are rare; very long "involution forms," from 12 to 45 and even 100 μ in length, are the most striking feature.

When a culture of the mucoid form in peptone water is examined by the dark-ground method the number of small cocco-bacilli at once catches the eye, and the rapidity with which these coccoid forms travel is very striking.

When films of the mucoids and of the derived colonies are stained by Benians' "relief stain," [2] the two can be distinguished at a glance. The picture is quite different from that given by ordinary staining methods; there the bacilli in mucoid cultures are smaller than those in the derived; here, on the contrary, the silhouettes of the mucoid organisms are much the larger. The explanation of this is that they have capsules, while the paratyphoid bacilli in the derived colonies have none.

In films made from the mucoids the faint outlines of the bacilli can be distinguished lying within thick capsules, and there are many round, coccoid forms about 3 μ in diameter. The capsules cannot be stained by ordinary means, such as Welch's method, and it is possible that they are not firm envelopes, but are derived from the mucoid matrix in which the bacilli are embedded and envelop them as drops of dew envelop particles of dust.

There is yet another point of difference between films made from mucoids and those from the derived paratyphoid colonies. In the latter the background of Congo-red is homogeneous, but in mucoid films it is traversed in all directions by an irregular reticulum composed of a deposit of small granules, which appears to be derived from mucilaginous matrix. This deposit is not shown in Fig. 2.

The evidence in favour of classifying these mucoids as a form of *B. paratyphosus B* is overwhelming.

The mucoid organisms disappeared from the excreta of Pte. S. on June 11th, 1917, and shortly afterwards he was transferred to another hospital.

From that time until Oct. 6th only six carriers of paratyphoid bacilli were admitted to this hospital; none a chronic carrier; no mucoids found in excreta. On Oct. 6th Pte. C., a chronic carrier of *B. paratyphosus B*, was sent here from France.

He had been taken ill on Sept. 1st, 1917; severe attack with high fever and hæmorrhage from bowels. He had received two injections, by T.A.B. 2 method, 1½ years before illness.

In first plate, prepared from fæces, a large number of mucoids was present. The mucoids did not disappear; in 59 examinations made while he was here they were found 47 times. Ordinary *B. paratyphosus B* always present as well. As a rule, 80 per cent. of colonies on Endo plate, spread with emulsion of fæces, consisted of mucoids and typical paratyphoid colonies.

Illustrations of Mucoid Forms of Paratyphoid Bacilli.

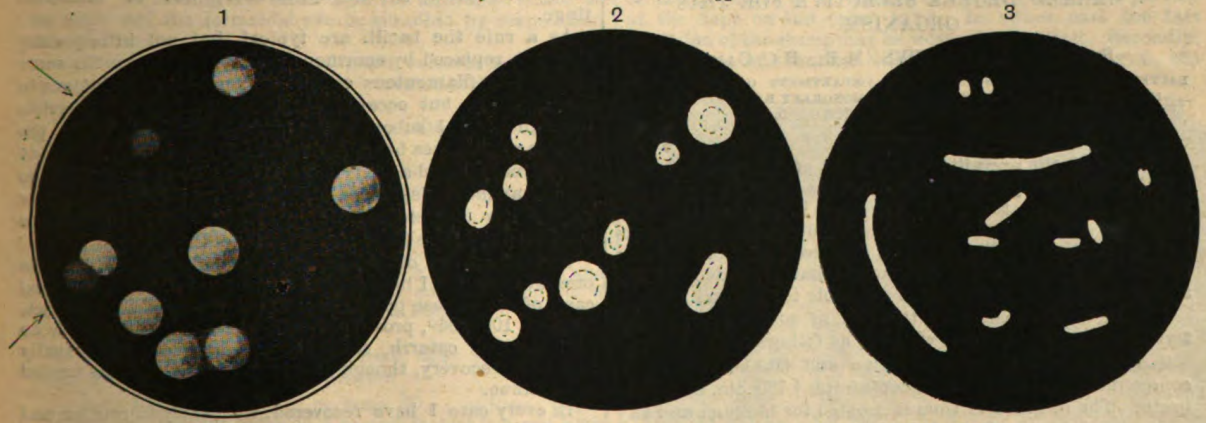

FIG. 1.—Sketch of five-day peptone culture of mucoid isolated from fæces of Pte. S., plated on Endo's medium. The large colonies represent the mucoids, the small colonies (to which the arrows are directed) consist of paratyphoid organisms derived from them.
FIG. 2.—Drawing of silhouettes of mucoid organisms in case of Pte. S. (Benians' stain.) × 2000.
FIG. 3.—Drawing of silhouettes of paratyphoid bacilli derived from mucoids. (Benians' stain.) × 2000.

The only way in which these paratyphoid organisms derived from mucoids differ from typical paratyphoid bacilli is: (*a*) the colonies on solid media are, as a rule, more granular; (*b*) more long "involution forms" are present than usual. Subcultures from these derived colonies behave in every other respect like ordinary paratyphoid organisms.

The mucoid colonies have about twice diameter of ordinary paratyphoid colony, and after repeated subculture on successive days they may attain a diameter of more than 1 cm. in 24 hours. They are dome-shaped, circular in outline, with a regular margin, and a mucoid appearance absolutely unlike a paratyphoid colony. By transmitted light they are very translucent and are somewhat like frosted glass.

A fresh culture on an agar slope is thick and slimy-like mucus. In a few days the sliminess disappears, except near top of tube, and on re-plating some ordinary paratyphoid organisms derived from the mucoids are found. If a culture on agar be left for several weeks and then plated the resulting growth will consist almost entirely of non-mucoid paratyphoid colonies and a few minute ghostly colonies mingled

The mucoid organisms resemble those of Pte. S., with the important exception that they do not remove the specific paratyphoid agglutinins from an immune serum saturated with them.

If a tube of peptone-water or other medium be inoculated with a culture of Pte. C.'s mucoid and incubated for several days the mucoids give rise to ordinary paratyphoid bacilli, which are not only agglutinated to full titre by a paratyphoid serum, but also remove the specific agglutinins from it by absorption.

A very glutinous variety of mucoid was isolated on one occasion from fæces of Pte. C. These glutinous colonies differ only in their small size and their stickiness. Both the mucoids and the glutinoids are precursors of the ordinary form under the conditions employed.

[2] T. H. C. Benians: Brit. Med. Jour., Nov. 25th, 1916.

Aertryck Mucoids.

These mucoid organisms were isolated from another patient.

Pte. W. suffered from acute infection with *B. aertryck* of "Mutton" type, ascribed to infected pork-pie. Typical Aertryck bacilli were isolated five times from fæces, once from urine.

Mucoid bacilli were recovered from fæces once only, at beginning of third week. This mucoid organism is motile, Gram-negative, does not liquify gelatin or produce indol. It turns milk acid in 12 hours and alkaline after four days. Its fermentation reactions in lactose, saccharose, glucose, maltose, mannite, dextrin, and dulcite are identical with those of *B. aertryck*.

When first isolated emulsions of mucoid organisms were not agglutinated by an Aertryck serum, nor did they absorb the specific agglutinins from it. When a culture in peptone-water, which has been growing for a few days, is plated on Endo's medium there are colonies of ordinary Aertryck bacilli mingled with mucoid colonies. The bacilli in colonies derived from mucoids behave in every way like typical *B. aertryck* of Mutton type.

One must conclude, therefore, that there is a mucoid form of *B. aertryck* as well as a mucoid form of *B. paratyphosus B.*

Organisms of the Mucoid Type in Dysentery.

Mucoid colonies have been found in four carriers of *B. dysenteriæ* (mannite-fermenting) and in one convalescent from dysentery, but from whose excreta dysentery bacilli were never isolated.

These mucoids differ in many respects from those found in paratyphoid infections. On an Endo plate spread with emulsion of fæces and incubated for 24 hours the mucoid colonies are about twice the size of usual dysentery colony. On plates made from subcultures they are smaller and reduced to little yellow droplets, which in 24-hour culture adhere to platinum loop and can be removed bodily from surface of medium without leaving a trace behind. In older cultures they become very adherent. Subcultures on agar slopes are hard, rough, and tenacious, with a yellowish colour.

After subculture of these mucoids in peptone-water, bacilli which resemble ordinary dysentery bacilli appear amongst the mucoids. These bacilli are derived from the mucoids.

These derived bacilli are agglutinated by immune sera of Flexner-Y type, but they do not absorb the specific agglutinins for homologous cultures or for typical dysentery bacilli isolated from same patients.

Neither the mucoids isolated from these dysentery convalescents nor the non-mucoid strains derived from them have been shown to be true dysentery bacilli.

ON A METHOD OF

PREPARING MEDIUM FOR THE CULTURE OF PFEIFFER'S INFLUENZA BACILLUS

THAT GIVES PROFUSE GROWTH AND IS TO A MARKED DEGREE SELECTIVE FOR THIS ORGANISM.

BY JOHN MATTHEWS, M.B., B.C. CAMB.,

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IN view of the prevailing pandemic of influenza it seems a fitting time to publish a short account of this peculiarly valuable medium, though it has been in contemplation to publish a more complete paper with detailed experiments and illustrations. The medium, however, is so favourable for the culture of influenza bacilli that it is deemed inadvisable to delay in making it available for general use.

The method consists in the use of blood digested by trypsin, the preparation of which is as follows:—

Quantities of 0·25 c.cm. of Allen and Hanburys trypsin compound are added to tubes containing 4·75 c.cm. of sterile broth. The mixture is then incubated for 24 hours and any contaminated tubes discarded. 1 c.cm. of blood from a venipuncture is then introduced into each tube, and the mixture of trypsin, blood, broth is incubated for three or four days. The product is then ready for use and is mixed with agar, as if making ordinary blood agar, in the proportion of 5 c.cm. of trypsin-blood mixture to about 30 c.cm. of agar. The trypsinised blood can be used in larger proportions than indicated, with advantage, if large quantities of emulsion be required. My colleague, Captain A. F. Hayden, obtained extraordinarily thick growths by using trypsinised sedimented corpuscles.

The advantage of the proportions indicated, however, is that they are just those quantities arrived at when making diagnostic blood cultures by the method of Douglas and Colebrook.[1] Thus any blood cultures that may prove sterile form ideal material for the medium in question, instead of being a waste product. Indeed, it was by the use of such material that the value of the method was discovered.

It may here be noted that Captain S. R. Douglas suggested the use of trypsinised medium about the date of the paper referred to, but the experiment failed at that time for the reason that the digestion process was not carried far enough.

The incubation of the trypsin-blood mixture should not be prolonged for more than a week. The product retains its properties for six months at laboratory temperature, but after that tends to deteriorate. Possibly it would keep indefinitely in the ice-chest.

The agar used is preferably Douglas's trypagar,[2] and should be faintly but definitely alkaline to litmus paper. Whole blood may be digested by adding trypsin in the proportion of 1–4 of blood, but the product is not so handy for intermittent use as when made in a series of tubes, one of which may be used as required.

The blood used need not be fresh, but may well be citrated blood that has been kept in an ice-chest. Indeed, there is some advantage in using citrated blood, as the trypsinisation seems to proceed more rapidly when citrate is present than when fresh blood is used.

The medium grows influenza freely from the first culture, and it is to a marked extent selective. Thus, it inhibits pneumococci entirely and in a large measure streptococci and other Gram-positive organisms, but apparently favours staphylococci.

It grows the Gram-negative cocci of the catarrhalis group, together with bacilli of the coliform group, freely, but does not favour them in the way it favours influenza bacilli.

The colonies of these bacilli on initial cultures attain a large size, being frequently 3 mm. broad; they are at first hemispherical, and later tend to be flat, and are translucent, with a brownish tinge and a regularly circular outline. The colonies of the catarrhalis group are usually more opaque, more convex, and more deeply tinted; staphylococcal colonies are white. Subcultures usually give quite confluent growths, frequently of the profusion of a typhoid culture, with a similar greasy appearance, but of brownish tinge.

As a rule the bacilli are typical, but not infrequently they are replaced by enormously long filaments. To some extent this filamentous condition depends on variations in the medium, but occasionally the characteristic persists through several subcultures on the special medium, the growth at all times being typical when subcultures are made on ordinary blood-agar. These strains do not emulsify so readily as the typical ones, and subcultures are apt to show only a few discrete colonies, possibly on account of the matting due to the filamentous forms of the organism.

It may not be out of place to record that during the present epidemic I have investigated about a dozen typical cases of the disease presenting these features—sudden onset, fever of 103–104°, prostration and malaise, usually with no symptoms of catarrh, and followed by rapid and usually complete recovery, though in some the malaise has tended to continue.

In every case I have recovered, frequently in profuse and practically pure culture, Pfeiffer's bacillus when making use of West's post-nasal swab, which method I almost invariably use, planting the swabs direct on to plates of trypsinised blood-agar. In the cases where catarrh has been present I have found the bacillus in bronchial and nasal mucus, together with varying quantities of pneumococci and streptococci, as shown by ordinary blood-plates. One case of nasal catarrh gave a pure culture from the nose as well as from the post-nasal space. No single organism, with the exception of Pfeiffer's bacillus, has been invariably—or perhaps frequently—present.

I feel confident, therefore, that if this medium be used, and especially if the post-nasal space be explored, Pfeiffer's bacillus will be found universally associated with the epidemic.

Wimpole-street, W.

[1] THE LANCET, July 29th, 1916.

[2] THE LANCET, Oct. 10th, 1914.

USEFUL MEDIA

FOR ISOLATION AND CULTIVATION OF MENINGOCOCCUS, ENTEROCOCCUS, AND *B. TYPHOSUS*.

BY W. JAMES WILSON, M.D. R.U.I., D.SC. BELF.,
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AND
GEORGINA DARLING, M.B., B.CH. DUB., D.P.H. BELF.,
DEMONSTRATOR IN HYGIENE AND PUBLIC HEALTH LABORATORIES, QUEEN'S UNIVERSITY, BELFAST.

As the result of personal experience we wish to draw attention to the following culture-media which in our hands have shown definite advantages over those in common use.

1. *Laked-blood agar medium* for the isolation and preservation of cultures of the meningococcus.

To fluid nutrient agar cooled to 50° C. add 3 per cent. of sterile laked-blood mixture prepared by following procedure:—

A wide-mouthed sterile bottle with volume graduation marks has added to it 10 g. of sodium citrate dissolved in 10 c.cm. of water and is taken to slaughter-house. When a sheep is being slaughtered the blood after the first gush is received into bottle usually up to 1 litre mark; during process bottle is vigorously shaken. On arrival at laboratory 1·25 c.cm. of formalin are added to litre of blood and thorough admixture ensured. The blood is then transferred with aseptic precautions to a ground-glass stoppered bottle and 30 c.cm. of methylated ether are added to one litre of blood. Stopper firmly inserted and bottle shaken; then left overnight in incubator at 37° C.

When required 3 c.cm. of mixture are added by pipette to fluid agar at temperature of about 50° C. It is convenient to have agar stored in flasks of 100 and 200 c.cm.

If immediately required the blood agar is kept at 50° C. for one hour before being poured out into plates or tubes so that ether may be driven off. The same result can be more conveniently obtained by incubating plates overnight at 37° C.; this also tests sterility.

This method of obtaining sterile blood was suggested to us by the work of Fildes and Rajchman[1] and of Bernstein and Epstein.[2] It is in the main a combination of the advantages of both. In making the blood agar the antiseptic action of the ether and the formaldehyde is annulled by evaporation and dilution.

Experiments have shown that fresh cultures may be kept alive on this medium for from 6 to 9 months at 37° C. without transplantion.

This medium is also useful for the cultivation of *B. influenzæ* and anaerobes.

2. *Modification of the Conradi-Drigalski medium.*—The following modification gives excellent results:—

Nutrient agar containing 0·5 to 1 per cent. of lactose is stored in 100–200 c.cm. flasks. To 100 c.cm. of melted agar cooled to 50° C., 3 c.cm. of etherised blood mixture, 1 c.cm. of 0·1 per cent. crystal violet, and 12 c.cm. of Kubel and Tiemann's litmus solution are added, and the medium is poured out into plates which are then incubated overnight to drive off the ether.

3. *A brilliant green lactose bile-salt agar medium.*—The medium has the following composition:—

Lemco 10 g., agar 30 g., peptone 20 g., sodium taurocholate 5 g., sodium chloride 5 g., and lactose 5 g. per litre. Reaction of medium is adjusted to + 10 (Eyre) and 0·4 c.cm. of 1 per cent. solution of brilliant green added to each 100 c.cm. of melted medium which has been cooled to 50° C. and is ready for pouring out into plates.

The adjusting of reaction is the most important point in its preparation. If more acid is added specific inhibitory action on *B. coli* is annulled; and if medium is made more alkaline growth of *B. typhosus* is retarded. Many strains of *B. coli* completely fail to grow on this medium; others grow slowly and others quite readily. It is observable that, after a few strains of *B. coli* have grown, subsequently other colonies develop, the acid produced by the first strains evidently reducing inhibitory action of brilliant green on the others.

References.—1. The Sterilisation of Albuminous Culture Media by Ether, P. Fildes and L. W. Rajchman, THE LANCET, 1915, i., 1232. 2. Bernstein and Epstein: Jour. Infec. Dis., 1906, p. 772, Ueber Pseudomeningokokken aus dem Rachen gesunder Schulkinder verglichen mit echten Meningokokken, unter besonderer Berücksichtigung des Wachstums dieser Arten auf hämatinhaltigen Nährboden. 3. Lieberknecht, August: Archiv für Hygiene, 1908, lxviii., 143.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON RE-AMPUTATIONS.

BY W. A. CHAPPLE, M.D., CH.B.N.Z., M.R.C.S., D.P.H.,
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TWO facts are of great and increasing significance in the surgery of amputations, and the accompanying illustrations from a case under my care may serve to emphasise these facts. In the first place, it is impossible to re-amputate in the presence of pus if the ordinary

FIG. 1.—Stump showing projecting bone on May 10th, 1918, primary amputation having been performed on March 22nd, 1918.

sutures are used without great sacrifice of length of bone, on the one hand, or a certainty of breaking down and parting of the flaps on the other hand. In either case the last condition of the stump may be worse than the first. Secondly, by the use of "button sutures," as shown in Fig. 2, the

FIG. 2.—The same stump four days after operation on May 11th, 1918. Dead bone has been removed, but the whole of the skin flaps retained.

following advantages are obtained: (*a*) earlier operations can be undertaken, with the saving of weeks and even months of time; (*b*) length of bone can be saved; and (*c*) primary union can often be secured, and earlier union almost always, and this notwithstanding the presence of pus both before and after the operation.

[A third illustration supplied by the author has been omitted out of consideration for space. This photograph demonstrated that the edges of the wound did not break down, but that, on the contrary, union took place in 12 days.]

A NOTE ON LICE AND SKIN DISEASE.

BY J. F. SMITH, M.B.,
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ATTENTION has recently been directed by Captain H. C. Semon and Captain H. W. Barber to the importance of pediculosis as a cause of cutaneous disease in the Army.[1] While it has always been recognised that lice can and do give rise to such conditions as impetigo and ecthyma, considerable credit is due to these authors for, firstly, showing that in the Army *Pediculus corporis* frequently deposits its ova on the pubic hair, thus defeating such antiparasitic measures as are directed only to the clothing and blankets; and, secondly, for showing that the lesions, and still more the distribution of the lesions, are sufficiently characteristic to enable a diagnosis of pediculosis to be made, even in the absence of live parasites or ova.

The object of this brief communication is to show that the contentions of Semon and Barber are entirely borne out by the experience of another base hospital.

In the last 4430 cases which passed through my hands there were 1074 of scabies and 1120 of pediculosis, the latter in every case carrying live pediculi or ova. There were in addition 919 cases of pyodermia (ecthyma, &c.) in which the distribution of the lesions strongly suggested pediculosis, but in which no absolute evidence was found. (As a majority of my patients come via C.C.S. it is not unreasonable to assume that for every case arriving with live parasites there is at least one who has been freed from them.)

A further point of some interest emerges. In this series of 4430 patients there occurred 152 cases of "trench fever." No case in which any cause—such, for example, as tonsillitis—for the pyrexia could be discovered was included, and all the 152 cases showed the symptoms which are recognised as characteristic of "trench fever." 143 of these occurred in patients suffering either from scabies or pediculosis, an incidence of 4·6 per cent.; while 9 only occurred among all the other patients, an incidence of 0·67 per cent. It would be unwise to draw deductions from so few cases, but the above figures certainly lend some support to the theory that trench fever is carried by lice.

Conclusions.—1. In the B.E.F. it is not exceptional for *Pediculus corporis* to lay its eggs on the pubic (and occasionally axillary and peri-anal) hair, thus defeating the antiparasitic measures in ordinary use. 2. Patients frequently reach the base with marked pediculosis, even after weeks' residence in C.C.S. 3. Pediculosis is almost certainly as serious a cause of disabling skin disease as scabies. 4. There is some evidence that lice are the carriers of the infection of "trench fever."[2]

I am indebted to Lieutenant-Colonel M. M. Rattray, D.S.O., R.A.M.C., for permission to publish these notes.

A CASE OF ACUTE ENCEPHALITIS.

BY W. B. RUSSELL, M.B. CAMB.,
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THE following case seems of sufficient interest to record in THE LANCET.

On Thursday, June 27th, I was called in to see a woman, aged 29, apparently suffering from influenza, which began three or four days before, with vomiting, diarrhœa, pains in back, sweating and insomnia. I found her suffering from pain behind right scapula; T. 104°; no headache. The next day she was better, but had tendency to retention of urine.

On Sunday (June 30th) she was much worse, with furious delirium. She tried to jump out of the window, and smashed a big hole in window-pane with head. She refused food and drink, and had no sleep, requiring constant attention to prevent her escape. Next day she was quieter and took food and drink freely, but was still without sleep.

The following day difficulty in swallowing was noticed, and liquid escaped from a corner of her mouth. A day or two later she developed third nerve paralysis, with squint and complete inability to swallow. Attempts to administer drink led to convulsions, cyanosis, and partial suffocation, as in hydrophobia. Her limbs were rigid, but not so the jaw muscles; otherwise the case resembled tetanus, as the slightest touch or shaking of the bed provoked general convulsions. She rapidly grew worse, T. rose to 105·7°, and she died on July 5th. There was urinary incontinence.

Dr. A. N. Leeming, who saw the case, detected friction and signs of congestion of right lung, but sputum was not rusty. There was a cough and profuse herpes on lips and nostrils. He performed spinal puncture after death, and drew off clear c.s. fluid which contained no meningococci.

Dr. Leeming agrees with me in considering this to have been a case of epidemic meningo-encephalitis. There was no lethargy until near the end.

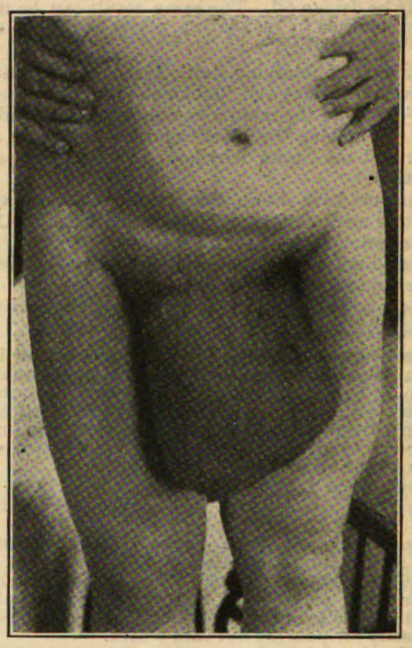
Colwyn Bay.

RADICAL CURE OF A VERY LARGE HERNIA.

BY J. ARTHUR BROWNE, B.A., M.B., B.CH.R.U.I.,
SURGEON, SAFFRON WALDEN HOSPITAL.

THE unusual size of this right oblique inguino-scrotal hernia would seem to justify a note thereon. It was larger than the patient's head and made one think of elephantiasis scroti. The penis had completely disappeared, and the urine issued through a channel resembling a deeply-sunk navel.

The patient, aged 28, very stout, first noticed his rupture three years previously. Had suffered little inconvenience; able to drive van. I performed a radical cure by Bassini's method, but without transplanting the cord. The opening of the canal admitted three fingers with difficulty. Sac was very thick and voluminous, with numerous large and



Condition before operation.

tortuous veins; and contained two feet of ascending colon, the cæcum and appendix, and six feet of ileum with mesenteries. It required considerable patience to restore contents to abdomen.

Owing to thickness of sac and firm adhesions to scrotal tissues, I thought it well to divide it across and leave the distal end *in situ*, separating larger proximal portion and cutting it away after tying neck with thick silk high up in inguinal canal. There was some orchitis thereafter, which subsided in a few days, and part of distal end of sac sloughed, causing slight suppuration in lower end of operation wound. Otherwise recovery was uneventful.

Newport, Essex.

[1] Brit. Journ. of Derm. and Syph., July–September, 1917, Pyodermia of Parasitic Origin.

[2] The above was written before direct evidence on this point had been obtained by the Commission on Trench Fever. The figures have since been brought up to date (May 4th, 1918).

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

The Prevention and Arrest of Lice-borne Diseases.

A MEETING of this society was held on July 17th, Sir RICKMAN GODLEE, the President, being in rhe chair, when Colonel WILLIAM HUNTER, C.B., A.M.S., gave a lecture on the Prevention and Arrest of Lice-borne Diseases (Typhus, Relapsing, and Trench Fevers) by New Methods of Disinfection. The speaker laid special stress on the importance of trench fever. Of the medical sick in the Eastern Command 10 per cent. were cases of trench fever and about another 10 to 14 per cent. came from those admitted for P.U.O. Any method of disinfection must be available at all times and must be easily devised and worked. The lecturer then gave a description of two forms of disinfection which he had used on an extensive scale in Serbia, in Egypt, and in Salonika. The first was barrel disinfection, a method devised by Lieutenant-Colonel G. E. Stammers, which was very effective and very cheap. For this an ordinary wine barrel was needed (or a sanitary dustbin). One large and four or five smaller holes are bored in the bottom, and the barrel is placed on an iron boiler containing water which is heated from a fire trench, the barrel being separated a few inches from the boiler by rings or bricks. The lid is kept on tightly by a stone placed on top. The clothes are placed inside. The barrel heats in about half an hour to 100° C., and disinfection is complete an hour later. The principle on which disinfection is carried out is the destructive effect on protoplasm of steam in motion. Three barrels could be heated over one fire-trench, but if this were done it was impossible to guarantee eqnal and efficient heating power in all three barrels. Four barrels should be sufficient for a regiment, and clothes should be disinfected every three weeks. For disinfection on a large scale (i.e., masses of troops) within a short space of time he used the railway van disinfector. This was devised also by Lieutenant-Colonel Stammers, and modified by himself. For this method modified ordinary luggage vans are used. Steam from the engine is discharged backwards into the vans by means of pipes running along them longitudinally. The clothes are either hung on hooks or across bars, or done up into bundles and placed on shelves all round the van. When the doors are shut the steam is turned on. At first water is seen to drip from underneath the door, and at this time the clothes are wet. At the end of half an hour disinfection is complete, there is no drip from around the door, and the clothes are only very slightly damp, becoming quite dry about half to one minute after being shaken out. Railway van disinfection had been used extensively in Egypt, and by this method the complete kit of 8000 men could be disinfected in four days, or 18,000 in ten days. He had made tests by placing various articles inside the van. Eggs were boiled hard in 10–15 minutes, potatoes became floury, cultures were sterilised, and a thermometer packed in the centre of a large bundle of clothing registered 105° C. The initial cost of the van disinfector was £50–£60, that of the barrel disinfector a few shillings. Photographs were exhibited showing the actual disinfection of 500 Turkish prisoners, and charts were displayed illustrating the remarkable checking of the incidence of relapsing and typhus fevers in Serbia and the lowering in the mortality rate. He considered that disinfection could be carried out by these practical measures more effectively and expeditiously and more cheaply than by any other form of disinfector at present in use.

In answer to various questions put to him by members present, Colonel HUNTER said that steam in motion at any temperature over 70° C. destroyed protoplasm. No part of the scheme was devised to raise the pressure in the van, but the steam escaped from the boiler into the van at a pressure of 4–5 atmospheres. The heat of condensation and the pressure produced a temperature of 105° C. in 5–10 minutes. He had had no accidents with these disinfectors. During the time represented in the charts the conditions were of the worst description.

Reviews and Notices of Books.

I. *Diseases of the Heart.* With a Chapter on the Electrocardiograph. By FREDERICK W. PRICE, M.D. Edin. London: Henry Frowde and Hodder and Stoughton. 1918. Pp. 472. Price 21*s.* net.

II. *Clinical Disorders of the Heart-beat.* By THOMAS LEWIS, M.D. Lond. Fourth edition. London: Shaw and Sons. 1918. Pp. 120. Price 6*s.* net.

I. Dr. Frederick Price adds a comprehensive work on an important subject to the practitioner's library. It may seem that in this particular branch of medicine there is nothing further to say for the moment. But Dr. Price does not aim at new contributions to his subject. By great care, and by the use of an amazing amount of material, he has accomplished what many readers have been waiting for, giving us a complete account of the diagnosis, prognosis, and treatment of heart diseases by modern methods in association with all the invaluable teaching bequeathed to us by the older masters of clinical observation. Matters of merely theoretical interest have been omitted, leaving room for the essentially practical points needed by the practitioner. The author's presentation of the newer teaching on cardiac arrhythmia is lucid and not too prolix, and a large series of carefully selected curves assists greatly in the elucidation of this difficult subject. In these chapters the work of Mackenzie, Cushny, Wenkebach, Lewis, to say nothing of the author's own valuable researches, has been admirably dealt with, and the reader may feel assured that he is getting the composite results of all these investigators rather than the view-point of one observer only. We are greatly impressed by the care shown in the arrangement of the subject-matter and by the literary exactness of the text. If we picked chapters for special commendation, we should specify those on Heart Failure: its Symptomatology, Auricular Fibrillation, Auricular Flutter (which has already appeared in these column), Carditis in Childhood, and Angina Pectoris—Pseudo-angina. We are pleased to find a frank invitation to the practitioner to combine with his own clinical experience the results of the graphic method of investigation as yielded by the more easily managed instruments, such as the sphygmograph and the ink polygraph. The results of the electro-cardiograph are reserved for a special chapter at the end of the book.

We regret the brevity of the chapter on Functional Disorders of the Heart and the absence of any comparative account of the different clinical features observable in the course of the different forms of valvular disease. It is very helpful to the student, for example, to point out the very different symptoms that are apt to arise when a heart that is the subject of aortic incompetence slowly fails, and when the same organ fails after years of a well-established mitral incompetence. And again, the different manifestations of cardiac inadequacy in a case of mitral stenosis and a case of mitral regurgitation. These broad and more philosophical views are useful, and might have been expected in a work of this scope. We note a good account of "primary cardiac overstrain" ("heart strain" would surely be a sufficient and unequivocal term?), but we think it is somewhat spoilt by the long note supplementing the account, and referring to the discussion on this subject at the Royal Society of Medicine. The author's own ideas are here obviously subjugated to those of Mackenzie, and the artificial adherence accounts for the confusion occurring in the following sentences. "While there is much to be said for the theory that these cases are the result of toxic poisoning following some microbic invasion, the practical evidence is too vague for dogmatism. What the toxins may be, or how produced, does not, so far, invalidate the results of the treatment advocated by Mackenzie. The treatment is mainly based on the assumption that the root of the malady lies in the central nervous system, the cardiac symptoms being merely incidental." In the etiology of aortic incompetence we find no reference to syphilis, which we regard as second only in importance to rheumatic fever in this connexion. We do not agree with the author that mitral stenosis results from acute rheumatic endocarditis. But these are small matters. We repeat our praise of the clearness of presentation of the subject and

the practical scope of the work. The production of the book is admirable and deserves a word of praise on its own account.

II. The appearance of the fourth edition of Dr. Lewis's excellent handbook testifies to the growing interest in modern conceptions of cardiac arrhythmia, and the increasing desire on the part of the practitioner to understand the new terminology and to weave it into his everyday practice. This little book not only serves to lay the foundation of such knowledge, but there is very little of any practical consequence in the subject which the reader will not find in the brief compass of its pages. "The chief derangements of the rate and sequence of the pulse and heart-beat as they are felt, seen, or heard," are here briefly but adequately described. The several chapters deal with sinus arrhythmia, heart-block, extra-systoles, tachycardia, auricular flutter, auricular fibrillation, and pulsus alternans. Dr. Lewis reminds the reader that there are few important disorders of the heart-beat which the unaided and practised senses may not recognise. So long as that fact is continually emphasised we may have no fear that mere instrumental records will displace the far more important training of the eye and hand and ear. The function of instruments of precision is to supplement and confirm these, not to supplant them—a fact which Dr. Lewis does not fail to make abundantly clear. In discussing the differential diagnosis of paroxysmal tachycardia Dr. Lewis says that in his "judgment there is no sufficient evidence that a healthy heart is ever damaged by muscular exertion, however severe or prolonged." "Is it to be supposed," the author says, "that the organ is so ill-protected that it is to be damaged by actions natural to man?" But surely there is a fallacy here: "however severe or prolonged" may include very *unnatural* effort.

I. *The Basis of Symptoms: The Principles of Clinical Pathology.* By Dr. LUDOLPH KREHL. Translated by A. F. BEIFELD, M.D. Third American edition; seventh German edition. London and Philadelphia: J. B. Lippincott Co. Pp. 517. Price 21*s.* net.

II. *Symptoms and Their Interpretation.* By Sir JAMES MACKENZIE, M.D. Edin., F.R.S. Third edition. With 19 figures. London: Shaw and Sons. 1918. Pp. 318. Price 8*s.* 6*d.* net.

I. THE word pathology has been wrested from its original broad meaning during the past two decades, and has come to connote that section of etiology which has to do with laboratory investigation—morbid histology, morbid anatomy, and bacteriology. To the branch of medicine in which laboratory investigation and clinical examination are intimately associated—hæmatology, urology, &c.—the term "clinical pathology" has been applied. It is not in this sense, but in one which much more nearly approximates to the older meaning of the terms, that use is made in Dr. Krehl's volume, "The Basis of Symptoms." "Pathological physiology" expresses equally well the material of which this book is a careful and forbearing study. The work is, in effect, an attempt to explain how diseases arise rather than to unfold their several manifestations. Without giving way to ungoverned speculation the writer attempts "to foster a more definite leaning upon the biological sciences in general." The author's aim is summed up when he says that "he who will understand disease must see clearly the inter-relationship of all the organs—must consider the unit only in its bearing upon the ensemble." To a few readers this book will appear, especially at first, to leave so many facts unexplained that it hardly justifies itself. But fuller acquaintance will, they may be assured, abolish this idea. In any case it is all to the good to know exactly what we know and what we do not, and a definite benefit accrues from the exposure of those gaps in an exact knowledge to fill which must be the aim of every student imbued with the scientific spirit. The chapters deal respectively with the circulation, the blood, infection and immunity, respiration, digestion, nutrition, and metabolism, glycosuria, gout, constitutional diseases, fever, the secretion of urine, and nervous diseases. The general sections upon the heart are admirably lucid, and tend to broaden the oft-times contracted horizon of the practitioner. Those paragraphs dealing with the cardiac arrhythmias are of special interest. The author utters a useful warning against regarding our current ideas on this subject as being based upon more than a useful hypothesis. He is of opinion that nervous influences play an important rôle here, and are not sufficiently allowed for. Even in so-called heart-block he considers that cerebral changes play a part—witness its occurrence in some cases of cerebral arterio-sclerosis, in which there is a complete absence of disease of the heart muscle. In the chapter on infection and immunity (written with the collaboration of Dr. E. Levy) there is an illuminating synopsis of our knowledge of the phenomenon of anaphylaxis, with consideration of its many bearings, and the reasons for regarding infection itself as an attenuated and protracted form of the anaphylactic state (Friedberger). There is a full account of the known relations between the bacteria of the alimentary tract and disorders of digestion, including constipation, and we welcome a criticism of the ill-defined and much-abused application of the term auto-intoxication. There is a careful analysis of the mass of data relating to obesity and its pathological associates. Acidosis is dealt with in the light of modern research. The still vexed problems of gout and diabetes receive guarded handling, and the disappointment that awaits us at the end of both these chapters is born of a sense of the gaps in our knowledge rather than of the inadequacy of the author's guesses, concerning which he exercises laudable forbearance. In the discussion on fever there occurs the following paragraph *à propos* the question whether or not the elevation of temperature is directly beneficial to the infected organism: "In recent years there has been a tendency to apply the Darwinian theory to pathological processes in general, and to say, for example, that fever could never have survived throughout immeasurable time were it not inherited as a useful weapon in the struggle for existence. Yet we may question to what extent the Darwinian theory applies to pathological conditions, for it seems equally reasonable to regard fever as a blind reaction against an injury, possibly useful or possibly harmful. The question is not one that can be solved by such philosophical considerations, and the final answer must be based upon established facts, derived either from bedside observations or from animal experiments." This reflection forms a good example of the temperate manner in which the author approaches most theoretical questions arising in connexion with pathological processes. In conclusion, we strongly recommend this work to all readers who are not content merely to accumulate a mass of unassorted clinical facts, but who wish to understand "how disease arises out of health; to be a nature philosopher." The book is the most thoughtful and complete account of this aspect of medicine that we have seen.

II. We welcome the third edition of Sir James Mackenzie's "Symptoms and Their Interpretation," the appearance of which proves the value attaching to the original work, and incidentally it also proves the interest shown in the author's particular method of approaching the study of disease processes. This book demonstrates to what a high degree of precision careful clinical observations can attain; and also how highly suggestive are the many questions bearing on general pathology arising out of them. The chapters dealing with pain, the mechanism of its production, its radiation and its bearing upon diagnosis, would alone make the work an extremely useful book of reference. It is possible that the author relies on symptoms too largely in the study of medicine, asking them to carry more weight than is wise; risking, in this manner, both accuracy of diagnosis and therefore efficacy of treatment. That is largely a matter of opinion. If this book serves to show how much knowledge of disease may be gained by methodical study of subjective states, and how important are many symptoms that too often get the scantiest attention, it will have achieved valuable results. Too often the practitioner forfeits data of the utmost significance by neglecting to take stock of the patient's sensations. This book is written largely in order to prevent such an error. Granted the need for care in collating and in interpreting the sensations, Sir James Mackenzie shows how both of these desiderata can be attained. He points out how this line of study suggests subjects for further research in the direction of clinical investigation, with a useful warning against regarding "original research" as being covered by laboratory work or as being best undertaken by the raw youth at the primitive stage of his medical career. We should like to see this book in the hands of all thoughtful practitioners, and we can think of no more appropriate gift to the profession at the time of the author's retirement from active practice than the issue of this present edition.

Blood Pressure from the Clinical Standpoint. By FRANCIS ASHLEY FAUGHT, M.D., formerly Director of the Laboratory of Clinical Medicine at the Medico-Chirurgical College, Philadelphia. Second edition, thoroughly revised. Illustrated. London and Philadelphia: W. B. Saunders Company. Pp. 478. Price $3.25 net.

Blood Pressure: Its Clinical Applications. By G. W. NORRIS, M.D. Third edition. Philadelphia: Lea and Febiger. 1918. Price $3.50.

THESE two books on blood pressure have proved their acceptability by passing into second and third editions respectively. Both can be warmly recommended. Dr. Faught's book has already received notice in these columns. It is thoroughly practical in its outlook, clearly written, and adapted to the needs of the practitioner. As the author states in his preface, his aim has been to avoid unnecessary discussion and the introduction of theoretic and inconclusive data. This makes it all the more valuable to those who wish for a straightforward account of a subject that they fear has become so technical as to be of interest only to the few.

Dr. Norris's book deliberately deals with some disputed aspects more fully. His description of the various instruments used would alone make it of value. But we must admit that some of his theoretical discussions have interested us as much as anything in the book. Thus the chapter on the functional efficiency of the circulation as determinable by blood pressure estimation and allied tests is largely destructive criticism, but none the less helpful at a time when perhaps too much reliance may be placed upon such methods in estimating the capacity of a recruit's heart for military service. The chapters on arterial hypertension are suggestive and full of fresh ideas. We wish we could have received more information on vascular crises; the author's classification is useful, but on a subject so little understood we should have liked more of the illuminating discussion he has provided on some of the other topics he reviews.

Practical Organic and Bio-Chemistry. By R. H. A. PLIMMER, Reader in Physiological Chemistry, University of London. New and revised edition. London: Longmans, Green, and Co. 1918. Pp. 636. Price 18*s.*

THIS is a revised edition of Dr. Plimmer's admirable handbook for practical work in physiological chemistry, with the scope extended to include the botanical side also. Sections such as those on bile and nucleic acids have been enlarged, and minor additions appear throughout. The book, though intended mainly for medical students, and dealing very fully with such things as proteins and enzymes, may also be taken as a general course in practical bio-chemistry. Experiments suitable for a preliminary course are indicated by an asterisk. Both author and students are fortunate in the early appearance of a new edition, bringing the matter of a rapidly developing subject fully up to date.

JOURNALS.

Quarterly Journal of Experimental Physiology. Editors: E. A. SHARPEY-SCHAFER, W. D. HALLIBURTON, C. S. SHERRINGTON, E. H. STARLING, A. D. WALLER. Vol. XII., No. 1. London: Charles Griffin and Co. 1918. Pp. 1-95. Price 7*s.* 6*d.* net.—Capillary Phenomena Observed in Blood Cells: Thigmocytes, Phagocytosis, Amœboid Movement, Differential Adhesiveness of Corpuscles, Emigration of Leucocytes, by John Tait. After some prefatory remarks on Rhumbler's hypothesis that ingestion of particles by cells is a simple physical process, the author deals with his own observations on the three types of blood cells found in the crustacean Ligia: (1) the explosive corpuscles; (2) the hyaline, which do not explode but flow onward on a glass surface; and (3) granular thigmocytes. Thigmocytes are defined as cells which are unstable in contact with a non-greasy foreign matter. Mammalian platelets are thigmocytes. The mere spreading on glass cannot be taken as evidence of vital activity. Phagocytosis involves a relation among three separate factors—phagocyte, particle, and surrounding medium (plasma). As to the mechanism of amœboid movement, it is not in every case due to alterations of surface-tension, but only in some cases—viz., when the movement is associated with instability of the cell substance while in contact with a foreign body. The fully granular cells of crayfish and cockroach blood are instances of unstable amœboid blood. Blood cells are known to show selective adhesions or differential adhesiveness, and, in fact, there is a delicately balanced relation in respect to adhesiveness between individual blood cells and other objects with which they come in contact—a fact which serves to broaden the basis of the investigation of "agglutinins."—The Blood of *Astacus fluviatilis*: A Study in Crustacean Blood, with Special Reference to Coagulation and Phagocytosis, by John Tait and J. Donald Gunn.—Carbohydrate Metabolism in Relation to the Thyroid Gland. III. The Effects of Thyroidectomy in Rats on the Gaseous Metabolism, by W. Cramer and R. M'Call. In rats removal of the thyroids and parathyroids does not produce severe disturbance of metabolism. The curves of CO_2 output and O_2 intake and R.Q. do not differ essentially from those of a normal animal. The power of the body cells to oxidise carbohydrates is not impaired, and it is inferred that the carbohydrate metabolism in experimenial hyperthyroidism is not due to a direct stimulating effect of the thyroid hormone on the oxidation of carbohydrates.

The American Review of Tuberculosis. Baltimore: National Association for the Study and Prevention of Tuberculosis. Price 35 cents.—The issue for May is exceptionally well illustrated, but there are only two original contributions. The first, by Dr. W. S. Miller, is a study of the nerves and ganglia of the lung in a case of pulmonary tuberculosis. He concludes with three queries: (1) May not the increased activity of the glands be due to the irritation of the nerves and ganglia? (2) May not the irritating and productive cough in some cases of tuberculosis, and the dry hacking cough in other cases, be due to nerve irritation? (3) May not the nervous hyperæsthetic condition accompanied by very shallow breathing which is a frequent result of gas poisoning in the present war be due in some measure to irritation of this nervous apparatus of the lung? The author leaves the answers to these questions in the hands of the physiologists and clinicians, who may, perhaps, be tempted to suggest that the notes of interrogation are superfluous, and that the author has been unduly cautious and diffident in his conclusions. The second original contribution is by Dr. G. E. Bushnell, and is a long clinical lecture on the signs and their interpretation in advanced pulmonary tuberculosis. It is a well-worn subject, but the paper is well written and illuminated by the shrewd observations of a clinician.

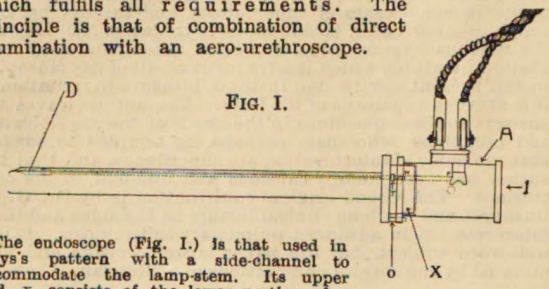
The Military Surgeon (Washington, D.C., U.S.A.).—In the June number there is a review of a paper issued by the Surgeon-General of the U.S. Army, quoting many foreign papers on the reconstruction and re-education of the disabled soldier—a task, as the reviewer states, that will require the most persevering patience and the sanest human sympathy. It is then considered whether these invalids are to be under civilian or medico-military control. The importance of enthusiasm for an ideal in the superintendent is obvious, also the benefit of judicious discipline for the patients during recovery. The editor observes that the military officer is promoted through his corps, until having proved his superior ability, study, and experience, and knowledge of his brothers-in-arms, he is selected to be a general officer; but has no knowledge of the medical profession sufficient to acquire its point of view. Therefore, the medical authorities of the Army, who have learned to work with the other branches, must be put in charge and given a staff sufficient in number and rank to take care of the disabled men in the most efficient and economical way. Particularly as they will be held responsible for the results, whoever has the organising of the scheme, while, in so far as they are hampered in their work, by so much the fittest of their patients will not completely recover.—Captain Wallace H. Pratt, of the Medical Reserve Corps, U.S. Army, before the war apparently a railway surgeon, makes valuable remarks on the prevention of pneumonia in camp, by diluting the infection with fresh air and decreasing it by attention to the mouth and fauces. His advice may thus be summarised: 1. Give the men enough blankets so they can endure the cold and neither lose their rest by being awakened by chill, nor be poisoned because they have been compelled to cut off their ventilation. 2. Do not give late leave; bring men home early so they can go to bed soon. 3. Keep the air of stove-heated tents moist. 4. Spray the men's noses daily once, gargle their throats twice, and make them clean their teeth four times. As for trains (his advice may be commended to officers R.A.M.C. in trains on the Continent) he notes that men moving by rail remain long without exercise in compartments often stuffy and overheated. He suggests that on the train men should be made to do physical drill in the corridors, while windows should be regularly opened; and that when the train stopped the men should be turned out of it and made to walk about. There is a very interesting note by Dr. Lloyd Garrison, assistant librarian of the Surgeon-General's Office, on a mistaken diagnosis of infectious disease in Paris about 1870, which prefaces an account, by Lieutenant N. R. Schiff, of a medical ward for acute cases, designed to avoid cross infection by means of screens made of sheets hung between the beds.

New Inventions.

A NEW AERO-URETHROSCOPE.

THE urethroscope, which up to the last three or four years was used only by the few specialists mostly in London and the large teaching centres in the provinces, has now come into general use owing to the establishment of venereal clinics, and medical officers in charge should be thoroughly acquainted with the appearance of the normal and abnormal urethra, if they are to treat chronic gonorrhœa successfully. For this reason I have thought it necessary to try to improve on existing patterns of urethroscope. There are two main types; the first, those through which the urethra is seen by direct illumination, and the second, those through which it is seen by indirect illumination or reflected light. By the use of the first type the urethra cannot be distended with air, but by the second type, of which Wyndham-Powell's aero-urethroscope is the best, all necessary instrumental work can be done with the urethra distended. I think, however, that the size and weight of the illuminating and operating mechanism are serious obstacles to its employment generally, and I venture to think that I have made an improvement which fulfils all requirements. The principle is that of combination of direct illumination with an aero-urethroscope.

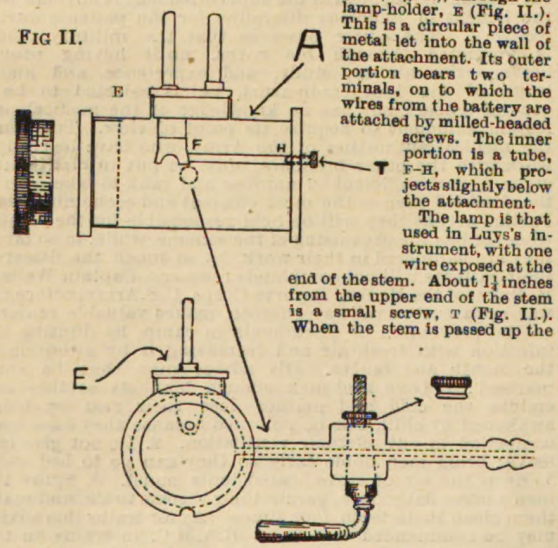
FIG. I.



The endoscope (Fig. I.) is that used in Luys's pattern with a side-channel to accommodate the lamp-stem. Its upper end, X, consists of the lower portion of a cone mounted on a flange in which is fixed an upright guide-pin, o.

The attachment, A, is a metal cylinder. Its lower end is a flange tapered internally to fit on to the cone, X. The upper end is made to receive either the examination cap, I, or the operating cap, C (Fig. III.). The examination cap is a lens of focal length corresponding to the length of the endoscope and is mounted in a metal rim, which fits into the attachment. The joint is air-tight, but loose enough to allow removal of the cap when the urethroscope is being used. Current is conveyed to the lamp, D (Fig. I.), through the lamp-holder, E (Fig. II.).

FIG II.



This is a circular piece of metal let into the wall of the attachment. Its outer portion bears two terminals, on to which the wires from the battery are attached by milled-headed screws. The inner portion is a tube, F–H, which projects slightly below the attachment.

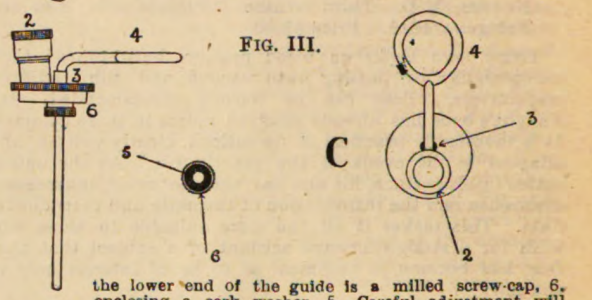
The lamp is that used in Luys's instrument, with one wire exposed at the end of the stem. About 1¼ inches from the upper end of the stem is a small screw, T (Fig. II.). When the stem is passed up the tube F–H the exposed wire makes contact in F, and the screw T engages in the lower end of F–H. Opening into the attachment at right angles to the lamp-holder is the tube with tap for attaching the bellows.

To use the instrument the lamp is screwed into its place, and the wires from the battery are connected up to the lamp-holder. If the light is satisfactory the rubber bellows are attached to the tube. When the endoscope is in position in the urethra and its interior has been carefully dried the attachment is fitted on to the cone, the lamp passing down the channel which just accommodates its widest diameter. To make the urethroscope air-tight gentle pressure of the endoscope is made upwards to the attachment.

The urethra is now inflated and examined; if no abnormality is discovered the examination comes to an end, but if there is need for operation the examination cap is removed and the operation cap is fitted in its place.

This is a metal disc perforated by two tubes. One (Fig. III., 2) is an eye-piece; the other is a guide, 3, with a bore equal to a No. 2 bougie English gauge, for the operating handle, 4, the lower end of which is tapped to receive a probe or knife. When the operation cap is in position the operating handle just clears the side of the endoscope. To give room for the movement of the handle the eye-piece is not placed in the centre of the disc, but a full view of the field is obtained by inclining it slightly from the vertical. The lens in the eye-piece is removable, so that when shorter endoscopes are used a lens of appropriate focal length can be fitted in. On the lower end of the guide is a milled screw-cap, 6, enclosing a cork washer, 5. Careful adjustment will compress the cork washer round the operating handle, to prevent leakage of air, and will allow easy up-and-down and slight lateral movement. It is advisable to lubricate the handle with a drop of lubafax. When the handle is not used the guide is closed with a small metal plug.

FIG. III.



The attachment is about 3 oz. in weight, and the whole urethroscope can be held easily in its place with the left hand gripping the urethra round the tube, leaving the right free to do the necessary manipulations.

The urethroscope has been made by Mr. Clive Wilson, Albert Road, Southsea, who has with much skill and ingenuity overcome many difficulties before a practical instrument could be turned out. The lamp-holder is entirely his idea, and the insulation is such that if the lenses are removed the whole instrument can be sterilised by boiling.

A. CAMBELL, M.B., Ch.B. Manch.,
Medical Officer, Portsmouth Venereal Clinic.

AN IMPROVED MON-AURAL STETHOSCOPE.

FOR some time past I have been using the mon-aural stethoscope which I have modified in such a manner as enables me to hear through it with both ears at the same time. The instrument has proved so satisfactory with me that I venture to bring it before the profession. It consists of an ordinary mon-aural stethoscope in two parts, to which is attached a piece of indiarubber tubing about 16 inches in length. This is connected at the ear-piece and communicates with the bore; at the free end of the rubber tubing is a comfortably fitting ear-piece. When in use the small free ear-piece is inserted into the ear farthest away from the examining side. The stethoscope is placed in position on the chest and used in the ordinary manner. There is no need to remove the tubing during the entire course of the examination and it in no way interferes with the replacing of the stethoscope into different positions. The advantages of this instrument over the ordinary mon-aural stethoscope are that both ears are engaged and the examiner can better concentrate his attention, since all extraneous sounds are prevented from reaching the otherwise unused ear and interfering with the examination. The sounds are louder, more clear, and distinct, owing to better coördination. For medical men doing work at the front or those returning whose hearing may have been affected by constant shell fire this instrument would be found a great help in examinations of the chest.

Messrs. Allen and Hanburys have kindly designed for me the pattern shown in the illustration.

LOUIS LOWENTHAL, M.D. Chicago,
Hampstead, N.W. M.R.C.S., L.R.C.P. Lond.

THE LANCET.

LONDON: SATURDAY, JULY 27, 1918.

The Fifth Year of War.

ANOTHER year of universal war will have commenced before our next issue, and it is right and proper that the profession of medicine should pause at this fifth milestone and look back on what the healing art has accomplished during the embittered struggle, in order to balance up the successes and failures of our organisation in the past and to see in what direction things should be better ordered for the future. At the outbreak of war the medical profession was admittedly unprepared for a struggle of such magnitude and duration, but this unpreparedness was shared with every section of the population, military or civil. With one great difference. The medical man had the distinction from all other civilians that as he stood, whether with or without a uniform, he was a trained man for medical needs, and therefore was of superlative value to the Navy and the Army. There is, of course, a medicine of peace and a medicine of war, but the medicine of war is a medicine of peace developed to suit the various exigencies of the case. The position of the medical man as the trained man for medical purposes was recognised in an honourable if embarrassing manner upon the outbreak of war, for an immediate draft was made upon our body of such magnitude and quality that when later a vast British army began to take shape and the war extended from continent to continent the supply of our own medical men available was already much depleted. It is old history now that when those who had the conduct of the war in their direct charge lacked the necessary imagination and foresight with regard to medical affairs, the situation was met by the medical profession instituting their own deliberative war committees. The Central Medical War Committee and other similar bodies showed themselves prepared to investigate the supply of medical men remaining in the various localities, and to meet the medical demands made by the Services, while keeping a watchful eye upon the due maintenance of the public sanitary and education organisations. What the Central Medical War Committee did for England and Wales the Scottish Medical Service Emergency Committee did for Scotland, and their task of recruiting the officers for medical military purposes, without imperilling civilian needs, has now become recognised as part of the official machinery and is still being worked out. In England and Wales the magnitude of the populations concerned presented a problem of considerable difficulty, but substantial help has been given by the Committee of Reference of the English Royal Colleges. This Committee discriminates with regard to the conflicting claims on the honorary staffs of the great hospitals and institutions, and the work of this Committee is still proceeding in the direction of a fair and economical distribution of medical care in the metropolis. The medical profession may congratulate itself upon the continuous and hard work done by these three bodies. Through their activities the medical profession, while remaining a civilian body, has organised itself for military purposes, and has done so with a spirit of unanimity, though the conditions of their employment were often hard to justify.

The fifth year of war opens with happy omen. The prolongation of the struggle with its terrors and griefs tends to produce among all the participants a frame of mind on which the actual happenings produce an immediate effect. The recent successes of the armies of the Allies on the Western front, and the presence of large and effective American forces in France, have shaken the martial ardour of the Central Empires. The reported words of the German Kaiser and of his principal military subordinates show that in Germany as well as in Austria the war is being prosecuted with less confidence in the invincibility of the German armies than heretofore, and that some apprehension is dawning of the reasons why the rest of the civilised world regard German actions and German professions with suspicion and anxiety. But with all this there is nothing to suggest an abatement in the relentlessness of the fighting, and the medical responsibilities remain undiminished. It is the duty of the medical profession to keep the Army and Navy properly equipped with medical assistance during the prolonged struggle. It falls to them also to organise the proper treatment of the sick and wounded on their return, while looking far ahead to the possibility of restoring to useful and happy citizenship many thousands of unfortunate men who have been damaged in the prolonged contest. As the war goes on, while the actual number of men engaged in fighting at any one time may not become larger, the toll of sick and wounded rises, and it is on the ever-increasing task of dealing wisely and efficiently with these unfortunates that we now have to focus our particular attention. In an admirable article which we publish this week Major-General Sir ROBERT JONES describes, as medical director of military orthopædics, the way in which orthopædic treatment is now being organised throughout the country, and it will be observed that under this amorphous heading a large part of the urgent work of military surgery has come to be included. Similar organised endeavours to deal with the results of tuberculosis, of shell shock, of ophthalmic and of jaw injuries (to mention only a few of a long category) have been set in motion, and it remains for the medical profession to justify by their methods of dealing with these sad cases the eulogy which they have earned in other directions.

The field of work is so immense and so laborious that there is room at times for discouragement, or for a lowering of the standard to the dead level of mere routine. But one thing should ever be borne in mind, and it is a wonderfully heartening reflexion. Just as the medicine of peace became the medicine of war, so the medicine of war need

not be scrapped, but will become again the medicine of peace. No iota of the work done or genius expended need be wasted. When the swords have been beaten into reaping-hooks and the tanks are drawing ploughs the hygienic and surgical achievements of the present war will remain as the birthright of a new generation. We have already seen how the service of hospital ships on the Tigris, which ply past the gate of the Garden of Eden, will remain as the civilising means of intercourse in a new Mesopotamia, from which water-carried disease will have been excluded by the clean water installations now dotted along the river banks. We have also seen how the effective adaptation of simple means to ends in the hygiene of the battle-front may revolutionise the practice of sanitation in our rural areas at home. It is equally true that the war-time discovery of how to restore the mutilated face by the combined art of sculptor and surgeon will benefit the peaceful victims of lupus, rodent ulcer, and accidental burns. The solution of the problem of the tuberculous soldier, whether in colonies or by the aid of all that is implied in the term after-care, must help to solve the ever-present difficulty of dealing with consumption in our great cities on lines befitting the twentieth century. Intensive study and team-work developed under the stimulus of war conditions will remain to fertilise the medical practice of peace. Medicine has this vast consolation of a fruitful continuity.

Combating Louse-transmitted Diseases.

THE recent demonstration that *Pediculus humanus corporis* transmits trench fever[1] is leading to more active steps being taken to combat lousiness among soldiers, because even the most obstinate combatant officer appreciates the loss in man-power that may be induced. The knowledge of the discomfort and injury produced by lice, and that these insects convey relapsing fever, typhus, and various skin affections, and possibly plague, has not resulted hitherto in adequate measures being taken to mitigate the evil. The biology of lice is at last receiving the attention which it deserves, and with a real knowledge of their life-history we shall be in a much better position to devise effective measures against their attacks. This does not imply that the requisite measures can be carried out in practice immediately, but it does mean that future work against lice infestation will be better directed.

In the meantime there is much that might be done which is not done. To check the spread of disease by lice it is necessary to keep soldiers clean. That is not a new discovery, but it is knowledge that has hitherto been turned to little account. To keep men free from lice it is imperative that their clothing and persons should be periodically disinfested. Half measures in this respect are of little or no use; indeed, they are dangerous because they give a false sense of security. Although lice may be spread in a variety of ways, infestation occurs mainly through contact and close association with verminous persons. Therefore strict attention is required to keep clean persons apart from infested individuals. The latter may carry lice or nits on any article of their clothing and upon their body-hair. When disinfestation is limited to cleansing a man's shirt it is bound to fail as a preventive measure, for the shirt, replaced upon the man, is promptly reinfested by the lice that wander again upon it from the other untreated clothing; moreover, if all the clothing belonging to a man is disinfested and his body-hair is not rid of nits or stray lice, he will reinfest his clean clothing. These are no new discoveries, but, again, it is knowledge that has not been made use of. The apparel and person of the soldier require attention whenever the military circumstances permit. As a matter of routine, weekly inspection of men by competent examiners is imperative if lousiness is to be avoided. To be effective the plan of procedure and treatment should be systematised and rigidly carried out. For the destruction on a large scale of lice in clothing and blankets the only remedies that can be thoroughly recommended are dry or moist heat. Lice and their nits are destroyed by 65°–70° C. in one minute. A most effective method of applying dry heat is by the use of huts in which the articles are exposed to air heated by means of coke braziers (Orr's huts) or by stoves. Smaller huts may serve as steam chambers, steam being led into them from a suitable boiler. Railway vans, stationed at sidings, have been used as steam disinfectors in Germany, Serbia, and Egypt on an extensive scale. Colonel WILLIAM HUNTER, in a lecture before the Royal Society of Medicine, which we report elsewhere (p. 107), describes the successful application in the early days of the Near Eastern campaign of disinfestation by means of barrels and railway vans; the plan was devised by his colleague, Lieut.-Colonel G. H. STAMMERS. Underclothes and other suitable effects may be disinfested by dipping them in hot water or immersing them in such insecticide solutions as petroleum, cresol, or lysol, with or without the addition of soap. Sulphur dioxide is an untrustworthy agent here; as the gas is injurious to uniforms, while it is slow in action and unduly costly, its use should be discontinued where better means of louse destruction are available.

Other means of combating lice are merely palliative; they do not effect the complete destruction of vermin. This must not be taken as meaning that palliative measures are valueless, they serve to keep down the louse population and may have to be relied upon at certain seasons when the systematic procedure detailed above cannot be put in action. Chief among palliative measures at present employed may be reckoned the application at frequent intervals of insecticides to clothing. The use of insecticides is a confession that men are not being kept clean by direct means, and may sometimes mean that nothing worth doing is being done. The indiscriminate use of empirical

[1] See McNee and Renshaw (1916), Brit. Med. Jour., i., p. 225; Journ. R.A.M.C., xxvi., p. 490; Davies and Weldon (February, 1917), THE LANCET, i., p. 185; Strong and Others (March, 1918), Med. Bull. (American Red Cross Soc. in France), i., p. 376; Byam and Others (May, 1918), Trans. Soc. Trop. Med. and Hyg. (In press.) The last two publications are specially important in relation to trench fever.

remedies is strongly to be deprecated, for many of those advertised are entirely useless. It is important that medical and sanitary officers should receive instruction in the best methods of dealing with lousiness in troops, for the matter is by no means so simple as it may appear to the uninitiated. In this connexion we would refer those interested to the papers by Professor G. H. F. NUTTALL, where the subject is exhaustively treated and illustrated.[2] The National League for Health, Maternity, and Child Welfare has recently issued leaflets and posters dealing with the problem of vermin in general (flies, lice, bugs, fleas), with the object of spreading a knowledge of their misdeeds among the public. The movement is laudable, but we wish that the league had obtained its "best scientific information" from more competent sources before spreading its leaflets broadcast.

[2] See Parasitology, Cambridge, vol. ix., pp. 1–185, *Pediculus humanus*, its Biology and Relation to Disease, bibliography. Ibid., vol. x., pp. 375–405, *Phthirus pubis*, its Biology and Relation to Disease, pp. 411–586, combating lousiness among soldiers and civilians.

Annotations.

"Ne quid nimis."

THE SUPPLY OF MEDICAL STUDENTS.

WE have received from the General Medical Council the following tabular statement giving the number of students in actual attendance on courses of instruction in preparation for medical degrees or diplomas. The statement refers to the month of May of the present year.

Topical distribution.	First year. Due to qualify in 1923.			Second year. Due to qualify in 1922.			Third year. Due to qualify in 1921.			Fourth year. Due to qualify in 1920.			Fifth year. Due to qualify in 1919.		
	Men.	Women.	Total.	Men.	Women.	Total.	Men.	Women.	Total.	Men.	Women.	Total.	Men.	Women.	Total.
London District	285	202	487	211	137	348	167	150	317	195	66	261	389	53	442
England & Wales*	592	329	921	472	256	728	362	226	588	300	116	416	514	92	606
Scotland	393	222	615	329	259	588	319	185	504	231	129	36	315	103	418
Ireland	393	114	507	448	104	552	369	73	442	228	30	258	115	12	127
Total	1378	665	2043	1249	619	1868	1050	484	1534	759	275	1034	944	207	1151

* Including London.

The totals for the several areas in the order given are 1855, 3259, 2485, and 1886, with a grand total of 7630, of whom 5380 are men and 2250 are women. The high proportion of women students in the London area is noteworthy, especially in comparison with the Irish figures. It also appears from a subsequent part of the tabular statement not here reproduced that 671 of the men students are under 18 years of age and that 553 come from places outside the United Kingdom. It is instructive to compare the grand total of students in May, 1918, with the corresponding figures for the last two years.

Total Medical Students in Attendance.

May, 1916	6103	October, 1917 ...	7048
January, 1917 ...	6682	May, 1918	7630

This numerical comparison bears out Sir Donald MacAlister's statement at the recent session of the General Medical Council that the student registrations in 1917 exceeded those for any year since 1891. Although there is for the time being a "shortage of doctors," there is apparently no shortage of potential doctors.

THE CHOLERA SITUATION IN EUROPE.

FOR some time during the present year it has been known that cholera was appearing in certain parts of Russia, more especially in the city and district of Petrograd; at various places in the government of Podolia, in the west of Russia; at the town of Penza, in Middle Russia, 330 miles south-east of Moscow; at the port of Tsaritzin, on the Lower Volga, in the province of Saratoff; and at the port of Astrachan, also on the Lower Volga, 47 miles from its discharge into the Caspian Sea. In Asiatic Russia cholera was also prevalent in May of the present year at Tashkent, the capital of Russian Turkistan. With the coming of the summer season the cholera prevalence began to assume epidemic proportions in several places, particularly in Petrograd, which in past years has often been devastated by the disease. On July 13th the *Times* published a message, which had been transmitted through the wireless stations of the Russian Government, addressed "to all the Councils of the Corn Provinces and to all railway officials," to the effect that cholera was increasing in Petrograd, and that daily hundreds of persons were falling victims to the disease, the situation being greatly accentuated by the serious scarcity of food. Three days later another message stated that every day 500 cases of cholera were occurring in Petrograd, and that the infection was spreading to other parts of Russia and to Finland. About the same time information reached this country that cholera was epidemic in the city of Saratoff, on the Volga, 500 miles south-east of Moscow, and that "thousands" of persons had already been attacked by the disease. On July 12th a steamship from Petrograd arrived at Stockholm with six of its crew suffering from cholera, and a few days later another ship arrived at the Swedish port of Gefle, on the Gulf of Bothnia, with cholera on board. On July 17th yet another ship from Russia reached Christiania with five cases of cholera among its passengers. We understand that the Scandinavian Governments are on the alert and are making strenuous efforts to prevent cholera from gaining a foothold in their several countries, and that the Finnish-German Government also is making similar efforts. Experience of previous cholera epidemics has shown that England has generally received its infection by way of one of the northern or north-western ports of Europe. The war, for the time, has closed our trade with Baltic ports, and this, in a measure, has lessened the present danger of cholera importation into this country from that quarter. The fact that cholera has already been carried by ships from Russia into various parts of Scandinavia is not without significance. There are other Russian ports, such as Archangel and Murman, which are still in communication with England by shipping, and the possibility of the introduction of cholera into our country by this route cannot be disregarded. It has generally been considered that when cholera infection is imported into England in the autumn months the danger of its spreading is not so grave as when it is brought to us in June or July. Formerly, if the importation of the infection coincided with a hot summer there was grave risk of a serious epidemic. In recent years, however, owing to the greatly improved sanitary condition of the country, the danger that cholera might gain a footing on our shores has been much reduced. Simon's well-known observation that "excrement-sodden earth, excrement-reeking air, excrement-tainted water, these are for us the causes of cholera," no longer seems to apply. But it is

otherwise in Russia, and particularly in Petrograd, where the Bolshevists have swept away the municipal sanitary administration and the responsible officials, without whose assistance no city can hope to keep itself free of filth and filth diseases such as cholera: this remark is, no doubt, true as regards many other cities and districts in unhappy Russia at the present moment. For that and other reasons it is extremely probable that we shall hear more of the ravages of cholera in Russia in the next two or three months.

THE REINSTATEMENT OF DR. JOHN HENDERSON BELL.

THE decision of the General Medical Council was, as we pointed out at the time, equivalent to a reinstatement of Dr. J. H. Bell in the esteem of his colleagues and of a larger public. The miscarriage of justice of which he was a victim has already been to this extent made good. What he has suffered he has suffered, and although we can do nothing more to compensate him for his suffering, we can at least help to remove the pecuniary burden which still rests upon him. We feel sure that the appeal by four of Dr. Bell's most distinguished colleagues, which appears in our correspondence columns, will not fall on deaf ears, and we commend it to the notice of all our readers. No single one of us is secure, as the signatories remind us, from a similar mishap.

THE NEED FOR STATUTORY MEDICAL ADVISORY COMMITTEES.

IN an open letter to the medical profession Mr. Sidney Webb, who has been invited by the Labour Party to stand for Parliament, representing the University of London, gives his views on the proper relation of medicine to the State. He is convinced of the importance of the medical profession, as a whole, obtaining a genuinely effective influence on the administration of the service which it renders to the community. The ideal relationship between the various parts of the medical profession as well as that between the profession and the State will not, in his opinion, be discovered unless Parliament can be induced to provide for a much more effective and continuous intervention than at present exists of the mass of medical opinion and medical counsel —meaning predominantly that of the general practitioner—alike in national and in local administration. Mr. Webb goes on to say:—

> This will not be achieved merely by getting medical practitioners appointed as assistant secretaries or heads of departments, or even as Ministers of Health. I see not much advantage, and some considerable drawbacks, in making good doctors into not particularly good bureaucrats. There must, of course, be qualified medical men, clinical as well as sanitary, wielding real powers of administration in all health departments, central and local. But what I should like to see, in addition, is some provision for the continuous, authoritative, and responsible influence, on policy and on administration, of the medical profession itself. It seems to me that the Ministry of Health ought to be provided with a statutory advisory committee composed, not of the medical bureaucracy inside the office, nor yet of the nominees of the Royal Colleges, but of the duly chosen representatives of the profession outside the Government service; that this advisory committee ought to have no executive power (because we do not want it to become itself part of the bureaucracy), but unlimited freedom to criticise and advise; that it should be entitled to give its opinion, not merely on matters affecting the pecuniary interests of doctors or their status in the community, but on anything, done or undone, affecting health or disease; and that it should be free, whenever it thinks fit, to present an authoritative report to Parliament, uncensored by any department of the Government.

Mr. Webb suggests a similar advisory committee of the local medical profession, on a smaller scale, attached to every town and county council in the country, with analogous powers of reporting, uncensored by the town clerk or the health committee, upon the doings of the local sanitary authority. Dr. Basil W. Martin tells us that in Leicester, which has long been to the fore with its Public Medical Service, such an advisory committee representing the medical profession, local public bodies, and voluntary health organisations, was agreed to last week. The mayor is to be chairman and a member of the medical profession vice-chairman of this committee, which is to have no executive powers but will consider, in a purely advisory capacity, matters relating to the health of the town. Similar committees have for long had a beneficent influence in several Alpine health resorts. The example of Leicester will be watched with interest by less adventurous towns.

THE OCCURRENCE OF SPIROCHÆTA EURYGYRATA IN MAN.

DURING the past quarter of a century the study of protozoology has received more and more attention from medical men distributed in the four corners of the earth. The microscope has revealed a number of varieties of lower animal life which readily make of man a habitat and breeding ground under suitable climatic conditions. The spirochætes have a special predilection for various portions of the human mucous membranes. We have received an interesting paper by Temporary Surgeon G. Marshall Findlay, R.N., entitled "Observations on the Occurrence of *Spirochæta Eurygyrata* in Man," but space only allows of our giving his conclusions. In THE LANCET of March 3rd, 1917, Dr. J. W. Scott Macfie showed that this spirochæte is universally present in man on the Gold Coast, but its geographical distribution is almost unknown. For this reason Surgeon Marshall Findlay decided to examine the stools of British sailors and local natives in Egypt and the Red Sea littoral. His researches confirm those of Macfie, and indicate the almost universal parasitisation of man by this spirochæte in the equatorial zones of Africa. In Lower Egypt *S. eurygyrata* is present in the intestinal canal of man in a very considerable number of cases. In Upper Egypt it is universally present. In Europeans there appears to exist some correlation between the existence of pyorrhœa alveolaris and the occurrence of the spirochæte in the intestine. An impure culture of the spirochæte can be obtained by incubating in sterile hydrocele fluid at 37° C. It has long been suggested that a granular form exists in the life-history of certain spirochætes parasitic in man, and the present investigations indicate that *S. eurygyrata* is no exception to this rule. Dried fæces, three and a half months old, which revealed no spirochætes under the microscope, when incubated at 37° C. in sterile hydrocele fluid yielded a growth of active spirochætes. This spirochæte does not appear to be harmful to man, can be readily cultivated in the human organism (as also in monkeys) by oral administration of capsules containing the spirochæte, and is curable by the administration of thymol.

THE house and library of the Royal Society of Medicine will be closed for cleaning from Thursday, August 1st, to Saturday, August 31st, inclusive. During that time, however, medical officers of the naval, military, and air services, including the medical corps of the Dominions and our Allies, will be admitted to the library between 10.30 A.M. and 6.30 P.M.

MILITARY ORTHOPÆDIC TREATMENT.

AT the beginning of the fifth year of war the notion of "team work" as applied to war-time injuries and diseases is taking more definite form. And in no department of military medicine and surgery is this more evident than in the important, if vaguely defined, sphere of military orthopædics. A recent official pronouncement has included all of the following conditions in this sphere of influence:—

Derangement and disabilities of joints, including ankylosis. Deformities and disabilities of feet, such as hallux rigidus and valgus, hammer toes, metatarsalgia, painful heels, flat and claw feet. Malunited and ununited fractures. All fractures of the femur. Cases of nerve lesion requiring operative treatment. Cases requiring tendon transplantation or special surgical appliances.

These cases are now sent direct, as far as space permits, to one of the military orthopædic centres which have been established in each military command in Great Britain. There are three such centres in the Scottish Command and we give this week some account of two—at Aberdeen and Glasgow—as the result of a personal visit. To the third—the Edinburgh War Hospital at Bangour, Midlothian—an important addition has just been made in the form of a building for hydrotherapy, massage, and electrical treatment on a large scale. The gift of the Edinburgh Red Cross Committee, this was formally handed over at the end of last month by Lord Mackenzie to Lieutenant-Colonel John Keay, R.A.M.C., commanding the hospital.

The following address on the scope and aims of military orthopædic surgery was delivered by Major-General Sir Robert Jones at the recent Inter-Allied Conference on the After-care of Disabled Men, and deals with the whole extensive subject in an illuminating way.

MILITARY ORTHOPÆDIC SURGERY: ITS SCOPE AND AIMS.

BY SIR ROBERT JONES, C.B., CH.M., D.SC., F.R.C.S.,
MAJOR-GENERAL, A.M.S.; INSPECTOR OF MILITARY ORTHOPÆDICS.

I HAVE been requested to state briefly the way in which we deal in this country with the group of cases classified under "Military Orthopædics."

Nature of Cases: Departments of an Orthopædic Centre.

Both at home and in America the definition practically covers the surgery of the extremities. The Army Council Instruction includes under the term "orthopædic" ankylosis of joints, deformities and disabilities of the feet, malunited and ununited fractures, injuries to the peripheral nerves, and conditions requiring the transplantation of tendons. This represents a very large proportion of the injuries of war, so that constant effort is being made to increase our accommodation, which is at present inadequate. We opened our first orthopædic hospital in Liverpool in 1915 with 250 beds, and now we have centres scattered over Great Britain and Ireland with well over 25,000 beds.

In organising an orthopædic centre we decide to have every department represented, and that these departments should be so related that while they interdigitated they should not overlap. Our experience of uncontrolled special departments led us to conclude that they were lacking in a sense of proportion, and that cases were being bathed, massaged, or electrified which required fundamentally different treatment. Unless these special departments are guided by men with an orthopædic training they might as well not exist. In one institution which we visited we found several men being massaged who should have had their torn nerves sutured. Others being electrified required preliminary tenotomies, while the subjects of arthritis were undergoing harmful movements in Zander machines. Again, attempts were being made to break down old septic joints which required the gentlest care. From all the evidence it was clear that special departments should be controlled by well-trained surgeons, and remain in association with orthopædic centres.

An orthopædic staff will consist of neurologists, operating surgeons and their assistants, and the chiefs of departments. Consultations are encouraged and take place between the chiefs of the various sections, and the powers and limitations of each department are soon appreciated. The co-operation between the departments is of the most friendly character, and the chief of massage is in constant touch with the chiefs of electrotherapy and curative workshops.

The departments for treatment consist of: (*a*) Curative workshops; (*b*) gymnasium; (*c*) massage; (*d*) electrical treatment; (*e*) baths.

Therapeutic Value of Work: Active and Passive Movements.

Perhaps the most interesting development is the curative workshops. Obviously a very large proportion of the inmates of an orthopædic centre are of chronic type. Many of them have passed through various hospitals, and have undergone several operations. Their moral fibre has been weakened by prolonged strain, and they have lived a life of painful indolence for many months. To such men occupation is essential to their recovery, and the curative workshop has been to them a priceless therapeutic boon. For the initiation and organisation of these workshops the nation is deeply indebted to King Manuel, assisted by the princely generosity of the British Red Cross.

These shops have a double curative value—the psychological and the mechanical. As soon as a derelict finds himself once again a productive agent he becomes transfigured. Hope replaces despair, and we find this mental reaction soon produces its physical changes. The power to order a man to work is practically never exercised, for we obtain our ends more effectively by persuasion and example. Work is therefore very popular, and is, in addition, accompanied by rewards and privileges.

The mechanical therapy is of two kinds—direct and indirect. A man with a stiff foot which he is disinclined to use may be given a job to do with his hands. In the interest which the work inspires he forgets to nurse his foot, which almost unconsciously, and often very rapidly, becomes again mobile. A knee-joint which could not bear the continued strain of working a treadle will perhaps improve in function quickly while the patient, forgetful of his injury, is working with a saw. This is the indirect method of attack.

The direct is invoked when we give a man with a stiff shoulder paperhanging or whitewashing in order to loosen it, or screw-driving to pronate or supinate his arm, or a plane to mobilise his wrist.

The governing principle in regard to curative work is founded on the well-grounded belief that active movements are of infinitely greater value than passive movements. Active movements by exercise in one of its various forms have a direct curative effect upon the muscular structure. Passive movements are sometimes essential in order to stretch or flex a joint in preparation for active exercise, but in war injuries movements must be supervised by an experienced mind.

Work in the gymnasium is rendered attractive by games carefully devised for definite objects. If these games are competitive they often prove most helpful to the functional element so often grafted upon the organic. Although associated regional types of disability are grouped in classes, we depend mostly upon individual attention. A good instructor has a hundred eyes, can detect and watch men with special disability, and he always knows the danger of over-exercise.

Massage and electrotherapy are governed by well-considered surgical principles both in regard to the types of graduated contractions induced in order to simulate normal psychological action and the maintenance of uninterrupted relaxation in paresed muscles. We lay it down as a fundamental principle that muscles must not be massaged while they are under tension. In drop-wrist not for one moment is a patient allowed to palmar flex his wrist, it must be kept dorsi-flexed while either being massaged or while undergoing electric treatment.

In all centres we have artists and modellers, and careful pictorial records are kept of the various types of deformities.

Instruction in Military Orthopædic Surgery.

Shepherd's Bush Military Orthopædic Hospital, London, is typical of some 15 similar centres situated in large industrial centres over Great Britain and Ireland. Around each of these centres is grouped a series of auxiliary hospitals supervised by the parent staff.

It is desired to make these institutions educational in order to disseminate orthopædic knowledge among men who will have to deal with after-war problems. Intensive

instruction is being given at Shepherd's Bush, Liverpool, and Leeds, and in three months a well-trained young surgeon will have thoroughly grasped the fundamental principles.

We have been immensely indebted to the United States, who, as soon as they entered the war, sent over my friend Major Goldthwait and 23 extremely well-trained orthopædic surgeons. This was a delightful gift for the duration of the war. In addition to these, we have placed at our disposal 50 American surgeons of junior rank, who can both help us in our work and at the same time undergo a training.

Even yet—such has been the demand upon our young men—we have very few Britishers undergoing training. This is most unfortunate. A young surgeon would be so much more useful and adaptable at the front if he had undergone an intensive training in the surgery of the extremities for three months.

For educational purposes congresses are held twice a year, when the staffs from all the hospitals meet to discuss and relate experiences; while every three months visits are arranged between centres geographically convenient in order that they may link up in efficiency.

The Work of the Centres: Restoration of Patients.

The operative work done in these centres consists largely in rectifying the deformities of war—arthrodesis of joints in good functional positions when they are ankylosed in bad ones; bone-grafting and other reconstructive measures for bony deficiencies and non-union; lengthening of shortened limbs and readjustment of malunited fractures; the fixation of flail joints in good functional position; and tendon transplantation for various conditions.

We have included injuries of the peripheral nerves in our orthopædic list because they often require pre-operative, operative, and post-operative treatment, and they were the type of case which at the beginning of the war were found to be neglected owing to pressure on beds. Such cases are most carefully examined by neurologists, who work in close conjunction with the surgeon. In this way the nerve cases are under admirable control, and we endeavour more and more to segregate the cases requiring suturing under the care of those men who do the work best. A feature of the neurological work is the success which has attended tendon transplantation in irreparable damage to the musculo-spiral and posterior interosseous nerve.

Distinguished general surgeons overlook the work of each of the centres.

There has been a very natural anxiety on the part of the War Office at the prolonged retention of men at the orthopædic centres, but when the other side of the picture is presented and it is realised that over 70 per cent. of the cases are returned to military life it is evident that the patient care devoted to them is justified. The orthopædic hospital is the only link which makes it possible for the Pensions Ministry to make a useful citizen of a disabled soldier. The regret we must all feel is that so many of the deformities which we have to rectify might be avoided were surgeons more generally instructed in mechanical principles.

More recently—to expedite the process of cure, to diminish the time of hospital treatment, and to prevent the formation of these chronic disabilities—steps have been taken to bring suitable cases from overseas to the orthopædic hospitals. They are labelled "orthopædic" and taken in convoys direct to the centres. The stay in hospital is in this way much diminished, as the facilities and equipment are such as to ensure that the best thing shall be done and at once.

Suggestions as to Preventive Methods.

Another useful method of improving treatment is that of instructional propaganda. Command depôts are visited monthly by orthopædic surgeons, and the doubtful cases are discussed in groups. Instructions or suggestions are sent to the various hospitals all over the country dealing with preventive methods. The following suggestions, drawn up by the consultants, may be useful as an idea of what is being done.

(*a*) *Gunshot injuries through joints, followed by suppuration, generally result in ankylosis.*—The position of greatest usefulness in such conditions are:—

Shoulder.—The arm should be kept abducted to about 50°. The elbow should be slightly in front of coronal plane of body, so that when it is at right angles, and the forearm supinated, the palm of the hand is towards the face. The arm is placed in this position, while the scapula retains its normal position of rest. The humerus being fixed to scapula at angle indicated, the arm can be lifted to a considerable height by scapular action.

The arm should not be kept more abducted than 50°, otherwise it may not be possible to bring it down to the side.

Under no circumstances should the joint be allowed to ankylose while the arm lies hanging down, for the functional result will be so bad as to necessitate an osteotomy later on to correct the adduction.

Elbow.—The position must always be influenced by the patient's calling, but in the majority of cases the best functional results are obtained when angle between humerus and forearm is a little greater than a right angle—about 110°. The forearm should be supinated so that that palm is directed slightly upwards. If both elbows are ankylosed one should be about 110° and the other 70°.

Wrist.—All injuries of wrist-joint should be treated with wrist slightly dorsi-flexed, with fingers spread well out (see paragraph (*e*) later). There should be no exception to this rule.

Hip-joint.—Ankylosis should be secured in position of slight abduction, the thigh extended and slightly rotated outwards.

Knee.—It should be fully extended, care being taken to avoid hyper-extension.

Ankle.—The foot should be kept at right angles to the leg, in a very slight varus position. A valgoid position of foot is to be specially avoided.

(*b*) *Gunshot injuries of joints followed by rapid healing.*—During the period of rest these joints should be kept in the same position as indicated above.

If there is no considerable damage to joint surfaces movement may be expected in many of these cases if ample time is given for recovery from inflammatory change. Any attempt at breaking-down under an anæsthetic is to be deprecated. Such joints require very careful handling.

The shoulder will serve as an instance. Without removing the shoulder abduction splints the joint should be well massaged for a few days. If there is no reaction it is safe to remove the arm a few degrees from the splint and let it down again. If this is not followed by reaction it may be repeated every day and the patient encouraged to lift it actively from the splint. When he can do this easily the splint can be bent a few degrees (adducted), so that further movements can be practised. Massage and electric stimulation of the deltoid are indicated. The principle is one of alternative attack and rest. If reaction occurs a further rest of the joint is needed.

A similar principle applies in injuries of other joints.

(*c*) *Injuries involving tissues in neighbourhood of joints, resulting in suppuration, deep scarring, &c.*—No attempt should be made to break down these cases under an anæsthetic.

The knee-joint will serve as an example. When by massage and other tests there is reason to expect no inflammatory reaction graduated movement may be attempted. The knee is straight, with, say, 10° of movement; a splint is moulded allowing the joint to flex to 25°. The limb is bandaged to the splint. When the joint has yielded, so that limb lies easily on splint, it should remain in that position for recovery of strained tissues to occur. Movements are then practised by patient within range of 25°. If voluntary movement is free within that range a greater angle is given to the splint and treatment is repeated. If the joint becomes tender and stiffens in the new position it must be placed back in straight position and rested. When movement has been secured to about 45° movements may be continued in the gymnasium.

In all extra-articular lesions of the axilla and its folds, where ankylosis of the joint is not expected, the arm should be placed in the fully abducted position.

(*d*) *Injuries occurring at distance from joints, fractures, &c., with inflammatory changes occurring in muscles.*—No joint, not the seat of an arthritis, should ever be allowed to stiffen permanently.

In all fracture cases where it is possible to move the joint without interfering with the fixation of the fragments this movement should be practised. One gentle movement in each direction once in two days is sufficient. Passive movements which involve frequent repetition of the same movement are unnecessary and often harmful.

If the joint is very stiff after prolonged immobilisation, and where the bone is supposed to have united, great care is required. The bones above and below the joint should be well splinted while movement is started if necessary under full anæsthesia. Unless the joint yields readily the surgeon should be content with a few degrees of movement, the joint should be secured for a few days, and the surgeon may renew his efforts from time to time. Bones are soft for many months after a gunshot injury, and many fractures have occurred again as the result of attempting to move the joint without first protecting the bone from strain. This is especially true of fractures above the knee and near the shoulder-joint.

(*e*) *Stiff fingers.*—All splints for dorsi-flexion of the wrist, especially where fractures or inflammatory changes have occurred in metacarpals and phalanges, should be moulded in the position the hand takes when holding a cricket-ball.

Particular care should be taken not to over-extend the metacarpophalangeal range, as stiffening in this position is most intractable. The palmar arch should be maintained concave, the short dorsi-flexion splint should leave ample room for movement in the metacarpophalangeal range, and should be moulded to allow of abduction of thumb. At earliest possible moment active movements should be encouraged, and massage and passive movements should be gently practised. The so-called breaking-down the fingers followed by swelling from effusion retards recovery. The movements should be very gentle to be effective.

General remarks.—In all cases where the injury does not directly involve the joint, massage and active movements should be encouraged.

Even when a joint has to be fixed in consequence of a fracture in the neighbourhood early massage and electric stimulation is needed in order to prevent adhesions forming in the muscle sheaths. The patient should also be taught how to contract his muscles while the limb is splinted.

Splints should not be applied to the fingers except where they are the actual seat of fracture or active inflammation.

In all fractures of the forearm the hand should be supinated.

All splints should be removed from the upper extremity at the earliest practicable moment. As bones take a very long time to harden, the lower limbs, inasmuch as they have to bear the body-weight, should be guarded against deformity during walking. Neglect of this precaution has given rise to many cases of bowing and overlapping of the femora.

All gunshot injuries of the joints have to be treated with great gentleness, and the breaking-down of such cases under an anæsthetic is to be generally avoided. Our pre-war experiences are not applicable to gunshot injuries.

All scars about joints should be kept extended during healing unless a contra-indication exists. Care should be taken to prevent equinus at the ankle taking place during the treatment of other lesions of the limb.

As patients have to be discharged while still under treatment, it is imperative that full instructions should be given to the local Pensions Committee as to further treatment.

These instructions give the various surgeons, many of whom have not had an orthopædic training, fundamental principles upon which they can act.

Artificial Limbs.

All the artificial limbs in the country were made first of all at Roehampton House in London. This hospital, though not included in the orthopædic scheme, is staffed by orthopædic surgeons. It was soon found necessary to decentralise, and limbless hospitals were started in Scotland, two in Ireland, and one in Wales. Quite recently it has been decided to start fresh centres in direct connexion with the orthopædic centres at Liverpool, Leeds, Manchester, and Birmingham. Three of these have already started work. They are under the joint control of the War Office and the Pensions Ministry. The patient remains in the Army until his limb is fitted.

But the curative workshops can be utilised in an invaluable way by the facility with which they can turn out *provisional limbs* of a cheap but effective pattern, by means of which the soldier can be provided with a method of locomotion as soon as he can bear his weight on the stump. He can very soon discard his crutches and move about with a stick.

A further boon has been conceded. He can go to his home on furlough with this provisional limb until such time as he is required to enter the "limbless" hospital for the adjustment of the permanent artificial leg.

Treatment and Training of Pensioners.

Such are the means adopted to restore function and render the patient fit to return to the Army or to go back to civil life. If sufficiently restored, the patient may go to a Command Depôt for further training, or be remitted direct to his unit and become again a serving soldier.

If he is so disabled as to be unfit for further service he is discharged from the Army and becomes a pensioner, coming under the supervision of the Pensions Ministry. The discharged soldier, now a pensioner, may be able to go back to his old trade, or he may find a new job in which he may be employed without further training; or he may be re-educated for another trade or craft. Arrangements are being made by means of classes in the technical schools, through private employers, or by the establishment of new institutions, in which he can get both training and treatment.

Many of the orthopædic pensioners require very prolonged treatment, necessitating close observation for a considerable time, combined with massage and electrical treatment, &c. For this purpose numerous out-patient clinics are required and set up. One paramount consideration should be kept steadily in view by the Ministry of Pensions in this connexion. Any provision for the treatment of the orthopædic pensioner must be made so as to allow supervision, control, and inspection by adequately trained surgeons. Continuity of treatment is lost otherwise, and the patient, careful work of months may be undone.

Organisation.—The complete organisation in relation to the treatment and training of the pensioner should include: 1. An out-patient clinic, with massage and electrical installation. 2. Beds for in-patients. Both these to be inspected and supervised by specially trained surgeons. 3. Hostels. 4. Means of re-education.

Military orthopædic centres exist now in all the commands.

In the Scottish Command there are three—at Aberdeen, Glasgow, and Edinburgh. At all three, and at Dundee as well, arrangements have been, or are being, made for the correlated treatment and training of the pensioner.

In the Irish Command there are two orthopædic centres—Belfast and Dublin.

In Wales the Welsh Metropolitan War Hospital, Whitchurch, near Cardiff, is the main orthopædic centre. A second one is in the process of being established at Newport, Mon. Arrangements are now being made at Cardiff to coördinate the treatment of the orthopædic pensioner with the military orthopædic centre at Whitchurch.

In England there are two orthopædic centres in the Northern Command—at Newcastle-on-Tyne and at Leeds. In both the pensioner is to be dealt with by association with the organisation of the military centres.

In the Western Command (in which Wales is included) there are in addition centres at Liverpool and Manchester.

In the Eastern Command a military orthopædic centre is being organised at the military hospital at Edmonton.

In the Southern Command centres exist at Birmingham, Netley, Oxford, Reading, and Bristol; and in the London area there are Shepherd's Bush and Tooting Military Orthopædic Hospitals.

For the orthopædic pensioner it is necessary that all schemes of treatment shall be closely allied to these military orthopædic hospitals, so as to be able to take advantage of the special equipment and departments which are found there. The pensions beds must be either at, or closely proximate to, the orthopædic centre, as it is impossible to reduplicate staffs.

Many more subordinate clinics are needed, however, in towns where recognised orthopædic centres do not exist. Such institutions should be affiliated to the nearest orthopædic centres in the several commands. As each command possesses at least one military orthopædic hospital, these subordinate clinics should be set up by the Ministry of Pensions after consultation with the War Office, and be periodically inspected by skilled orthopædic surgeons.

Such arrangements must be made if continuity of treatment is to be maintained and the pensioner is to be restored to health. The staffs for the pensioners' clinics should undergo an intensive training at an orthopædic centre.

Conclusion.

Such are the scope and aims of military orthopædic surgery. Arising out of principles adopted for the treatment of crippled children, it has expanded into a huge organisation of extreme military importance—first, with the object of receiving the serving soldier and sending him back to the fighting line; and secondly, to reconstruct and restore the functions of those so badly crippled as to be useless as fighting units, but who, if properly treated, may take their places as useful workers and efficient members of organised society.

The name "orthopædic" may be open to criticism as applied to war surgery, but it is not easily replaced. It is intended to cover a type of case which requires for its treatment a combination of specially equipped hospitals manned by well-trained operative surgeons of mechanical mind who will work in team and accord with heads of special departments. They must be loyally prepared to develop the work they are most fitted for to the complete exclusion of any other branch for which they have a liking, and they must all combine in an effort to make the institution they work in an abode of inspiration and contentment for the wounded. We have the teaching staffs represented in all these centres, but the more so-called general surgeons we can rope in the more effective will we become.

ORTHOPÆDIC CENTRES IN SCOTLAND FOR THE

THE ORTHOPÆDIC DEPARTMENT AT THE 1ST SCOTTISH GENERAL HOSPITAL, ABERDEEN.

1. Gardener patients at work in the grounds.

2. The splint shop.

3. The shoe-making shop.

4. Making trawl nets or nets for Sinclair fracture beds.

I. 1ST SCOTTISH GENERAL HOSPITAL, ABERDEEN.

THE special hospital block at Oldmill, of which Lieutenant-Colonel J. Smart, R.A.M.C., has kindly supplied us details, forms the nucleus of the orthopædic department for which 500 beds are set apart. Two large wards have been equipped with the necessary appliances for electrical and massage treatment. Five wooden huts, erected some three years ago for accommodation of hospital orderlies and now no longer required, have been fitted up as curative workshops, where at present is being carried on: Carpenter-work, boot-repairing, net-making, splint-making, wood-carving, leather-work, photography, and other handicrafts. A new hut ward for 50 patients, with nurses' room attached, has been erected on the east side of the special hospital, at a cost of about £800, at the expense of the Red Cross. The ward, connected by corridors with the main building, is electrically lighted and heated by a low-pressure hot-water installation. The orthopædic section is under the supervision and direction of Professor J. Marnoch.

Plans have been prepared and approved, and tenders obtained, for the erection of a large new block to the north of, and in direct communication with, the special hospital buildings, to be used for orthopædic bath treatment, with large gymnasium attached. It is proposed to erect also four additional huts as workshops adjoining the hospital. The estimated cost of the extension, £6000, is to be provided by the Scottish Branch of the British Red Cross Society.

An *electro-therapeutic department*, under the charge of Major J. R. Levack, R.A.M.C., has been installed in one of the wards of the special hospital which has been given over to orthopædic surgery. The apparatus used has been provided by the Red Cross and consists of galvanic switchboards and special faradic coils with metronome interruptors. Earthenware tubs for use as baths are used with both of these. A high-frequency apparatus is in constant use, particularly as modified for diathermy. Some of the faradic coils are supplied from small accumulators, while the remaining apparatus is supplied from the main current, either directly or by means of a transformer.

The methods of treatment include graduated faradic contractions, interrupted and continuous galvanism, ionisation, diathermy, high frequency, muscle testing. Many types of cases are treated, including peripheral nerve injuries and muscle wasting; functional cases—e.g., total paralysis of one limb, spasmodic closure of hand and permanently open hand, functional foot-drop, spasmodic inversion of foot. Electrical treatment also proves of benefit in the case of stiff joints, adherent scars and in cases requiring re-education of muscles, in trench feet and allied disorders.

Massage department.—Massage and carefully supervised exercises form an important item in the treatment of many orthopædic cases. The massage department occupies a ward similar to that of the electro-therapeutic department. It is provided with massage beds and apparatus designed for carrying out different beneficial exercises. There are also a number of electrical hand vibrators.

Some idea of the extent of the work may be gained from a summary of the number of treatments given over a period of three months (December, 1917, January, February, 1918):—

—	Massage.	Electrical.	Radiant heat.
Dec., 1917, 4 weeks	1818	1124	164
Jan., 1918, 5 ,, ...	2798	1585	271
Feb., ,, 4 ,, ...	2404	1419	145
—	7020	4128	580

In the *plaster department* four different classes of work are performed: (1) Fixation of limbs in plaster; (2) plaster records of limb before, during, and at conclusion of treatment; (3) casts for splints; (4) plaster splints.

TREATMENT OF DISABLED SOLDIERS AND SAILORS.

THE MANUAL CURATIVE WORKSHOPS AT THE SCOTTISH NATIONAL RED CROSS HOSPITAL, BELLAHOUSTON.

1. General view.

2. The splint shop.

3. The art metal shop.

4. Wood-carving shop.

II. THE SCOTTISH NATIONAL RED CROSS HOSPITAL, BELLAHOUSTON.

The Scottish National Red Cross Hospital at Bellahouston, Glasgow, of which Lieutenant-Colonel H. Chaffer, R.A.M.C., is in command, contains 1140 beds, of which 500 are reserved for orthopædic cases. Of these, 30 beds are allotted to orthopædic cases from overseas and 50 to pensioners. The orthopædic centre is under the direction and supervision of Prof. R. Kennedy, assisted by Capt. A. H. Edwards, R.A.M.C., Mr. W. Laird, Capt. G. Miller, R.A.M.C., and Lieut. Wynn, M.R.C., U.S.A., in the electrical and massage department. The centre includes an orthopædic building for baths, electricity, massage, and radiant heat, with an orthopædic operating theatre adjoining, and a special block of manual curative workshops, of which we give a series of illustrations.

These workshops provide facilities for such handicrafts as metal-work, fretwork, boot- and shoe-making, tailoring, joinering, cabinet-making, wood-carving, leather-work, art needle-work, and splint-making, and include a paint-shop and blacksmiths' shop. Exercise is prescribed by the surgeon in charge of the case, who follows the man to the workshops and watches his course of treatment there. By a happy fortuity the commanding officer of the hospital is also a trained engineer.

The *plan of treatment* is described by Sir George Beatson in an illustrated pamphlet issued by the Scottish Branch of the British Red Cross Society (86, St. Vincent-street, Glasgow). The physical remedies used in connexion with these cases may be grouped under the headings: (1) Hydrotherapy, in the form of the various baths; (2) mechanotherapy, in the form of massage, movement, physical exercises, and manual curative workshops; (3) electrotherapy, with electricity in its various modifications; (4) radiotherapy, with its hot-air and radiation baths.

Hydrotherapy is carried out mainly by the use of baths, general or local, and sedative or tonic in their action. The pool bath is circular and can be partaken of by 10 to 12 patients at a time; the water is at a moderately high temperature with a gentle motion, and immersion in it has a soothing and calming effect. Local sedative baths are represented by different shaped arm and leg baths. Both pool and other baths may be converted into tonic baths by employing water at a high temperature and in rapid motion by turbine action. The whirlpool bath prepares disabled parts for massage and for movements of the joints and muscles by manipulation.

Mechanotherapy is carried out first of all by massage, which may be manual, where the various manipulations are carried out by the hands of masseurs or masseuses, or it may be mechanical, where the effects are produced by mechanical apparatus of the Zander or other type, driven by hand or electricity. Movements and physical exercises are used in connexion with preserving, restoring, or improving the functions of joints. They strengthen the activity of muscles, and indirectly have an effect on the general health.

Electrotherapy is represented by the various forms of electricity—viz., galvanic, faradic, sinusoidal, and high-frequency—administered through different electrical appliances for the purpose of furthering local nutrition and stimulating nerves. For radiotherapy hot-air and radiation baths have been fitted up, the heat being furnished by electric lamps of varying colour, from which high temperatures can be obtained without damage to the tissues.

The manual curative workshops are not primarily intended for the occupational re-education of the wounded man, but have the object of hastening improvement and getting rid of the disablement following wounds, thus rendering the men better able for everyday work in life. At the same time no doubt the workshops help to bring out the aptitude of men for any special trade, and thus have a value in deciding the question of re-education.

THE CANADIAN MEDICAL WEEK IN HAMILTON, ONTARIO.

(FROM A SPECIAL CORRESPONDENT.)

THE combined meeting of the Ontario Medical Association, the Canadian Medical Association, the Canadian Public Health Association, the Ontario Health Officers' Association, and the Canadian Association for the Prevention of Tuberculosis, which was held in Hamilton, Ontario, from May 27th to June 1st, proved to be the largest medical gathering which has ever taken place in Canada. About 4000 medical practitioners registered their names. With slight exception all the meetings were held in the Royal Connaught Hotel, Hamilton. The Congress was opened on the morning of May 27th by the Duke of DEVONSHIRE, Governor-General of Canada. The first meeting was devoted to public health matters.

Venereal Disease.—Child Welfare.—Tuberculosis.

Lieutenant-Colonel J. W. S. MCCULLOUGH, head of the Ontario Board of Health, dealt with the control of venereal disease in relation to the drastic Act passed recently by the Legislature of Ontario.

A Child-Welfare Session was held, to which Dr. GRACE L. MEIGS, of Washington, D.C., contributed a paper dealing with the year's campaign inaugurated in the United States by the Children's Bureau in Coöperation with National, State, and Local Child-Welfare Committees of the Council of National Defence, with the object of saving the lives of 100,000 children.

The eighteenth annual meeting of the Canadian Association for the Prevention of Tuberculosis took place on May 29th. The report of Capt. G. D. PORTER, the secretary, discussed the social and public aspects of tuberculosis.

Capt. H. W. HILL, medical officer of health for London, Ontario, drew attention to the need of differentiating between the human and bovine forms of tuberculosis, advocating efficient pasteurisation of milk to exclude bovine tuberculosis. Open cases of tuberculosis were rare in children, and should not be allowed to commingle with each other or with closed cases. He did not accept the view that tuberculosis was almost invariably contracted in childhood, but thought that a large number of cases arose after the age of 16.

Problems of the Returned Soldier.

At the suggestion of Surgeon-General FOTHERINGHAM a symposium was held on some of the problems of the returned soldier. Four papers were read. The first, by Lieut.-Colonel COLIN RUSSELL, C.A.M.C., described psychogenetic conditions and their treatment. Their etiology was explained as the result of the conflict between the natural inherent instincts and the more lately acquired control of these instincts by the higher centres. Deficient control, either congenital (as in mental deficiency) or lack of proper training, as well as the natural exhaustion of the acquired control of the higher centres under prolonged strain, were held responsible. The defeat of the higher centres and the abolition of the critical activities rendered the patient open to suggestions that met the wishes of the conquering instinct. Stress was laid on the fact that shell shock cases practically disappeared from the French Army when the rule was made that soldiers suffering from it would not receive a pension. Colonel Russell advocated the establishment in Canada of special hospitals to deal with these cases.

Colonel J. H. CAMERON, of Toronto, gave an address on Orthopædics, with special reference to the history of this branch of surgery. He took occasion to criticise sharply the sentimental mollycoddling of the returned soldiers indulged in by well-meaning people.

Lieutenant-Colonel HADLEY WILLIAMS, C.A.M.C., read a paper on the surgical treatment of nerve injury, and Lieutenant-Colonel ROBERT WILSON discussed the place of physiotherapy in the treatment of the invalid soldier.

Prevention of War Neuroses.

In the Section of Medicine an interesting paper on the prevention of war neuroses was presented by Dr. THADDEUS H. AMES of New York, based on his personal experience at Montreal and Toronto, of soldiers suffering from shell shock, and on that of other medical men from the battle lines. Shell shock was, he held, preventable, proof being found in the fact that in some regiments the condition was unknown. Discipline alone did not suffice to prevent it; successful prevention largely rested with the junior and non-commissioned officers, who came into close contact with the rank and file, and were able to talk familiarly with the men. When a change in behaviour was noticed the officer should distract the man's mind by all means in his power. A sharp reprimand would sometimes bring about the desired reaction. Everything depended upon the officer, the object aimed at being to induce the man to unburden himself. The soldier continually in peril of his life was peculiarly open to suggestion. In war the primitive emotions were unleashed. Training was of great value in restraining these emotions, and especially that of fear. Soldiers should be taught that discipline was for the good of the State and that fear was a healthy reaction in face of danger and admitted by all except the insane man and the liar. In view of their powers of prevention if they chose to exert them, Dr. Ames went so far as to state that officers were responsible for neuroses in regiments.

Broncho-Pneumonia in Army Camps.

An important paper on the virulent type of pneumonia observed in Army camps was read by Dr. W. G. MACCALLUM, of Johns Hopkins University, Baltimore. This disease seemed likely to be the cause of a large amount of sickness and death. While numerous cases of lobar pneumonia had occurred, the most noteworthy was a type of broncho-pneumonia due to infection with a hæmolytic streptococcus. This was studied first at San Antonio, Texas, and more recently at Camp Dodge, Iowa, where an outbreak occurred among the coloured troops, spreading later to the white troops in an adjacent camp. Like the outbreak of pneumonia at the camp Zachary Taylor, described by Dr. L. H. Mayers and Dr. W. W. Hamburger in THE LANCET, it frequently gave rise to empyema, was extremely deadly, and spread with great rapidity. Streptococcal pneumonia appeared to arise spontaneously, although in some cases cold or scarlatina was an antecedent, and more frequently measles, which was very prevalent in the camps at the time. The prominent symptoms were sore-throat, swelling of the larynx, and alteration of the voice owing to deep ulceration of the vocal cords. The fluid which collected in the pleural cavity was slightly turbid, at first straw coloured, becoming later brown, and then purulent and thick. Relief was afforded by aspiration or by resection of ribs, followed by washing out with Dakin's fluid. Post mortem the lungs were found distended with air and containing hard peri-bronchial nodules as large as peas, resembling miliary tubercles. Aspiration was often difficult owing to the presence of adhesions. After evacuation of fluid thickening of the framework of the lungs often took place. The picture was one of interstitial broncho-pneumonia, the bronchial area being filled with polynuclear cells. Infection appeared to be conveyed by personal contact or mouth spray, and increased when men were huddled together in barracks. Disinfection had no effect in staying the spread of the disease, and Dr. MacCallum thought that in vaccination lay the chief hope of checking it.

Delivery of Addresses.

The Address in Medicine was given by Dr. LEWELLYS F. BARKER, of Johns Hopkins University, who discussed the significance of heart murmurs found in the examination of candidates for military service. Dr. Barker pointed out that by improved methods and standardisation a large proportion of these rejected men might be rendered fit for whole or part service. Murmurs produced outside the heart had no effect upon the man's capacity for military service.

Dr. ISAAC A. ABT, of Chicago, gave the Address in Pediatrics on asthma in childhood. Dr. JOSEPH D. LEE, of Chicago, gave the Address in Obstetrics, discussing methods and operations for reducing fœtal mortality, with special reference to the newer methods of Cæsarean section.

The Address in Surgery was given by Dr. CHAS. H. MAYO, of Rochester, Minn., and was devoted to a consideration of cancer.

The meeting was a conspicuous success throughout, and a word of praise is due to its organisers, and especially to the energetic secretary of the General Committee of Arrangements, Dr. J. H. Mullin, of Hamilton.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions and donations to the Fund have been received during the week ending July 22nd:—

	£	s.	d.
Dr. Bernard Spilsbury...	5	5	0
Dr. B. D. Kirby	1	1	0
Miss Everina S. I. Massy, M.B.	1	1	0
Mr. A. P. McCallum, M.P.S.	5	0	0
Dr. A. A. Parson	1	1	0
Mr. T. Baker, M.P.S. ...	1	0	0
Mr. S. Summers	0	2	6
Mr. W. S. Howorth, M.P.S.	0	5	0
Dr. J. Crisp Griffiths ...	2	2	0
Messrs. James Beard, Ltd.	3	0	0
Dr. E. Kershaw	2	2	0
Dr. Heywood Smith ...	1	1	0
Dr. J. T. Churchill ...	2	0	0
Dr. W. J. Stephens ...	0	10	6
Dr. T. H. Galbraith ...	5	5	0
*Sir James O. Affleck ...	10	10	0
Lt.-Col. R. D. Hotchkiss, R.A.M.C.	1	1	0
Dr. C. R. Marshall... ...	1	1	0
Capt. T. T. Apsimon ...	1	1	0
Mr. J. A. Buckley	2	2	0
Dr. W. Snodgrass... ...	3	3	0
Capt. R. M. Barwick, R.A.M.C.	10	10	0
Dr. W. B. Russell	1	1	0
Major R. Stirling, R.A.M.C. (T.)	3	3	0
Dr. T. G. Stonham ...	1	1	0
Fleet-Surg. C. C. Macmillan	1	1	0
Dr. & Mrs. J. F. Blackett	1	1	0
†"A Friend"	100	0	0
Staff Surg. B. S. Robson	5	0	0
M. C.	5	0	0
Dr. B.	10	0	0
Sir Rickman J. Godlee	4	4	0
Capt. F. A. Hampton, R.A.M.C.	5	0	0
Dr. G. Peterkin	2	2	0
Mr. H. B. Morgan, M.P.S.	0	10	0
Dr. T. Fawsitt...	5	5	0
Dr. R. Kay	2	2	0
Mr. C. J. Heath	5	5	0
Capt. and Mrs. J. Rutter Williamson	5	5	0
"Returned Red Cross Salary"	4	4	0
Dr. M. A. Teale	1	1	0
Stourbridge Medical Society	3	3	0
Dr. G. I. Dudley	1	1	0
Dr. J. Fawcett	5	5	0
Dr. J. P. Purvis	2	2	0
Mr. A. H. Bell	1	1	0
Dr. C. Riviere...	2	2	0
Dr. F. Gourlay	1	0	0

* Per Sir Rickman Godlee. † Per Dr. Herbert Spencer.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

DIETETICS.

Special Rations for Invalids.

THE position of invalids has been greatly improved under the national rationing system which came into force on July 14th owing to the further powers of issuing extra rations in suitable cases now granted to Food Control Committees. These include power to deal with an extended list of diseases for which extra rations of meat, butter or margarine may be required, and to make grants of sugar or of white flour for a limited time. Application is now always to be made to the Committee of the district in which the applicant lives, and not directly to the Ministry of Food. The extra rations, or white flour, when granted, can only be purchased by means of authorities issued by Food Control Committees, and may not be supplied by retailers on doctors' certificates without such authorities. Except in the case of white flour or of extra rations for expectant and nursing mothers application is to be made on Form N. 36, copies of which may be obtained from food offices. This form includes a certificate to be signed by the doctor in charge of the case, stating the disease from which the patient is suffering and specifying the minimum weekly amounts of the food in question required by the patient. In the case of an application on the ground of tuberculosis the Food Control Committee may inspect the official register of notifications.

Meat, Butter, and Margarine.—In the case of adults the following diseases have been granted special consideration, the quantities given being the maximum weekly quantities, inclusive of the ordinary ration, which can be allowed in any case:—

1. Active tuberculosis,[1] pulmonary or otherwise: Meat,[2] 2½ lb.; bacon, 1 lb.; butter,[3] 3 rations.[4]

2. Diabetes and glycosuria: Meat, 2½ lb.; bacon, 1 lb.; butter, 4 rations.

3. Exophthalmic goitre: *Either* meat, 2 lb.; bacon, 1 ration; and butter, 1 ration; *or* meat, 1 ration; bacon, 1 ration; and butter, 2 rations.

4. Pernicious anæmia: Meat, 2 lb.; bacon, 1 ration; butter, 1 ration.

5. Cancer[5]: *Either* meat, 2 lb.; bacon, 1 ration; and butter, 2 rations; *or* meat, 1 ration; bacon, 1 ration; and butter, 5 rations.

6. Senile dyspepsia: Meat, 2 lb.; bacon, 1 ration; butter, 1 ration.

7. Convalescence after severe illness, severe operation, or serious loss of blood (including childbirth in which the child does not survive): Meat, 2 lb.; bacon, 1 ration; butter, 2 rations.

(In the case of 7, the grant is for 4 weeks; in the case of 6, for an indefinite period; in the case of 1–5, for an indefinite period, subject to renewal every 4 weeks.)

In no case can extra meat be sanctioned for the purpose of obtaining beef-tea, applicants being advised to use meat extract with or without the addition of milk powder.

Where a patient not falling into any of the groups mentioned cannot take one of the rationed foods an interchange may be granted on the following basis, viz.: 1 meat coupon a week = 1 bacon coupon a week = 1 butter coupon a month. In the case of children under 2 years suffering from diarrhœa and wasting or marasmus, extra meat, not exceeding 2 lb. weekly, may be granted for making raw beef-juice, but only for a maximum of 4 weeks.

White Flour.—No ordinary disease is held to require bread made from white flour. Application for a grant is made to the Local Food Office on a special form not used for any other food, for a period of six weeks and for not more than 14 lb. in all, and may be granted in cases of active gastric or duodenal ulcer, where the patient is confined to bed or only newly convalescent, in cases of gastric carcinoma or senile dyspepsia, chronic diarrhœa, or intestinal ulceration. The term "senile dyspepsia" is used to describe the form of flatulent indigestion often associated in the aged with chronic bronchitis or cardiac weakness. In the case of gastric carcinoma or senile dyspepsia renewal may be granted by Committees without fresh medical certificates. All other applications for renewal must be made to the Invalids' Flour Subsection at the Ministry of Food. The medical certificate in regard to white flour is a searching document, stating in each case whether the patient has recently tried the regulation grade flour, and if so with what effect, whether the present bread has been found unsuitable, even when thoroughly toasted, and whether the certifier is satisfied that the supply of flour of lower percentage extraction is essential.

Sugar.—Extra rations may be granted for a period not exceeding four weeks where a patient is medically certified to be unable to take solid food on account of difficulty in swallowing or because his disease necessitates a slop diet. No grant of extra sugar may be made to anyone receiving an invalid's ration of meat, butter or margarine. The total sugar granted, including the ordinary ration, must not exceed 1 lb. per week, except in the case of a patient requiring to be fed by a tube. The concession is not intended to apply to artificially fed infants or to healthy children. The renewal of a grant has to receive confirmation by the Special Diseases Subsection of the Ministry of Food.

Milk.—It is desirable to recommend milk rather than extra allowances of meat or butter wherever this will meet the need of the patient. In accordance with the model priority scheme a ticket for priority in the supply of milk may be issued to any person holding a doctor's certificate that he is entitled on health grounds to a certain specified daily quantity of milk. Application for a priority ticket should be made for any invalid unable otherwise to obtain the quantity found medically desirable.

Extra Rations for Expectant and Nursing Mothers.

We have already noted[6] the concessions made on behalf of maternity.

Expectant Mothers during the last three months of pregnancy may be granted: 1. An extra ration of the amount represented by either 2 meat coupons or 1 butter coupon per week. Application is made on a special form containing a certificate to be signed by a doctor or by a certified midwife. 2. A priority certificate for 1 pint of milk daily in districts where a milk priority scheme is in force.

Nursing Mothers will not themselves receive extra rations or priority milk tickets, but the following clauses apply to them: 1. The child's ration book will be issued on application, accompanied by a birth certificate. Where the registration of birth is unavoidably delayed an emergency card will be issued in the meantime, giving a weekly ration equal to the infant's ration, the application being countersigned by the doctor or midwife in charge. These provisions apply whether the mother is nursing the child or not. 2. In the event of stillbirth, or the death of the infant within one month, the mother may on a doctor's certificate be regarded

[1] The actual word "tuberculosis" should appear on the certificate.
[2] Implying here and elsewhere butcher's meat.
[3] Including butter and margarine.
[4] The ordinary ration, which may vary from time to time.
[5] If desirable some euphemism, such as "new growth" or "neoplasm," may be used on the certificate.
[6] THE LANCET, June 8th, 1918, p. 811.

as a convalescent. 3. In districts where a milk priority scheme is in force children under 18 months are entitled to a preferential allotment of milk up to 1½ pints daily, the mother using the child's allowance if she is nursing the child.

At *Maternity Feeding Centres* approved by the Local Government Board expectant and nursing mothers may receive meat up to 12 oz. per head weekly without producing coupons for it.

Rations in Other Special Cases.

In cases of grave emergency, where the doctor certifies that the life of the patient is in danger unless extra rations are granted, Committees are authorised to grant extra rations for one week up to a maximum (including the ordinary ration) of meat, 2 lb., and butter, 2 rations. Renewal of this grant must be confirmed by the Ministry of Food. No ordinary diseases, other than those already referred to, are recognised as grounds for the issue of extra rations. In exceptional cases of disease the Committee may forward an application to the Special Diseases Subsection of the Ministry of Food (29, Upper Grosvenor-street, W. 1) for consideration by their medical adviser. Applications so forwarded must be supported by strong medical certificates, grants being made only in exceptional cases. In dealing with importunate patients it may be borne in mind that the doctor has no power to grant extra rations, but only to recommend such a grant when convinced of its necessity, the final responsibility resting with the Ministry of Food.

THE OXFORD OPHTHALMOLOGICAL CONGRESS.

THE annual meeting of the Congress was held at Oxford on July 11th and 12th. As in former years, members enjoyed the hospitality of Keble College, while the gatherings were held in the Department of Human Anatomy.

On the first day Mr. SYDNEY STEPHENSON opened with an address on the History of the Congress, after which Sir WILLIAM J. COLLINS, Doyne Memorial Lecturer for the year, opened a discussion on Ophthalmology and the War, in which the following, amongst others, took part: Lieutenant-Colonel R. H. ELLIOT (London), Captain E. H. E. STACK, R.A.M.C., Miss MARION GILCHRIST (Glasgow), Dr. T. HARRISON BUTLER (Leamington), Captain P. H. ADAMS, R.A.M.C., Captain PERCIVAL J. HAY, R.A.M.C., Captain THOMSON HENDERSON, R.A.M.C., Mr. R. J. COULTER (Newport, Mon.), Major A. C. PURCHAS, N.Z.M.C., Staff-Surgeon R. J. E. HANSON, R.N.V.R., Captain T. H. WHITTINGTON, R.A.M.C., Mr. J. GRAY CLEGG (Manchester), Dr. GEORGE YOUNG (Colchester), and Mr. BERNARD CRIDLAND (Wolverhampton). Colonel ELLIOT concluded the proceedings by reading a paper on Some Useful Devices in Operative and Other Work.

On the second day of the Congress Sir WILLIAM BARRETT, F.R.S., read a paper, accompanied by demonstrations and slides, on Entoptic Vision, a subject which has recently fallen into neglect by ophthalmologists. Colonel HANFORD MCKEE, C.A.M.C., followed with a paper on Some Aspects of Military Ophthalmology, summarising the conclusions of a wide ophthalmic experience during the war. The morning session concluded with two papers by Captain HAY on, (*a*) Implantation of Cartilage after Excision or Evisceration of the Eye; (*b*) Vulcanite Casts as a Support for Protheses, both of which were illustrated by photographs of operative results and radiograms. In the afternoon cases were shown at the Eye Hospital by Captain ADAMS and Dr. A. W. ORR, after which Colonel ELLIOT read a paper on Herpes, and Dr. BUTLER one on Cataract Operations. In the scientific museum Sir WILLIAM BARRETT gave demonstrations with the entoptoscope. Captain HENDERSON showed sections of monkeys' eyes with special reference to Descemet's membrane, and Captain ADAMS described the histology of a hitherto unknown disease causing blindness in horses. Captain STACK exhibited a combined perimeter and scotometer. Mr. COULTER showed improved test-types. In the commercial museum various novelties were on view.

The contributions to the Congress will appear in the Transactions of the Ophthalmological Society of the United Kingdom, with which the Congress is now affiliated.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR THE MONTHS ENDING *Oct. 31st, 1917.* *Nov. 30th, 1917.*

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Carbonaceous other than tar	Ash.	Soluble matter. Loss on ignition.	Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
Leicester	58	0·14	3·36	5·21	1·70	3·27	13·66	1·53	0·48	0·13
London—										
Meteorological Office...	74	0·08	1·63	2·21	1·84	6·77	12·53	2·22	0·66	0·07
Embankment Gardens	61	0·13	2·37	3·58	7·83	20·76	34·66	8·97	2·35	0·18
Finsbury Park ...	92	0·06	1·08	3·94	2·84	6·13	14·05	3 75	0·64	0·08
Ravenscourt Park	79	0·08	1·76	7·22	1·65	1·79	12·49	1·96	0·38	0·13
Southwark Park	58	0·03	2·82	22·52	3·38	7·01	35·78	4·06	0·51	0·17
Wandsworth Com.	34	0·01	0·00	0·10	0·71	2·00	2·81	1 00	0·26	0·05
Golden Lane ...	73	0·05	3·64	5·16	3·80	4·97	17·62	2·91	0·70	0·23
Malvern	72	Nil.	0·15	0·43	0·38	0·56	1·52	0·36	0·15	tr.
Manchester—										
Queen's Park ...	125	—	—	—	—	—	14·40	—	—	—
School of Technology	109	—	—	—	—	—	21·00	—	—	—
Newcastle-on-Tyne	53	0·16	4·49	7·19	2·23	3·62	17·70	1·88	0·45	0·09
Rochdale	—	—	—	—	—	—	35·69	—	—	—
St. Helens*	—	—	—	—	—	—	—	—	—	—
SCOTLAND.										
Coatbridge	106	0·09	2·19	7·71	2·56	7·49	20·04	3·80	1·56	0·24
Glasgow—										
Alexandra Park...	97	0·18	2·76	4·94	1·45	10·19	19·52	3·20	0·85	0·19
Bellahouston Park	117	0·02	1·49	2·86	3·27	6·79	14·43	2·92	1·05	0·23
Blythswood-sq....	117	0·15	2·78	4·40	1·98	8·99	18·30	4·04	0·79	0·23
Botanic Gardens†	123	0·19	8·86	12·48	18·50	12·88	52·91	5·88	1·17	0·36
Richmond Park...	117	0·12	2·22	6·17	4·21	4·93	17·65	3·45	0·65	0·23
Ruchill Park ...	122	0·06	2·41	4·78	3·53	5·83	16·61	5·10	1·16	0·18
South Side Park.	154	0·08	0·87	3·20	3·38	4·60	12·13	2·80	0·58	0·04
Tollcross Park ...	125	0·19	2·60	8·63	7·47	6·60	25·49	4·57	0·77	0·12
Victoria Park ...	167	0·23	1·72	3·35	10·20	30·78	46·28	4·25	1·03	0·30

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Carbonaceous other than tar	Ash.	Soluble matter. Loss on ignition.	Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
Leicester...	24	0·06	1·25	3·15	0·94	2·38	7·78	1·29	0·35	0·07
London—										
Meteorological Office...	34	0·14	1·04	1·43	1·74	2·62	6·97	1·12	0·55	0·03
Embankment Gardens	31	0·14	3·41	7·05	4·43	9·22	24·25	4·93	1·14	0·28
Finsbury Park ...	49	0·05	0·86	3·11	2·07	4·72	10·81	2·67	0·47	0·05
Ravenscourt Park	23	0·08	1·35	3·55	0·81	1·75	7·53	0·93	0·26	0·05
Southwark Park...	48	0·05	3·00	8·54	2·94	5·76	20·28	3·24	0·80	0·10
Wandsworth Com.‡	—	—	—	—	—	—	—	—	—	—
Golden Lane ...	37	0·05	2·40	3·14	1·04	2·96	9·59	1·42	0·49	0·09
Malvern	22	Nil.	0·05	0·12	0·41	1·15	1·75	0·36	0·15	0 01
Manchester—										
Queen's Park ...	102	—	—	—	—	—	10·90	—	—	—
School of Technology	70	—	—	—	—	—	13·20	—	—	—
Newcastle-on-Tyne	23	0·10	3·31	8·04	1·45	2·20	15·10	1·15	0·37	0·02
Rochdale...	—	—	—	—	—	—	35·69	—	—	—
St. Helens	101	0·93	4·48	7·35	5·05	4·79	22·60	3·63	2·22	0·20
SCOTLAND.										
Coatbridge§	—	—	—	—	—	—	—	—	—	—
Glasgow—										
Alexandra Park...	118	0·14	1·53	3·36	3·54	4·46	13·03	3·31	0·30	0·21
Bellahouston Park	126	0·12	0·95	1·92	4·27	4·53	11·79	3·32	0·45	0·15
Blythswood-sq. ...	152	0·08	1·75	4·57	3·19	6·07	15·67	3·86	0·35	0·30
Botanic Gardens..	119	0·25	1·11	1·75	6·53	6·77	16·41	4·52	0·34	0·10
Richmond Park...	125	0·28	1·90	5·91	3·99	4·75	16·83	3·30	0·22	0·33
Ruchill Park ...	120	0·41	1·03	2·22	2·29	5·49	11·44	3·21	0·27	0·18
South Side Park..	114	0·09	0·40	1·45	2·74	2·85	7·53	2·11	0·28	0·12
Tollcross Park ...	130	0·38	1·59	3·92	5·09	7·30	18·28	3·97	0·24	0·13
Victoria Park ...	109	0·01	1·40	2·38	3·38	7·18	14·35	3 47	0·41	0·16

* Sample lost in transit. † Sample contained considerable amount of sandy matter. ‡ No returns. § Bottles burst. tr. = trace.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) 1 g. per sq. metre; (*d*) 1/1000 mm. of rainfall.

* The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables. The analyses of the rain and deposit caught in the gauge at the Meteorological Office are made in THE LANCET Laboratory.

Correspondence.

"Audi alteram partem."

THE CASE OF DR. JOHN HENDERSON BELL.

To the Editor of THE LANCET.

SIR,—On June 29th of last year Dr. John Henderson Bell was convicted of "attempting to produce a disease in a man belonging to H.M. Forces" and in the following week of "doing an act preparatory to producing a disease or infirmity" in another member of H.M. Forces, and on conviction was sentenced to six months' imprisonment with hard labour. The sentence on appeal was modified to imprisonment for the same term in the second division.

At the last meeting of the General Medical Council his case came before the Council, sitting to hear disciplinary charges against practitioners. The Council received evidence tendered at length by Dr. Bell and by counsel on his behalf, with the result that they did not see fit to erase his name from the Medical Register. The fact of conviction was accepted by the Council, reference being limited to the consideration whether or not the evidence justified removal of Dr. Bell's name from the Register. Dr. Bell in his statement described the treatment which he had administered in the two cases. In that treatment he appears to us to have followed a perfectly usual medical routine.

The first patient, a deserter who had stolen another man's papers, complained of a condition for which the treatment given would have been suitable. This man, who may have believed what he said, informed the military police that an operation had been performed upon him by Dr. Bell with a view to rendering him unfit to rejoin the Army. The second patient was an *agent provocateur* acting under the orders of the police, and such treatment as he received was the perfectly correct proceeding on the part of a medical man who was attempting to make a diagnosis. Dr. Bell's arrest was effected by a concealed police officer while he was in attendance on the *agent provocateur*. Not only did Dr. Bell treat the alleged conditions in accordance with the usual medical practice, but he received only the ordinary and modest fee from the first patient, an imposter who appears to have paid a sum of money to a third person in order to obtain medical treatment which would produce a disease. Dr. Bell did not receive that money, nor did the prosecution suggest that he had received it. No motive, therefore, for the imputed misdemeanour was alleged, while Dr. Bell's actions were in consonance with his entire innocence.

At the time of the conviction THE LANCET stated that there had been a miscarriage of justice. This miscarriage has been rectified to a certain extent—that is to say, Dr. Bell's name has not been removed from the Medical Register, a proceeding which follows automatically upon a criminal conviction. The decision of the General Medical Council not to erase his name from the professional roll was received not only by Dr. Bell's friends and patients, but also by the medical public, with profound approval. But, while his good name is thus restored to him, he remains under the weight of a substantial pecuniary burden. His misfortunes have cost Dr. Bell at least £800, and, despite the many claims upon the charity of medical men, we hope that a subscription may be raised at once to relieve him from this debt. There is not a medical man who may not find himself exposed to similar charges and victimised by similar proceedings.

We shall be very happy to receive subscriptions to a fund to reimburse Dr. Bell his expenses.

We are, Sir, your obedient servants,

DAVID FERRIER, WILLIAM OSLER,
G. LOVELL GULLAND, STCLAIR THOMSON.

July 22nd, 1918.

Subscriptions should be sent to Dr. Kinnier Wilson at 14, Harley-street, W. 1, and will be acknowledged in the columns of *The Lancet* and the *British Medical Journal*.

THE BACTERIOLOGY OF THE PREVAILING PANDEMIC.

To the Editor of THE LANCET.

SIR,—In your issue of July 13th Captains Little, Garofalo, and Williams write of their finding a small Gram-positive diplococcus as the predominating organism in the secretions of 20 cases from the prevailing pandemic, and of their inability to find *B. influenzæ* (Pfeiffer). As you state on p. 51 that this is the first serious contribution to its bacteriological study, it would seem of value to record contrary findings, few though they may be.

The expectorated sputum from a small group of typical cases was taken, as far as possible, early in the course of the disease. After washing the sputum in several changes of salt solution cultures were made on whole-blood agar and stained films prepared. In three-quarters of the number a typical small, watery, transparent, discrete colony was found in more or less profusion (in one case in almost pure culture). Films from these colonies gave a short, moderately slender, Gram-negative bacillus, tending to form groups, that was therefore considered to be *B. Pfeiffer*. The stained films also showed numerous rods of the same morphology as the cultures, although other rods and various cocci were present in all films, and in some cases numerous.

According to verbal report, investigations of other bacteriologists with the B.E.F. in France tend to support the view that the present pandemic is due to infection by Pfeiffer's bacillus, and therefore truly influenza. I quite agree, however, that the term influenza should be restricted to such cases and other names be given to epidemics due to streptococci (such as the recent Chicago outbreak investigated by Capps and Rosenow), diplococci, or other organisms.

I am, Sir, yours faithfully,

E. B. KRUMBHAAR, M.D., PH.D.,
16 (Phila., U S.) Gen. Hosp., B.E.F., Capt., M.R.C., U.S.A.
July 19th, 1918.

THE STERILISATION OF INFECTED WOUNDS.

To the Editor of THE LANCET.

SIR,—In the article by Colonel Sir Almroth Wright and his colleagues on the physiological sterilisation of infected wounds in THE LANCET of June 15th two facts are brought to light which must be regarded as of great importance in the future development of the treatment of gunshot wounds. These observers have shown: (1) that putrefactive organisms are destroyed by healthy serum alone; (2) that streptococci and staphylococci, while thriving in serum, are destroyed by leucocytes in the absence of excess of serum.

These important observations seem to establish a reasonable basis on which to build up the principles of treatment of wounds infected by these organisms. That caution is necessary, however, in the application of knowledge gained in the laboratory to conditions met with in the actual practice of surgery is shown by the fact that the conclusions drawn by Sir Almroth Wright from his experimental results, in so far as they refer to the closure of infected wounds, are far removed from those arrived at by clinical experience. Sir Almroth Wright states that wounds after early surgical cleansing and resection are "as good as sterile," and can be sutured with only the risk of an "occasional" failure if no dead spaces have been left. This is in general true, provided that the wound has not before operation been infected with virulent streptococci. But it is now commonly recognised by surgeons who have worked at the closure of wounds that in the presence of these organisms suture is almost certainly foredoomed to failure, and, furthermore, that unless the sutures are quickly removed and the wound laid widely open grave danger to the patient is likely to ensue.

Sir Almroth Wright also states, if I understand him correctly, that wounds infected with hæmolytic streptococci, on the surface of which there is abundance of leucocytes—i.e., pus—can be safely sutured if the serum be first carefully removed by dry gauze and the surfaces brought into accurate apposition. This is also contrary to all surgical experience, and there can be no doubt but that anyone who attempts such a proceeding is courting disaster. The results, therefore, of these ingenious experiments do not appear to coincide with the facts of clinical experience, and it is necessary to inquire wherein lies the discrepancy—for discrepancy there certainly is. The accuracy of experimental results vouched for by Sir Almroth Wright is of course beyond question. The clinical facts which I have mentioned are also beyond question, having been independently confirmed by a host of workers, both British and French. The explanation must therefore be that some material difference exists between the conditions of the experiments conducted in Sir Almroth Wright's laboratory and those made every day by surgeons

in the operating theatre and wards. In the laboratory the leucocytes and organisms are confined within the impenetrable barriers of a glass cell. Save by the reproduction of the individuals concerned, no reinforcements can reach this arena, and no undesirable drops of serum can exude into it. He is dealing with a thin stratum of relatively homogeneous material—i.e., serum, leucocytes, and organisms—evenly infected throughout its depth. The surgeon is dealing with tissues of varying resistance and quality, whose blood and lymph supply is endlessly variable from case to case, and which are infected to varying depths from the accessible surface. It does not seem to me to be possible to argue from one to other. A bacteriological study of the walls of infected wounds by means of sections must be an essential item in any attempt to reconcile these laboratory results with the experience of practical surgeons; at present, in spite of the great merit of his contributions to our knowledge, Sir Almroth Wright appears to me to be arguing dangerously upon a false analogy.

It must be noted, also, that the conditions postulated by Sir Almroth Wright for success in the closure of wounds infected by streptococci can seldom be attained in the human body. How is it possible to close any wound in such a way as to prevent the exudation of a few drops of serum between its surfaces? And yet a drop of serum at any point, according to Sir Almroth Wright's own showing, may enable the streptococcus to thrive there and vitiate the result. Such perfect microscopic apposition of surfaces as would be required to fulfil the conditions laid down appears to be beyond our reach. It has been suggested by Sir Almroth Wright himself that failures of primary suture after early excision of wounds may be due to absence of sufficient numbers of leucocytes at this stage. This may be so, but whatever the explanation, the fact remains that the primary suture of wounds which contain, before operation, hæmolytic streptococci will practically always fail.

Full of suggestion as these researches are regarding the further evolution of the treatment of septic wounds, it is necessary to accept the conclusions drawn from them with reserve, for to act too hastily on the principles laid down would involve unnecessary and unjustifiable risk to wounded men. I am, Sir, yours faithfully,

FORBES FRASER,
France, June 18th, 1918. Captain, R.A.M.C.

INFANT MORTALITY AND MOTHERCRAFT.

To the Editor of THE LANCET.

SIR,—Dr. H. W. Pooler's main criticisms in his article on this subject in your issue of July 6th are two in number: (1) that I have endeavoured to eliminate poverty as a cause of infant mortality; and (2) that I have underestimated the value of "mothercraft." With regard to (1), I have certainly never attempted to ignore poverty as a cause of infant mortality and many other manifestations of ill-health. My view is quite clearly expressed that poverty acts mainly as a cause of ill-health by forcing people to live in crowded and insanitary areas, and that under rural conditions it is possible to be earning very low wages and at the same time to enjoy a high degree of health. I illustrated this by comparing the low rates of infant mortality among agricultural labourers in England and the poverty-stricken peasants of Ireland with the high rates prevailing among the much better paid miners. Dr. Pooler is not accurate when he states that the real excess of infant mortality only occurs among the unskilled and casual workers of the town slums and not amongst the skilled and respectable artisans of the better type of working-class neighbourhoods. There is, as a matter of fact, an excess in the infant mortality rates among all classes in large urban districts when compared with agricultural areas, even in the wealthy districts of the West End of London. The slum areas are, however, the worst, and in my opinion as long as people are living in these surroundings they will be unhealthy and their infant mortality rates will be excessive, even though their wages were increased tenfold.

On the second point—the value of mothercraft, and the effect of industrial employment in preventing mothers from looking after their infants—Dr. Pooler emphasises his views by referring to the decline of infant mortality during the Lancashire cotton famine and the siege of Paris, which he attributes to the return of the mothers to their homes and the increase of breast-feeding, and greater opportunities for domestic care and cleanliness. I have not studied infant mortality during the two periods he refers to, but it is very difficult to accept the remarkable explanation he gives. On the other hand, during the war there has been an unprecedented increase in the industrial employment of women, and it is reasonable to suppose that many thousands of mothers have been able to devote far less time to their households and to the feeding of their infants than they would have done under normal circumstances; yet these years have not been accompanied by any rise in the rate of infant mortality.

Dr. Pooler says: "Mothercraft means carefulness, personal cleanliness, clean bedding, clean floors, proper storage, preparation of food (including milk), frugality, thrift, sobriety, early hours, and, above all, breast-feeding." In your leading article, sir, you quote this observation, and you add, "The opportunities for all these things the countrywoman possesses to a far greater extent than her sister in the slums." Again, after referring to insanitary conditions in country cottages, Dr. Pooler says: "It is always possible during part of the 24 hours for the infants to be right away from their noxious influence. On the other hand, in the overcrowded areas of large towns, and in many mining villages, it is a sheer impossibility for the infant to get away from the effects of his own immediate environment or that of his neighbours." Both these statements admit my whole position. It is not nearly so much teaching which the town mother needs as the *opportunities* for carrying out that teaching. The average working-class mother is not such a fool as she is painted. She knows perfectly well that the right things for her baby are good and nourishing food, cleanliness, and healthy surroundings, but in the overcrowded slum districts of our large towns it is often utterly impossible to provide these, where the air is charged with soot and everything rapidly becomes dirty, efficient ventilation of the streets is impossible, the living rooms are small and crowded, baths may be unknown, the milk-supply is unsatisfactory, the storage room for food and domestic utensils is inadequate, and there is nowhere for the children to play except the streets.

I do not wish to depreciate the value of maternity and infant welfare centres any more than I wish to depreciate the teaching of hygiene and the maintenance of hospitals, because I believe that tuberculosis is very largely an environmental disease only to be effectively attacked by destroying vicious surroundings; and nowhere have I suggested that these institutions should be "incontinently scrapped." But I do wish to protest against the tendency to attach an exaggerated importance to maternal ignorance as a cause of infant mortality. I am of opinion that the main cause of excessive infant deaths, as of tuberculosis, malnutrition of school children, and other evils, is overcrowding of houses, congestion of streets, and the absence of large and sufficient open spaces, and so long as these unhealthy areas remain any measures taken can only be regarded as palliative.—I am, Sir, yours faithfully,

The Medical School, Charing Cross Hospital, July 12th, 1918. W. A. BREND.

To the Editor of THE LANCET.

SIR,—Dr. H. W. Pooler's article in your issue of July 6th raises many important questions, and I think that he shows the futility of generalisation in such a complex problem. Those of us who have been doing this work for some years will agree with him in his concluding remarks that "every district has its own problems to solve. In one it may be housing; in another sanitation; in another poverty and underfeeding; in another overfeeding or improper feeding, carelessness, and low morale; and in yet another it may be atmospheric pollution, and in most a combination of some or all of these."

I feel that the work done at infant welfare centres could be made much more convincing if we could show that the infant mortality in a given district was lower amongst those attending the centres than amongst those not attending. This would entail a slight alteration in the statistical tables of the medical officer of health. I feel sure it ought to be done, and the result, I think, would be disconcerting to the polluted atmosphere theorists. Dr. Pooler in his Table VI. gives the weights of infants attending the consultations in both bad and good homes, but we surely do not require tables to convince us of the fact that a child will do better

in a good home than in a bad one. He also gives us the mortality figures amongst the previous children—viz., those who did not attend his consultations—but what we really want to know are the mortality figures of those attending his consultations, and the ages in both sets must, of course, correspond. I am, Sir, yours faithfully,

H. RONALD CARTER, M.D.,
Temp. Capt., R.A.F.

Kensington, W., July 14th, 1918.

QUICK DIAGNOSIS IN MENINGOCOCCUS INFECTION.

To the Editor of THE LANCET.

SIR,—With regard to the paper in THE LANCET of July 13th on the above subject, Captain A. E. Hodgson asks whether the complement fixation by the patient's serum may not be due to antibodies introduced in the curative serum administered. This criticism was anticipated, and an additional communication was sent to THE LANCET to be appended to the original article, but delay in transmission prevented its publication.

The paragraph ran:—

"It may be argued that the results obtained were due to antibodies contained in the curative serum which was administered intrathecally, and that these antibodies had found their way into the blood stream.

Against this view are the following facts. Cases (c), (i), (j), and (o) were tested before serum was given. Case (b), which gave a clean-cut result, was treated only with a pooled serum—i.e., one consisting of the four types—and the same is true, at the time of testing, of 8 out of the remaining 11 cases."

There is a further argument. The blood content of a fair-sized man is some 5 litres. The size of an average intrathecal injection is 30 c.cm. Now, even if it be supposed (disregarding all other body fluids) that the whole of the antibodies find their way into the blood stream, the resulting dilution of the curative serum would be 1 : 166. In the test the lowest dilution of patient's serum was 1 : 50, which gives a final series of dilutions of the curative serum of 1 : 8300, 1 : 16,600, and 1 : 33,200.

We have tested the majority of the curative sera given in these cases and have not got in any complete complement fixation in the lowest of the above dilutions. Apparently, therefore, in cases of meningococcal infection, there is a source additional to the curative serum from which antibodies are produced.—We are, Sir, yours faithfully,

ARTHUR S. G. BELL,
Major, R.A.M.C.;
I. M. HARMER.

Central C.S.F. Laboratory, Caxton-street, S.W., July 20th, 1918.

SEXUAL PERVERSION.

To the Editor of THE LANCET.

SIR,—I was interested to read the excellent letter of Sir Bryan Donkin in your issue of July 13th, and, although I cannot quite agree with him that "inherited perversion" plays the most prominent part among the five classes which I enumerated, I admit that his wide experience as Director of Convict Prisons, as member of the Royal Commission on the Feeble Minded, and as hospital physician must be respected. I think I ought to have used the words "inherited disposition to sexual perversion" instead of "inherited perversion." There are a large number of such cases. The inherited disposition is there, but it is the environment and the taught or inculcated pernicious habits that produce the sexual perversion.

The whole question is most important, and I must still maintain that my other classes are numerically very large and are still increasing.

I am, Sir, yours faithfully,
LIONEL A. WEATHERLY, M.D.

Bournemouth, July 19th.

METHODS OF GENERAL ANÆSTHESIA IN FACIAL SURGERY.

To the Editor of THE LANCET.

SIR,—With reference to Captain T. Lovett's letter in THE LANCET of June 22nd, while I agree that preliminary laryngotomy is almost the ideal method for anæsthesia in facial surgery, at the same time my experience of these patients is that it is not a single operation which is required, but anything from four to twelve. I should very much like to see the condition of a trachea or larynx after it had been reopened so many times. From my two years' experience in working with Mr. P. P. Cole at King George Hospital rectal oil-ether administration seems to be the best, when it is successful, but unfortunately one cannot guarantee the depth of anæsthesia. The next best method appears to be the intratracheal, either with the ordinary intratracheal catheter or Kühn's tube.—I am, Sir, yours faithfully,

HUGH R. PHILLIPS.

Dawson-place, W., July 18th, 1918.

REST AS A FACTOR IN THE HEALING OF LEG WOUNDS.

To the Editor of THE LANCET.

SIR,—One of the chief objects of military surgery is the restoring of men to duty as soon as possible. May I, in connexion with this, draw attention to a point of war hospital practice which I think is of importance—namely, the length of time that is spent in the ultimate healing of wounds of the lower extremity owing to the want of complete rest. It seems to be the general practice to allow a man to be up, on crutches or with sticks, before his wound is finally healed, and it is no uncommon thing for weeks to be occupied in the final healing of a small granulating surface of a leg wound which would have healed in as many days if the man had been kept in bed for a little longer. It is difficult at V.A.D. hospitals to put back to bed a man who has been allowed to be up and about for a fortnight at the war hospital.

The point may seem a small one, but the number of cases involved is very great, and the total number of days lost in the prolonged healing of these leg wounds must be very considerable. If a general rule were suggested in one of those polite circulars ending "for your information, please," to the effect that all patients with leg wounds should be kept in bed until the wound had finally healed, many days in hospital would be saved.

I am, Sir, yours faithfully,
H. CAMERON KIDD.

Bromsgrove, July 19th, 1918.

GÜNZBURG'S TEST.

To the Editor of THE LANCET.

SIR,—Günzburg's test for free hydrochloric acid being so widely used in the examination of test meals and being the only reliable test for that substance, the following modifications may be found useful at the present time.

The Günzburg's test materials consist of phloroglucin, vanillin, and absolute alcohol. Of these, the alcohol is not necessary; the vanillin is easily obtainable and the phloroglucin cannot be obtained at all. The majority of laboratory workers have probably used up all their pre-war stock of phloroglucin, and some may be in need of a substitute. Both orcin and resorcin may be used instead of phloroglucin. The test works equally well with either substance. Orcin is difficult to obtain, even in small quantities, and costs about 2*s.* a drachm. Resorcin is readily obtainable at a cost of 4*s.* 6*d.* an ounce. The amount of substance required for a test is extremely small. A few small crystals of vanillin and of orcin or resorcin dissolved in a drop of the test-meal filtrate and evaporated to dryness give a very clear result. The colour reaction with orcin or resorcin is slightly more purple than with phloroglucin; otherwise the test behaves exactly as with Günzburg's reagent, is positive with very dilute hydrochloric acid in protein solution, and is negative with combined HCl and with lactic acid.

I am, Sir, yours faithfully,
P. N. PANTON, M.A., M.B., B.C. Cantab.,
Clinical Pathologist to the London Hospital.

July 12th, 1918.

"HEALTH RESORTS OF THE BRITISH ISLANDS."

To the Editor of THE LANCET.

SIR,—Owing to war conditions, so great is the difficulty of getting into touch with the original contributors to the pages of the above-named work, that I seek permission through your columns to invite those writers, and others representing health resorts, to send as soon as possible, for a revised edition now in preparation, notes on changes of importance during the past six years, addressed to me.

I am, Sir, yours faithfully,
EDITOR OF "HEALTH RESORTS, &C."

42, Elvaston-place, S.W. 7, July 10th, 1918.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. E. P. W. Wedd, M.C., R.A.M.C. and Yeomanry, was educated at Cheltenham and at Cambridge, and at St. Bartholomew's Hospital, London, and qualified in 1911. He held appointments at St. Bartholomew's and at the East London Hospital for Children, Shadwell. In the early 1900's he was a well-known oarsman, and rowed for his University against Oxford in 1905. On the outbreak of war Capt. Wedd was already in the Essex Yeomanry, and went to the front in November, 1914, in a combatant capacity. Later he transferred to the R.A.M.C. He was mentioned in despatches and awarded the M.C. in April last year.

Previously reported Wounded and Missing, now reported Died of Wounds.

Capt. P. M. MacLachlan, M.C., R.A.M.C., attached Hampshire Regiment. The award of the M.C. was recorded in THE LANCET of Nov. 24th, 1917, p. 805.

Wounded.

Capt. J. M. Forsyth, M.C., R.A.M.C.
Lieut. F. S. Adams, R.A.M.C., attached S. Wales Borderers.
Capt. G. A. Russell, Canadian A.M.C.

Previously reported Missing, now reported Prisoners in German Hands.

Capt. W. G. Harnett, R.A.M.C.
Lieut. A. S. Findlay, R.A.M.C.
Capt. A. C. Hepburn, R.A.M.C.
Capt. W. J. Hirst, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Corpl. J. Moxon, A.I.F., died of wounds, youngest son of the late Dr. W. Moxon, J.P., of Matlock, Derbyshire.
Lieut. R. A. Edwards, West Yorkshire Regt., died of wounds, youngest son of Lieut. E. H. Edwards, R.A.M.C.
Gunner H. T. Pridham, R.F.A., died from illness contracted on service, son of the late Mr. J. W. Pridham, L.R.C.P., M.R.C.S., of Hillfield, Broadway, Dorset.
Capt. W. R. G. Pearson, R.A.F., accidentally killed through a collision in the air, second son of Dr. S. Pearson, of Clapham-road, London, S.W.

OBITUARY OF THE WAR.

WILLIAM McQUIBAN, M.B., CH.B. ABERD.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. McQuiban, who died on active service on May 2nd, aged 44 years, was educated at Gordon College, Aberdeen, where he was Queen's prizeman in marine engineering. He took his medical course at Aberdeen University, qualifying in 1901 and holding appointments as house surgeon at Aberdeen Infirmary and clinical aural assistant at the London Hospital. Since 1902 he was in practice at Stoke Newington. Joining the R.A.M.C. in 1916 he saw service in India and Egypt. While acting as consulting surgeon to a unit in Palestine he was taken ill in April, dying of heart failure. His commanding officer writes of Captain McQuiban that he went out of his way to help others and that no work was too much trouble to him. Captain McQuiban had published work on scientific engineering and on the measurement of blood pressure. His wife, who was the widow of the late J. F. Kendal, F.R.G.S., survives him.

RICHARD AMYAS PRESTON, M.B., B.S. LOND.,

MILITARY CROSS AND CROIX DE GUERRE,
LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel R. A. Preston, who died of wounds on June 7th at the age of 27, was second son of the late A. Eley Preston, M.I.C.E., of St. Mawes, Cornwall. He qualified at the London Hospital, and before taking his M.B., B.S. degree he served in the Balkan War of 1912–13. When the present war broke out he was holding an appointment at the Poplar Hospital, which he resigned on receiving a commission in the R.A.M.C. He went to France early in August, 1914, was twice mentioned in despatches, and was awarded the Military Cross during the retreat from Mons. He also received the Croix de Guerre, and last year he was given the temporary rank of lieutenant-colonel while in command of a field ambulance. He was mortally wounded while attending to the removal of patients under heavy bombardment, and died the same day. Colonel Preston married in 1916 the daughter of the late Charles S. Crawford, of Newcastle-upon-Tyne.

JOHN WATT SENTER, M.B., CH.B., B.SC. EDIN.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant J. W. Senter, who died of wounds on June 9th at the age of 38, was youngest son of the late George Senter, farmer, of Kildrummy, Aberdeenshire. He was educated at Kildrummy Public School and first took up pharmacy, being apprenticed to a pharmaceutical chemist at Mossat. During the South African war he acted as a dispenser in the R.A.M.C., and upon his return to Scotland passed the qualifying examination of the Pharmaceutical Society in 1902. Soon afterwards he started business on his own account as a pharmacist, and whilst so engaged studied medicine at Edinburgh University, graduating M.B., Ch.B., in 1910 and B.Sc. Public Health in 1912. After holding special appointments in the eye and throat departments at the Royal Infirmary, he started in general practice in Edinburgh with every prospect of a useful professional career. Lieutenant Senter joined the Army in June, 1917, and met his death while in charge of an advanced dressing station on the western front. His promotion to captain was due in a few days. His superior officer writes that his work and his companionship will both be missed. Lieutenant Senter leaves a widow and four children.

THE HONOURS LIST.

The following are the statements of service for which the decorations recorded in THE LANCET of Feb. 23rd, 1918, p. 313, were conferred. All are members of the R.A.M.C. except where otherwise stated :—

Second Bar to the Military Cross.

Temp. Capt. ARCHIBALD FULLERTON, M.C.—For conspicuous gallantry and devotion to duty. He worked untiringly under heavy shell and machine-gun fire, attending to the wounded of his own and other units. His fearless conduct undoubtedly saved many lives.

Bar to the Military Cross.

Capt. WILLIAM FOTHERINGHAM, M.C., Spec. Res.—For conspicuous gallantry and devotion to duty. He attended to the wounded in an exposed position under heavy hostile gas-shell fire. Though suffering badly from gas he continued at work with the greatest courage and determination until he was blinded by gas.

Temp. Capt. WILLIAM JOHN KNIGHT, M.C.—For conspicuous gallantry and devotion to duty. He worked continuously during an engagement attending to the wounded under heavy fire, and later went into a village which was being heavily shelled and brought away several wounded men. He went back to the front line after the position had been evacuated and brought back several badly wounded men. He worked with untiring energy throughout the operations and saved many lives.

Capt. THOMAS AINSWORTH TOWNSEND, M.C.—For most conspicuous gallantry and devotion to duty. Although twice wounded he refused to have his wounds attended to, and continued to dress the wounded under a continuous and heavy concentration of high-explosive and gas shells. Not only did he attend the wounded and gassed of his own unit, but rendered aid, under conditions of great difficulty, to wounded of neighbouring battalions whose medical officers had become casualties. His complete disregard of personal danger and splendid devotion were a magnificent example to all.

Capt. FREDERICK WILLIAM LEES, M.C., Canadian A.M.C.—For conspicuous gallantry and devotion to duty. He worked untiringly attending to the wounded and superintending their evacuation. Though his aid-post was continually under heavy shell fire he carried on his work with an energy and cheerfulness which were a splendid example to all. He saved many lives by his devotion to duty.

The Military Cross.

Temp. Capt. ERIC PHILLIP BLASHKI.—For conspicuous gallantry and devotion to duty. He went forward during an engagement and established a dressing-station in an advanced position. He remained at his post under heavy shelling and collected the wounded from an area swept by machine-gun fire. He showed the greatest courage and resource.

Capt. FRANK CHADWICK.—For conspicuous gallantry and devotion to duty. After the troops had been withdrawn he remained with the wounded all night in an advanced position and organised their removal in the face of great difficulties. By his courage and determination he succeeded in getting all the wounded away.

Temp. Capt. THOMAS MAITLAND CRAWFORD.—For conspicuous gallantry and devotion to duty. He was wounded and rendered temporarily unconscious by a shell which mortally wounded the colonel and adjutant of his battalion. As soon as he recovered he attended to their wounds, and remained on the spot without having his own wounds dressed until stretcher-bearers arrived. He reported to brigade headquarters before having his wounds attended to, and showed splendid courage and self-sacrifice.

Temp. Capt. WILLIAM CLAUGHTON DOUGLAS.—For conspicuous gallantry and devotion to duty. While returning from the regimental aid-posts he came under a heavy barrage, and was slightly wounded. Seeing that some men further back had been wounded, he at once went to their assistance, got them under the only available cover, attended to their wounds, and organised stretcher parties for their removal. His prompt and gallant action saved the lives of two seriously wounded men.

Capt. ARCHIBALD McLAREN FERRIE, Spec. Res.—For conspicuous gallantry and devotion to duty. He continually exposed himself to heavy fire in attending to the wounded during an attack. Later, when an officer was wounded and was lying out in an exposed position, he crawled out and brought him in over ground swept by the enemy's fire. His gallantry and courage undoubtedly saved many lives.

4th Class Assistant Surg. JAMES GARNETT GOODMAN, I.S.M.D.—For conspicuous gallantry and devotion to duty. He remained tending the wounded under heavy fire until every case had been evacuated, after which he followed the battery into action. On the previous day, seeing the battery come under an intense shell fire, he at once went up to the guns to render assistance. His coolness, initiative, and keenness were most marked.

Temp. Capt. JAMES HUNTLY LEGGE.—For conspicuous gallantry and devotion to duty in an enemy counter-attack, which almost succeeded in penetrating to his aid-post. With the greatest coolness and courage he continued his work of clearing the wounded, not only of his own battalion, but of other units. Throughout the hostile fire was intense, and it was due to his untiring efforts that so many wounded were quickly and efficiently evacuated.

Capt. REGINALD DEVEREUX MOORE.—For conspicuous gallantry and devotion to duty. He worked continuously for eight days attending to the wounded at an advanced dressing-station, often under shell fire. His organisation of the work was excellent, and by his courage and cheerfulness he inspired all ranks with confidence, which assisted them materially in the performance of their duties.

Capt. JOHN GILBERT MORGAN.—For conspicuous gallantry and devotion to duty. When the advanced dressing-station had been ordered to withdraw he went forward with a party of bearers and successfully cleared a number of wounded from the regimental aid-posts. The operation was carried out under continuous shell and machine-gun fire.

Temp. Capt. JOHN OSCAR THOMAS.—For conspicuous gallantry and devotion to duty. He dressed a wounded officer and man under heavy fire and got them to a place of safety. He showed great coolness and courage.

Temp. Capt. PHILIP HEWER WELLS.—For conspicuous gallantry and devotion to duty. He attended to the wounded of several units who were lying out in an exposed position under fire. He worked throughout the night, often under an intense bombardment of gas and H.E. shells, and by his courage and self-sacrifice saved many lives.

Temp. Capt. ERNEST WILLIAM GILMORE YOUNG.—For conspicuous gallantry and devotion to duty. He collected and dressed the wounded in an exposed position under heavy fire, and remained on the spot after the withdrawal of the regiment until all the wounded had been brought in.

Capt. GAVIN YOUNG, Spec. Res.—For conspicuous gallantry and devotion to duty in attending to the wounded under heavy machine-gun fire. He worked up to the leading wave and searched the whole ground for wounded under continuous fire, and owing to his exertions all the wounded were evacuated with great rapidity. Later he showed great courage and devotion to duty in rescuing wounded from destroyed dug-outs under shell fire.

Capt. GEORGE MAY FOSTER, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. He was in charge of the evacuation of the wounded from the front line during the operations, and set a splendid example to his stretcher-bearers by his courage and determination. He led a party to remove several stretcher cases under heavy shell fire, and though wounded himself he attended to their wounds and arranged their removal.

Capt. ALFRED STANNAGE PORTER, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. He dressed many wounded during the operations, working in the open under intense fire, and set a splendid example of courage and self-sacrifice.

Lieut.-Col. D. L. IRVINE (late R.A.M.C.), at present working on the Western front under the French Red Cross, has been awarded the Croix de Guerre for his services with Motor Ambulance, Section 10, with the French Army.

THE LONDON RECRUITING BOARDS.

On the invitation of Sir Charles Bedford, the Commissioner of Medical Services for the London Region, 200 of the chairmen and members serving on the London recruiting boards met the Chief Commissioner, Sir James Galloway, K.B.E., C.B., in the Caxton Hall on Tuesday afternoon last. Sir James Galloway took the chair, and was accompanied by Sir Charles Bedford and Sir John Collie, representing the Ministry of Pensions. Sir Charles Bedford, in his introductory remarks, mentioned that the boards in the London region had had to be increased from 20 in March last, when he took charge, to 54 to-day, and offered personal thanks for the good work done. Sir James Galloway welcomed the opportunity of congratulating the chairmen and members of the London recruiting boards in the name of the Ministry of National Service for the whole-hearted manner in which they had carried out their very arduous duties. He added that neither on the administrative or executive side had perfection yet been attained and that all efforts must be put forth to improve their organisation and the quality of their work, while a comparatively quieter time allowed them to discuss matters among themselves. Sir James Galloway pointed out that much of the work was pioneer, while the boards were for the most part drawn from private practitioners who in the past had to deal only with the sick and diseased, and who had not had full opportunity of knowing what the normal condition of health was in reference to climate, nature of work, crowded surroundings, and other conditions of life. Conscription, he said, had given the profession the first real chance of studying these questions, and advantage should be taken of it to the full with a view to the improvement in the general health of the people by legislation or otherwise. Sir John Collie referred to the bearing which efficient medical examinations and grading would have when pensions were dealt with.

MEDICAL GRADING OF OLDER MEN.—A Memorandum (R. 218) has been issued by the Local Government Board and the Scottish Office to tribunals, instructing them to deal with the medical grading of men of the older ages in accordance with the statement made in the House of Commons on July 8th by the Minister of National Service (see THE LANCET, July 13th, p. 63). The Memorandum adds:—

> The requirements of the forces for men of all ages in Grade 1 and for men of the former military ages in Grade 2 are great and urgent. There is also a considerable demand for Grade 2 men of the new military ages, and for Grade 3 of the former military ages, except men who have been found by the medical boards to be fit only for sedentary work and who are without technical skill of a kind required in the Services.

LONDON HOSPITAL MEDICAL COLLEGE.—The following awards have been made to students of the London Hospital Medical College during the session 1917–18:—

Medical prize, £20, S. N. Sennett; honorary certificates: E. Miller and A. B. K. Watkins; Obstetric prize, £20, J. C. Ryder Richardson; honorary certificate: J. Fanning; Andrew Clark prize in Clinical Medicine and Pathology, £26, A. B. K. Watkins; honorary certificates: S. N. Sennett and E. Miller; Sutton prize, £20, A. B. K. Watkins; Anderson prizes in Elementary Clinical Medicine, £3, M. C. Hartley and R. A. Madgwick; honorary certificates: A. R. Crane and J. J. Coghlan; prizes in Elementary Clinical Surgery, £5, E. L. Sergeant, M. Marcus, M. C. Hartley, and F. F. Langridge and C. W. Tomkinson (equal—prize divided); Letheby prize in Organic Chemistry, £10, S. Sandler.

DONATIONS AND BEQUESTS.—By will the late Miss Ada Katharine Agnes Bickersteth, of Hunton Bridge, Herts, left, among other bequests, £500 each to the Middlesex Hospital for the Cancer Wards, the Home at Stoneygate-road, Leicester, Leicester Royal Infirmary, Watford District Hospital, and the Meath Home for Epileptics.

Obituary.

HENRY GEORGE PLIMMER, M.R.C.S. ENG., F.R.S.,

PROFESSOR OF COMPARATIVE PATHOLOGY AT THE IMPERIAL COLLEGE OF SCIENCE.

Professor Plimmer, whose death we chronicled at the time of its occurrence, was an exceedingly interesting figure in the medical world, and responsible therein for much good and varied work. The following detailed account of his career has been compiled from intimate sources.

Henry George Plimmer, the only son of Dr. George Plimmer and Eliza Eyres, was born on Jan. 29th, 1857, in Melksham, Wilts. His father died whilst he was a boy, and young Plimmer, after leaving school in 1870, became a clerk. Not being satisfied with such an outlook on life, he wrote in 1877 to Dr. J. H. Galton, who had been his father's assistant, concerning a career in medicine, and Dr. Galton invited him to come to him as assistant—the unqualified assistant's post being at that time a recognised mode of entering the medical profession. He lived with Dr. Galton at Norwood, at first doing the dispensing and book-keeping, but gradually helping in the dispensary part of the large practice of Galton and his partner Sidney Turner. In a few months he passed the preliminary examination of the College of Surgeons and Apothecaries' Society, and entered Guy's Hospital as a perpetual student in October, 1878. He was made prosector of the Royal College of Surgeons in 1882, became L.S.A. in October of the same year, and M.R.C.S. in January, 1883. Many of his dissections are to be seen in the Museum of the College of Surgeons, but he could not proceed to the Fellowship examination owing to the exacting work of a large general practice. In 1885 he was made a partner, but retired from general practice seven years later so as to devote himself to bacteriology and research, which he began with Professor E. M. Crookshank at King's College, London. Microscopy and histology greatly interested him in his student days; the first society of which he became a member was the Royal Microscopical in 1883. His early microscopical preparations were deservedly admired, and much attention was attracted by the inclusions in cancer cells, subsequently called Plimmer's bodies, which were differentiated by him in October, 1892, from the then known degenerations by means of a technique which he had devised. About this time he met Armand Ruffer, who was working at the same subject, and at Ruffer's suggestion they worked together at the laboratories of the Royal College of Surgeons. He was associated with Ruffer until illness compelled Ruffer to resign from the British Institute of Preventive Medicine, whither they had gone on its establishment in 1893. Some of the early work on diphtheria in this country was carried out by them there.

From this time on Plimmer occupied a series of important posts. He became pathologist to the Cancer Hospital in 1894, bacteriologist and lecturer on bacteriology at St. Mary's Hospital in 1896, and succeeded Silcock there as pathologist and lecturer on pathology in 1899, resigning this post to take charge of the cancer laboratories at the Lister Institute, started by Lord Iveagh, in 1902. Since 1898 he had been working at trypanosomes, partly in association with Sir J. Rose Bradford, and in 1906 undertook the research work on trypanosomiasis which was organised and directed by the Tropical Diseases Committee of the Royal Society. At the same time he was made a member of that committee. From 1907 to 1917 he was pathologist to the Zoological Society. His contributions to science were at last recognised in 1910, when he was elected a Fellow of the Royal Society. He accepted the professorship of comparative pathology at the Imperial College of Science and Technology in 1915, was elected a member of the War Office Tetanus Committee in 1916 and later of the Trench Fever Committee. He was actively engaged with the work of his professorship and the work of the War Office committees until a few weeks before his death, being very largely concerned with the recent discoveries relating to trench fever. In addition to these varied appointments Plimmer was a Fellow of many scientific and medical societies. He presided over the Royal Microscopical in 1911–12; he was visitor of the Royal Institution in 1914–16; a member of council of the Linnean and of the Association of Economic Biologists in 1917–18.

Plimmer's adaptability is worthy of special note. During his partnership with Turner and Galton he did surgical work of an original nature. Two cases—one of hysterectomy, the other of ectopic gestation—described in THE LANCET of 1888 were the first of their kind in this country. A paper on quinsy and rheumatism appeared in the *British Medical Journal* of 1886. His work on cancer dates from 1892. Following the note on the Parasitic Protozoa lately Found in Cancer, he further studied at the Cancer Hospital the various cell inclusions and during his appointment at St. Mary's Hospital he isolated a yeast from an ulcerating cancer. These yeast cells were very like cell inclusions, and the fact that they caused tumours in animals led to the hope that here was the long-looked-for cause of cancer. It was a disappointment, for though they were found in several cancers, they did not produce genuine cancer in animals, and were, no doubt, accidental infections. Comprehensive reviews on cancer from his pen were: On the Microscopical Diagnosis of Benign and Malignant Growths of the Cervix Uteri (*British Gynæcological Journal*, 1895); Ætiology and Histology of Cancer (*Practitioner*, 1899); the Parasitic Theory of Cancer (*British Medical Journal*, 1903). Since 1899 he worked mainly upon blood parasites, particularly the trypanosomes found in the tsetse fly disease, Gambia fever, sleeping sickness, describing three new species of the genus Toxoplasma.

Plimmer had a special gift for music. It was his recreation through life, and he was himself a remarkable pianist. He was also a connoisseur of the Italian School of Painting, while literature also occupied much of his time, although his scholarship is only dimly seen in his published works, such as "Omariana," "Bedullus Immortalis," and various presidential addresses. He delighted in intercourse with his fellow men, showing his kind and sympathetic nature to all, and was a brilliant conversationalist. The Omar Khayyam Club, of which he was some time president, afforded him abundant opportunities of meeting his friends, and he was one of those mainly concerned in founding the Lucretian Club, of which he was secretary for a number of years. Plimmer's life was full of many interests, and he found room for them all.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: A. W. Cocking, D. A. Knight, N. Macleod, J. D. Byrd.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Probationer J. W. Scharff has been invalided with a pension and the retention of his rank after two years' service.

ARMY MEDICAL SERVICE.

Temp. Col. Sir Robert Jones (Major, R.A.M.C., T.F.) to be temporary Major-General.

Temp. Lieut.-Col. John M. Cowan (Major, R.A.M.C., T.F.) to be temporary Colonel.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. J. W. H. Houghton relinquishes the temporary rank of Colonel on re-posting.

Major S. B. Smith retains the acting rank of Lieutenant-Colonel whilst employed as Assistant Director of Medical Services of an Army.

Capt. J. W. C. Stubbs to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

J. V. G. B. Tighe to be temporary Lieutenant-Colonel whilst serving at Gateshead War Hospital, Stannington.

Lieut.-Col. C. Garner, retired pay, to be acting Colonel whilst specially employed.

Capts. W. H. S. Burney and T. B. Nicholls and Temp. Capt. H. Moore relinquish the acting rank of Lieutenant-Colonel, and revert to the acting rank of Major, with pay and allowances of their substantive rank.

Temp. Major J. M. Nettleton, Canadian A.M.C., to be temporary Lieutenant-Colonel.

Temp. Capt. A. R. Jordon relinquishes the acting rank of Major on re-posting.

To be acting Majors: Temp. Majors H. F. Woolfenden, W. S. Dickie, R. Dick; Capts. G. F. Allison, C. Scales, W. E. Marshall, A. P. O'Connor, P. T. Priestley; Temp. Capts. E. B. Sunderland, W. De M. Peyton, T. Bragg, W. H. Fleetwood, D. C. Taylor, E. F. C. Dowding, J. A. C. Roy, C. Mackenzie, J. G. Duncanson, H. Stokes, E. L. Mackenzie, J. H. Legge, L. H. C. Birkbeck; Lieut. (temp. Capt.) J. La F. Lauder.

J. C. Webb to be temporary Major.

Capt. T. D. Inch, from R.A.M.C., Spec. Res., to be Captain.

The undermentioned temporary Lieutenants to be temporary Captains: G. S. Robinson, H. Topham, F. Heatherley, A. Barrett, A. T. Moon, J. W. O'Farrell, A. C. Brown.

To be temporary Captains: Capts. R. W. B. Gibson (South African M.C.) and T. L. Harrison (Canadian A.M.C.), T. H. Twigg, T. Milling, W. G. Ridgway, F. W. Jones, J. E. R. Orchard, H. E. C. Fox (late Surgeon, R.N.), D. T. H. Croly, E. Maynard, W. A. Russell, T. J. Buckley, S. P. Snook.

Temp. Hon. Lieut. H. F. Bold-Williams to be temporary Honorary Captain whilst serving with No. 8 Red Cross (Baltic and Corn Exchange) Hospital.

Temp. Hon. Lieuts. P. D. Spohn and E. A. Cayo to be temporary Honorary Captains.

P. M. Turnbull, late temporary Captain, is granted the honorary rank of Captain.

To be temporary Lieutenants: L. H. McConnell, A. L. Lynch, N. F. Sinclair, D. D. Farquharson, R. M. Mainwaring-White, A. W. MacK. Sutherland, A. Prentice, B. W. Lacey, J. Devine, F. H. Nixey, O. Eccles, A. S. Ransome, E. D. D. Davis, B. A. McSwiney, A. H. Ward, J. Moore, A. H. Marsh, G. Ap Thomas, R. A. MacArthur, W. Daunt, C. K. T. Hewson, P. N. Twomey, N. C. Fischer, N. J. Newbould, W. H. W. Mewhirter, W. E. Thompson, A. V. Moberly, H. G. Browning, G. S. Robinson, F. C. Mann, F. P. Hearder, C. H. Steinbach, A. W. Hare, F. W. Daniels, S. B. Turner, D. Davie, M. Baronov.

Officers relinquishing their commissions: Temp. Capts. E. L. Massiah, G. H. Brown (granted honorary rank of Captain), J. Lindsay, T. D. McLaren, F. M. Walker, A. Weigall, E. G. H. Weir, H. Saunders and R. McI. Muir (granted honorary rank of Captain), W. Rogerson, M. Hooper and J. M. Johnston (on account of ill-health contracted on active service and are granted the honorary rank of Captain). A. L. George; Temp. Lieuts. H. V. Mitchell, W. Martin, W. M. Fergusson (on account of ill-health).

SPECIAL RESERVE OF OFFICERS.

Capt. I. D. Evans relinquishes the acting rank of Major on re-posting.

Captains to be acting Majors: T. Lindsay, J. B. Scott, W. W. Shorten.

Lieutenants to be Captains: J. Scott, J. Adams, J. C. C. Howe, A. B. MacDougall, P. A. Stewart, O. M. Mirylees, W. L. Agnew.

Capt. P. W. Mathew to be acting Major while specially employed.

J. C. Coutts, from St. Andrews University O.T.C., to be Lieutenant.

TERRITORIAL FORCE.

Capt. Charles L. Tireman relinquishes his commission.

Captains to be acting Majors whilst specially employed: J. M. Smith, T. J. T. McHattie, A. Radford, Lieut.-Col. J. Clay, L. M. V. Mitchell, G. G. Middleton, G. B. Buchanan, W. T. Torrance, J. Browne, P. S. Martin, D. W. Reese, J. J. E. Biggs, J. H. Robinson, C. S. Wink, F. Ward, E. B. Hinde, M. Morris, L. Milton, C. E. Petley, A. B. P. Smith, W. F. Mackenzie, R. S. Taylor, C. S. P. Black, J. A. H. Aitken, R. G. Walker, C. H. K. Smith, A. F. B. Shaw, C. W. C. Myles, F. A. W. Drinkwater, W. J. Richards, C. Kerr, D. Lamb, J. Blackwood, J. J. Rainforth, A. P. Watson, W. Dyson, M. U. Wilson, W. T. Gardiner, L. West, A. L. S. Tuke, W. T. Ritchie, J. G. Morgan.

Captains (acting Majors) relinquishing the acting rank of Major on ceasing to be specially employed: A. F. B. Shaw, J. G. Morgan, A. J. Drew (seconded for duty overseas).

Capt. (acting Major) R. S. Taylor, Capt. (acting Lieut.-Col.) D. Shannon, Capt. (acting Major) A. N. S. Carmichael, and Capt. (acting Major) G. L. K. Pringle relinquish their acting rank on ceasing to be specially employed.

Capt. (acting Major) W. L. Robertson to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. (Brevet Major) J. Ewing to be acting Major whilst specially employed.

Capt. H. L. Driver is seconded for duty with London District.

Capt. (acting Lieut.-Col.) J. M. Hunt relinquishes his acting rank on ceasing to command a General Hospital.

Capt. H. Buck is seconded for duty with a General Hospital.

Lieut. (temp. Capt.) A. Leitch, and Lieuts. G. Bryce and W. V. Barritt to be Captains.

Lieuts. A. G. Harrington, J. Dull, G. N. F. Reddan, T. H. Savory, D. Smith, and A. Sykes are seconded for duty with the R.E.

TERRITORIAL FORCE RESERVE.

Capt. G. L. K. Pringle, from R.A.M.C., to be Captain.

ROYAL AIR FORCE: *Medical Branch.*

L. S. Hooper (temp. Capt., R.A.M.C.) is granted a temporary commission as Captain, and to be temporary Major whilst specially employed.

R. G. Maglione, I. M. Thomson, and A. H. Todd are granted temporary commissions as Captains.

G. Dunderdale, J. P. Hennessy, G. W. Harbottle, F. Gill, J. S. Harbinson, J. J. O'Mullane, M. J. Whelton, and A. G. Graham are granted temporary commissions as Lieutenants.

INDIAN MEDICAL SERVICE.

The King has approved the admission of the undermentioned:—To be Lieutenants: Hira Singh Anand, Sunda Dass Sondhi. To be temporary Major: Percy Charles Woollatt. To be temporary Lieutenants: Nariman Sorabji Kotwal, Kaikhusroo Rustomji Dalal, Susanta Kumar Sen, Kantilal Kalyanji Mankodi, Gopal Narayan Khanna, Amar Nath Madhok, Bantwal Shankar Rau, Waris Khan, Eustace Trevor Neave Taylor, Keki Sorabji Bhiwandiwala, Keith Montague Woodruff, Dya Ram Thapar, Albert Victor Lopes, James Henry Barrett, Shaikh Ghulam Mohamed, George Patrick de Sibra, Jugal Kishor Adhya, Yedatore Venkoba Krishnamoorthy.

URBAN VITAL STATISTICS.

(Week ended July 13th, 1918.)

English and Welsh Towns.—In the 93 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had increased from 11·4 to 19·0 per 1000 in the four preceding weeks, further rose to 21·1, the highest rate recorded in any week of the current year. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 18·4, or 1·1 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 6·2 in Ilford, 7·0 in Hornsey, and 7·1 in Bath, to 40·2 in Barnsley, 40·3 in Wakefield, 46·0 in Sunderland, 46·9 in Rochdale, and 49·4 in Middlesbrough. The principal epidemic diseases caused 330 deaths, which corresponded to an annual rate of 1·0 per 1000, and included 144 from whooping-cough, 84 from measles, 46 from diphtheria, 35 from infantile diarrhœa, 18 from scarlet fever, and 3 from enteric fever. Whooping-cough caused a death-rate of 1·5 in Warrington and in Sunderland, 1·6 in Ealing, 1·8 in Gateshead, and 2·4 in Walsall; measles of 1·5 in Sunderland, 1·6 in Rotherham, and 2·2 in Wakefield; and scarlet fever of 1·7 in St. Helens. The 821 cases of scarlet fever and 1070 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 9 and 76 below the respective numbers remaining at the end of the previous week. The 1422 deaths from all causes in London included 287 from influenza, of which 168 were of persons aged 15 to 35 years. The causes of 61 deaths in the 96 towns were uncertified, of which 13 were registered in Birmingham, 5 in Manchester, and 4 each in Liverpool and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 15·0, against 11·5 and 13·9 per 1000 in the two preceding weeks. The 260 deaths in Glasgow corresponded to an annual rate of 12·2 per 1000, and included 11 from measles, 6 from whooping-cough, 3 from infantile diarrhœa, and 1 each from enteric fever and diphtheria. The 115 deaths in Edinburgh were equal to a rate of 18·0 per 1000, and included 2 from diphtheria and 1 from whooping-cough.

Irish Towns.—The 250 deaths in Dublin corresponded to an annual rate of 32·7, or 9·4 per 1000 above that recorded in the previous week, and included 2 from whooping-cough and a fatal case each of measles, scarlet fever, and infantile diarrhœa. The 213 deaths in Belfast were equal to a rate of 28·3 per 1000, and included 10 from whooping-cough, 4 from infantile diarrhœa, and 1 from measles.

(Week ended July 20th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 18·0, against rates increasing from 11·4 to 21·1 per 1000 in the five preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 15·2, or 3·2 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 6·4 in Ipswich, 7·6 in Edmonton, and 8·9 in Hornsey, to 32·8 in West Hartlepool, 34·2 in Warrington, and 43·5 in Barnsley. The principal epidemic diseases caused 301 deaths, which corresponded to an annual rate of 0·9 per 1000, and included 105 from whooping-cough, 103 from measles, 41 from infantile diarrhœa, 31 from diphtheria, 14 from scarlet fever, and 7 from enteric fever. Whooping-cough caused a death-rate of 1·8 in Walsall, 2·0 in Aberdare, 2·3 in Grimsby, and 4·6 in Warrington; and measles of 2·0 in Barrow-in-Furness, 2·4 in Walsall, 2·6 in Sunderland, and 4·4 in Lincoln. The 836 cases of scarlet fever and 1016 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 15 above and 54 below the respective numbers remaining at the end of the previous week. The 1171 deaths from all causes in London included 192 from influenza, of which 74 were of persons aged 15–35 years. The causes of 44 deaths in the 96 towns were uncertified, and included 6 in Birmingham, and 5 each in Liverpool, Manchester, and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 11·5 to 15·0 per 1000 in the three preceding weeks, further rose to 17·4 per 1000. The 340 deaths in Glasgow corresponded to an annual rate of 15·9 per 1000, and included 9 from whooping-cough, 8 from infantile diarrhœa, 7 from measles, 4 from diphtheria, and 3 from enteric fever. The 106 deaths in Edinburgh were equal to an annual rate of 16·6 per 1000, and included a fatal case each of diphtheria and whooping-cough.

Irish Towns.—The 208 deaths in Dublin corresponded to an annual rate of 27·2, or 5·5 per 1000 below that recorded in the previous week, and included 5 from whooping-cough, 2 from infantile diarrhœa, and 1 from diphtheria. The 152 deaths in Belfast were equal to a rate of 20·2 per 1000, and included 4 from whooping-cough, 3 from infantile diarrhœa, and 1 each from enteric fever and diphtheria.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.

Surgical Therapeutics and Operative Technique. By E. Doyen. English edition prepared by the Author in collaboration with H. Spencer-Browne, M.B. Vol. II., Research Surgery (continued), Operations on the Head (continued), Thorax, Upper and Lower Limbs (complete in 3 vols.). 25*s.*

Aids to Analysis of Food and Drugs. By C. G. Moor, F.I.C., and Wm. Partridge, F.I.C. 4th ed. 4*s.*

Chemistry for Beginners. By C. T. Kingzett, F.I.C. 3rd ed. (New Part). 2*s.* 6*d.* net.

CHURCHILL, J. AND A., London.

War Surgery of the Abdomen. By C. Wallace, F.R.C.S. 10*s.* 6*d.*

Massage and Medical Gymnastics. By Dr. E. A. G. Kleen and Others. Translated by Dr. Mina L. Dobbie, with Foreword by Major R. C. Elmslie, R.A.M.C. 21*s.* net.

GRIFFIN, CHARLES, AND CO., London.

Food and Dietaries. By Sir R. W. Burnet, K.C.V.O., M.D. 5th ed. 4*s.*

Simple Experimental Hygiene, Physiology, and Infant Management for the Use of School Teachers. By K. M. Curwen. 6*s.* net.

HEINEMANN, WILLIAM, London.

The Breast: Its Anomalies, its Diseases and their Treatment. By J. B. Deaver, M.D., and Others. £2.

An International System of Ophthalmic Practice. Edited by W. L. Pyle, M.D. Medical Ophthamology. By A. Knapp, M.D. 21*s.*

Diseases of Occupation and Vocational Hygiene. Edited by G. M. Kober, M.D., and W. C. Hanson, M.D. 32*s.*

LONGMANS, GREEN, AND CO., London.

Anatomy, Descriptive and Applied. By H. Grey. 20th ed. Edited by R. Howden, C.M. 37*s.* 6*d.*

Stoichiometry. By S. Young, D.Sc. 2nd ed. 12*s.* 6*d.*

Practical Organic and Bio-Chemistry. By R. H. A. Plimmer, Reader in Physiological Chemistry, University of London. 18*s.*

POST-GRADUATE COLLEGE, WEST LONDON HOSPITAL.—During next week clinics will be held at 2 P.M. on Wednesday, Friday, and Saturday, and also at 10 A.M.

Medical News.

UNIVERSITY OF LONDON.—At examinations for internal and external students held recently the following candidates were successful:—

M.D. EXAMINATION.

Branch I., Medicine.—Arthur Joseph Eagleton, B.S., Guy's Hospital; Innes Hope Pearse, B.S., London School of Medicine for Women; William Norman Pickles, B.S., University of Leeds; and Gabriel Francis Rodrigues, B.S., University College Hospital.

Branch VI., Tropical Medicine.—Robert Yelverton Stones, B.S., London Hospital.

N.B.—This list, published for the convenience of candidates, is issued subject to its approval by the Senate.

UNIVERSITY OF GLASGOW.—The following candidates received their degrees on July 20th:—

Bachelors of Medicine and Bachelors of Surgery (M.B., Ch.B.).—*With honours:* John Gordon Harrower and William Ralston Duncan Hamilton. *With commendation:* Morris Hyman and Margharita Mary Lamont Couper. *Ordinary degrees:* Carl Otto Anderson, Ellen Davidson Anderson, John David Arthur, William Barras, Donald Cameron Bowie, William George Burns, Michael John Cahalane, Hugh Auld Cochrane, Edward Mitchell Erskine Cumming, John Freeland Cunningham, Andrew Murdoch Davidson, Archibald Browning Smith Drysdale, William Edgar, Duncan Finlayson, Grace Anderson Fleming, George Gordon, Adam Smith Goudie, Jane Evelyn Hanson, Lillias Beverley Hardie, Andrew Henderson, John Irving, Robert Paterson Jack, James Campbell Laurie, Jacob Lipsey, Alan James Macartney, Duncan MacColl, Isabella Quarrier McFadzean, Thomas McGowan, John William Mackay, Andrew Aird McLaughland, Donald Maclean, William Riddock McLinden, Findlay Kerr Macmillan, John Muil Melvin, Florence Frances Mitchell Milne, William Napier, Bryce Frood Niblock, Elizabeth Park Young Paterson, Norman Bligh Peacock, Robert James Peters, John Browning Potter, Rahmat Ullah Qureshi, William Scotland, Katherine Scott, Margaret Marion Catherine Steedman, James Alexander Walls, Thomas McSkimming Wilson, and George Macfeat Wishart.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held on July 9th, 26 cases were considered and £244 12*s.* voted to 24 of the applicants. The following is a summary of some of the cases relieved:—

Daughter, aged 60, of L.S.A. Lond. who practised at Warwick and died in 1899. Only permanent income £26. Receives a little from occasional boarders. Rent and rates £24. Suffering at present from a nervous breakdown. Voted £12 in 12 instalments.—Daughter, aged 68, of M.R.C.S. Eng. who practised at Brixton and died in 1878. Was left totally unprovided for, and now, through advancing years, unable to work. Lives with a widowed sister, who cannot afford to keep her. Voted £12 in 12 instalments.—Widow, aged 48, of M.B. Edin. who practised at Ballindalloch and died in 1910. Was left without income with four children, now ages 11-19. Receives £21 per annum from other funds. Recently had a situation, but has been compelled to give it up with a view of looking after the younger children. Relieved six times, £60. Voted £10 in two instalments.—Widow, aged 62, of L.R.C.P. & S. Edin. who practised at Balham and died in 1913. Was left entirely without means, and health not sufficiently good to enable her to do regular work. Lives rent free, but will shortly have to look for a room, for which she will have to pay. Relieved five times, £30. Voted £12 in 12 instalments.—Daughter, aged 63, of L.F.P.S. Glasg. who practised at Mauchline and died in 1883. Has been in bad health for a long time. Only income £15 from another charity and the amount given by the Fund. Relieved 11 times, £166. Voted £12 in 12 instalments.—Daughter, aged 66, of M.R.C.S. Eng. who practised in Liverpool and died in 1883. For some years acted as matron of a home, but owing to rheumatism and deafness had to give it up. Total income £37. Lives with a sister, who shares the rent. Relieved four times, £46. Voted £12 in 12 instalments.—Daughter, aged 61, of M.R.C.S. Eng. who practised at Lacock and died in 1898. Largely dependent on dividends, which she and her two sisters receive from investments, but owing to the war these have greatly depreciated. Takes occasional boarders. Relieved three times, £30. Voted £10 in two instalments.—Daughter, aged 66, of M.R.C.S. Eng. who practised at Dorchester and died in 1892. At present is living in Paris with a widowed sister, but is anxious to get away from there on account of air raids. Only income £10 a year from her brother. Relieved once, £10. Voted £15.—Wife, aged 52, deserted by husband, an M.R.C.S. Eng. who practised at Bournemouth. Was left with one daughter, now aged 24, who is earning 27*s.* a week. Applicant's health is bad, which prevents her from working. Relieved five times, £50. Voted £12 in 12 instalments.—Widow, aged 69, of M.D. Glasg. who practised at Dennistoun and died in 1876. Applicant lives with a married daughter and is a permanent invalid. Daughter unable to keep her. Only income £12 from another charity. Relieved four times, £48. Voted £12 in 12 instalments.—Widow, aged 53, of L.R.C.P. & S. Edin. who practised at New Quay and died in 1893. Was left with two young children, both of whom are now in the Navy and allow her 15*s* a week. Applicant's health is bad, and she recently fractured her leg. Relieved 15 times, £149. Voted £12 in 12 instalments.—Daughter, aged 62, of M.R.C.P. Edin. who practised at Holloway and died in 1884. Through ill-health applicant is unable to work. Has a pension from another charity of £40 and pays 16*s.* a week for board and lodging. Relieved 14 times, £127. Voted £12 in 12 instalments.

Subscriptions may be sent to the acting hon. treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, W.1.

Mr. Richard R. Cruise, C.V.O., has been appointed surgeon-oculist and Sir Harry Baldwin surgeon-dentist to the King.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, JULY 17TH.

Naval Medical Service.

Major NEWMAN asked the Secretary to the Admiralty what response had been obtained to the recent Admiralty invitation to the temporary surgeons to join the permanent list of the Royal Navy.—Mr. MACNAMARA replied: The actual number of applicants to transfer from the temporary to the permanent list of the Royal Navy since the promulgation of the Order is 18, and of these 15 will probably be eligible.

Major NEWMAN asked whether the right honourable gentleman was aware of the dissatisfaction that prevailed among members of the permanent medical service owing to the fact that surgeons were now doing the duties formerly carried out by fleet- and staff-surgeons without extra pay or acting promotion as in other branches of the service, and that the large influx of temporary surgeons had not reduced the time served for promotion in the permanent service; was he aware that when similar conditions prevailed in the Royal Army Medical Corps all subaltern officers of the permanent list were promoted forthwith; and what did he propose to do to remedy these grievances.—Mr. MACNAMARA answered: The Admiralty is not aware of any dissatisfaction in this respect, nor has any previous representation on the subject been received. The whole question of pay, prospects, and other matters in connexion with the medical branch is now under the consideration of the Board of Admiralty. This particular question of acting rank will also be dealt with. The influx of temporary surgeons has no influence on the conditions of promotion in the permanent service. I note the reference to what occurs in the Royal Army Medical Corps, but the case of subaltern officers in that corps does not form a parallel, as the Royal Naval officers affected are of the relative rank of captain or above.

Medical Grading.

In the course of an answer to Mr. H. SAMUEL, Sir AUCKLAND GEDDES said: Formerly a certain number of men were placed in Grade III. in order to provide an opportunity for diagnosing the affection from which they were suffering. Under the instructions now current a man who is temporarily unfit for posting on account of some acute transient affection (e.g., measles or scarlet fever), or whose case requires some special test, is not graded, but is notified that he must again attend for the completion of his examination and grading upon a definite date at an appropriate interval of time. In all other cases men are now placed at once in the grade for which they are considered physically fit. Men who are found to be permanently and totally unfit for any form of military service are given a final discharge.

Mr. ALBION RICHARDSON asked whether in order to give to all men called up, irrespective of their financial position, the same chance of being correctly graded he was prepared to make arrangements, or to recommend that arrangements should be made by the appropriate Government department, to enable a man who had been attended by his panel doctor in recent illness and who could not afford to pay such doctor for a certificate stating his recent medical history, to obtain such a certificate free of charge for production to the medical board to assist them in grading him, in the light of his recent medical history so certified to.—Sir A. GEDDES replied: I fully appreciate the importance of the point raised in my honourable friend's question. At present the instructions are that in cases of doubt as to the man's medical history chairmen of medical boards are to consult the recruit's private medical attendant. The difficulty connected with this is that so many medical men are serving with the Forces that in a very large number of cases the man's ordinary medical attendant, quite irrespective of the man's financial position, cannot be referred to. It was largely to meet this difficulty, which was fully recognised last autumn, that the systems of re-examination by National Service Medical Boards, of specialist examination in connexion with these boards, and of appeal medical assessors were introduced.

Housing of the Working Classes.

Answering Sir S. ROBERTS, Mr. HAYES FISHER said: The total number of local authorities in England and Wales which have intimated to me that houses for the working classes are required in their areas is 1103. Owing to the form in which the replies of local authorities have been given it is not possible to state exactly how many houses they consider necessary, but the number probably exceeds 300,000. In 510 cases the number of houses required exceeds 100.

THURSDAY, JULY 18TH.

Medical Establishments in France.

Major CHAPPLE asked the Under Secretary for War whether the Army Council had now considered the report of the

Committee on Medical Establishments in France, and whether any action was to be taken in the matter.—Mr. MACPHERSON replied: Yes, sir, the report has been considered, and such action as was desirable has been taken.

Medical Officer Prisoners in Turkey.

Colonel BURN asked the Financial Secretary to the War Office whether British medical officers, both of the Royal Army Medical Corps and of the Indian Medical Service, who were prisoners in Turkey were receiving smaller pay and allowances than when they were on active service in Mesopotamia or elsewhere, although they were still working as doctors; whether he would arrange that they be given the full pay and allowances which they drew on active service on receipt of certificates from them, or on other evidence, that they had had medical charge of prisoners; and whether those of them who drew free rations while on active service would be given an allowance in lieu for the period covered by such certificates or evidence.—Mr. FORSTER answered: British officers, both of the Royal Army Medical Corps and of the Indian Medical Service, are on their release or exchange credited with the full Indian pay of their substantive appointment for any period of their captivity during which they certify that they were fully employed with the care of British or Indian sick or wounded. Ration allowance is only issuable to officers when they are on active service.

Treatment of Nerve Strain.

Sir A. GRIFFITH-BOSCAWEN (Parliamentary Secretary to the Ministry of Pensions), replying to Colonel YATE, said: For functional nerve disorders six homes of recovery have been established as follows: One in London for 120 patients; one in Leicester for 60; one near Manchester for 100; one in Edinburgh for 30-60; one in Dublin for 33; and one in Belfast for 62. All these have workshops or provide other forms of occupation, such as gardening. There is no connexion with lunacy administration or lunacy staff. The records of my department do not, unfortunately, enable me to state how many men have passed through their hands since they were opened. I should, perhaps, add that no special provision has been made for men suffering from uncertifiable mental deficiency who are not suitable for admission to one of the homes of recovery. The number of cases of this nature which have been brought to my notice is not large, and, where necessary, arrangements have been made with one or other of the existing mental homes which accept uncertifiable cases.

Medical Examination of School Children in Scotland.

Mr. MUNRO (Secretary for Scotland) informed Colonel G. COLLINS that schemes for the medical examination of school children had been adopted by the whole of the school boards in Scotland, and, except in the county of Shetland, had actually been brought into operation. In some districts, however, the work had been temporarily interrupted owing to depletion of the medical and nursing staffs through the urgent demands of the war.

Lanarkshire Housing Scheme.

Mr. DUNCAN MILLAR asked the Secretary for Scotland whether arrangements had now been completed with the Treasury for the carrying out of the Lanarkshire housing scheme which was adjusted some months ago.—Mr. MUNRO replied: The Treasury has agreed to the scheme subject to certain conditions which will be communicated to the local authorities concerned.

Appointments.

CARLILL, H., M.D. Cantab., M.R.C.P. Lond., has been appointed Assistant Physician to the Westminster Hospital.

KENNEDY, D., L.R.C.P. & S. Edin., L.F.P.S. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Newbury District of the county of Berks.

WACHER, H., M.B., B.C. Camb., one of the Medical Referees under the Workmen's Compensation Act, 1906, for County Court Circuit No. 49, Ashford, &c., County Courts.

WARD, G. E. S., M.D. Lond., Assistant Physician to the Middlesex Hospital.

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital.—Locum Female Surgeon.
Birmingham University.—Sen. Demonstrator of Anatomy. £250.
Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200.
Bristol General Hospital.—H.P. £175.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Bristol University.—Demonstrator in Physiology.
Bury Infirmary.—Jun. H.S. £200.
Carlisle City, Maternity and Child Welfare.—Female Asst. M.O. £400.
Dudley, Guest Hospital.—Asst. H.S. £120.
Evelina Hospital for Children, Southwark, S.E.—H.P. and H.S. £160.
Great Yarmouth Hospital.—H.S. £200. Fifth-year Students. £150.
Guy's Hospital, S.E.—Two Clinical Assts. 1 guinea per session.
Hackney Union Infirmary, E.—Jun. Asst. M.O. £250.
Huddersfield County Borough.—Female Asst. M.O.H. £350.
London Temperance Hospital, N.W.—Surgical Registrar. 40 guineas.
Maidenhead, Home for Discharged Neurasthenic Sailors and Soldiers, Bray Court (National Hospital for the Paralysed and Epileptic, W.C.).—Res. M.O. £500.
Manchester City.—Female M.O. £450.
Manchester County Asylum, Prestwich.—L.T. £7 7s. per week.
Manchester Royal Eye Hospital.—Sen. H.S. £120.
Netley, British Red Cross Hospital.—M.O. for Electrical Department.
Nottingham, Ransom Sanatorium, Mansfield.—Res. M.O. £250.
Sheffield Royal Infirmary.—H.S. £120. Also H.P. £120.
South London Hospital for Women, S.W.—Female Temp. Asst. P.
Sunderland County Borough.—Asst. Female M.O.H. and Maternity and Child Welfare M.O. £400.
Walsall Education Committee.—L.T. Sch. Med. Insp. £400.
Walsall General Hospital.—Female H.S. and Anæs. £175.
Whipp's Cross War Hospital, Leytonstone, E.—Res. M.O. £1 per day.
Willesden Municipal Hospital, N.W.—Jun. Res. M.O. £300.

Births, Marriages, and Deaths.

BIRTHS.

HIGGINS.—On July 18th, at Straylea, New Milton, Hants, the wife of Captain F. B. Higgins, R.A.M.C., of a daughter.

HUGHES.—On July 18th, at "Coningsby," Stoke, near Rochester, to Dr. and Mrs. J. Morgan Hughes, a daughter (Joan).

SUCKLING.—On July 21st, at Charlton Lodge, Shepton Mallet, the wife of J. Jerome Suckling, M.B., B.S. Lond., of 5, Marine-terrace, Margate, of a daughter.

MARRIAGES.

CUNNINGTON—WEBB.—On July 20th, at St. Mary Abbott Church, Kensington, C. Willett Cunnington, M.B., Lieutenant, R.A.M.C. (temp.), of Tatchley House, Dollis Avenue, Church End, Finchley, N., to Phillis E. Webb, M.B., of 7, Scarsdale Villas, Kensington, W.

DRURY—TOMB.—On July 5th, at St. Gabriel's Church, Cricklewood, N.W., Major Kenneth Kirkpatrick Drury, M.C., R.A.M.C., to Meta Elizabeth, second daughter of William Tomb, Upperlands, co. Derry.

DYSON—GODDARD.—On July 13th, at the Parish Church, Wembley, Harold Edward Dyson, M.D. Lond., to Irene Eleanor, only daughter of Dr. and Mrs. C. E. Goddard, Harrowdene House, Wembley.

KINGSTON—VAUGHAN WALTON.—On July 15th, at Southsea, by special licence, Captain Stuart Hardy Kingston, R.A.M.C., to Mabelle Vaughan, third daughter of the late James Thomas Walton, of Bristol.

KYNGDON—DE LA COUR.—On July 11th, at St. Luke's, Oseney-crescent, N.W., Frederick Henry Kyngdon, M.D., of Lansdowne House, Tottenham, to Ethel Marian, elder daughter of G. F. de la Cour, M.D., and Mrs. de la Cour, of Camden-road, N.W.

MACAULAY—BRYSON.—On July 15th, at Dumfries, by the Rev. J. A. Campbell, Troqueer, Lieutenant Thomas Symington Macaulay, M.D., R.A.M.C., of Seremban, Federated Malay States, to Eleanor Minnie, daughter of Mr. Alexander Bryson, Castramont, Rotchell Park, Maxwelltown.

MUIR—LIVINGSTON.—On July 19th, at Inchbrook, Walkerton, Leslie, Major A. Ross Muir, R.A.M.C., T.F., to Ada Jane Buchan, daughter of James Livingston, Esq., J.P., Inchbrook, Walkerton, Leslie, Fife.

DEATHS.

ETTLES.—On July 19th, at his residence, 114A, Harley-street, London, W. 1, the result of a serious operation, William James McCulloch Ettles, M.D., F.R.C.S., in his 50th year.

STITT.—On July 17th, at Halifax, N.S., of blood poisoning, Robert R. Stitt, Medical Officer, S. S.——, second son of the late Colonel Samuel Stitt, of Birkenhead, and Mrs. Stitt, of Caldy, Cheshire, and loved husband of Eva Stitt, Port St. Mary, I.O.M., in his 51st year.

WEBB.—On July 16th, at Portballintrae, C. Walsham Webb, M.D.

WEDD.—On July 13th, killed in action, Captain Edward Parker Wallman Wedd, M.C., Yeomanry and R.A.M.C., aged 34.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET, VOL. I., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of June 29th will be ready next week. Owing to the increasing shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a *post-card* (which is more convenient for filing purposes than a letter) to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge

EDITORIAL NOTICE.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

Notes, Short Comments, and Answers to Correspondents.

SHOCK IN BURNS AND SCALDS.

"TAKE care of shock and Nature will do the rest" summarises the teaching of the lecture delivered at the College of Ambulance (3 Vere-street, London, W.) on July 11th by Dr. J. M. H. MacLeod, physician for diseases of the skin at Charing Cross Hospital. The lecture was the ninth of a series on ambulance work and first-aid intended for medical practitioners as well as ambulance workers. Sir James Cantlie, who presided, spoke of the growing importance of burns and scalds, on account of the improved methods of dealing with which the St. John Ambulance Handbook had been recently completely revised. The lecturer referred to the increased number of accidents in factories due to war conditions, to the action in the war area itself of liquid fire, mustard gas, and the like, and to the terrible burns resulting from aeroplane accidents and air raids at home. Experience had already taught much. He described the differences between the injuries caused by dry heat and moist heat. As a rule burns were less extensive and deeper than scalds and nearly twice as fatal. The immediate gravity in either case depended more upon the extent of the surface injured than the depth of the injury. When one-half or even one-third of the body surface was injured death was almost absolutely certain. An arm or a hand might be burned to the sixth degree—i.e., totally destroyed—and yet with proper care the patient would recover. The duration of exposure to the heat was also an important factor. Burns of the first degree generally healed in a few days, those of the second degree in which blisters had formed were more difficult to deal with on account of the liability of the contained fluid to become septic. Treatment should be taken seriously, however slight the injury might appear at first sight. In 24 hours a blister might form, and blisters were peculiarly liable to become septic. Given a wound or a burn of the same area the lecturer would prefer the wound to treat. In burns of a minor degree the first thing to do was to soothe by bathing in a solution of bicarbonate of soda in the proportion of a drachm to a pint of water. After pain had been relieved it was important to avoid friction and give rest. A dressing with a bland powder such as stearate of zinc might be used, and it was not necessary to exclude air. In a burn of the second degree it was best to puncture and drain the blister after washing with 1:4000 $HgCl_2$ unless it was possible to ensure asepticity. The dressing should soothe and astringe; he had found a weak solution of aluminium acetate preferable to other applications. Picric acid was liable to irritate. No redressing was required unless the wound became septic, a condition revealed by a characteristic smell. To be taken off the dressing must be soaked, or growing tissue might be torn off with it. Of all injuries burns were most liable to be accompanied by severe nervous symptoms: hysterical manifestations in the case of small burns and collapse in burns of a large area. The first consideration should be the patient, not the burn. Put him into a bath at 100° F., clothes and all; leave him there as long as necessary; give a normal saline injection if desirable, but on no account a stimulant. Then cut the clothes off and put the patient to bed, remembering that the skin was hypersensitive and a hot-water bottle therefore out of place. The bed should rather be warmed before putting the patient in. For severe burns treated in hospital no dressing was required, but the part should be protected by a cage warmed by an electric lamp and the charred surface dusted over with a bland powder. Moderate sepsis was best left alone; if severe the patient should be placed in the bath again until the surface became clean. Little scarring occurred by this method, but it was important to place the injured part in a natural position in case contraction of the tissues should occur. A review of Dr. MacLeod's recent book on "Burns and Their Treatment" appeared in our issue of July 20th.

MEDICINE IN SPANISH.

Two standard medical text-books of moderate size have been done into Spanish under the editorship of Dr. Luis Felipe Calderon, professor of clinical medicine at Bogotá, and issued by Messrs. Henry Frowde, and Hodder and Stoughton, as Publicaciones Médicas de Oxford. They are (1) "Manual de Medicina," by Dr. A. S. Woodwark (pp. 415, price 12*s.* 6*d.*); and (2) "Emergencias en la Practica de la Medicina y de la Cirugia," by Mr. Percy Sargent and Dr. Alfred E. Russell (pp. 496, price 17*s.* 6*d.*). Spanish America is largely dependent on foreign medical literature and we are glad that British text-books should be represented. The books may also suggest an agreeable way to the medical student of picking up a modicum of a Spanish medical vocabulary.

CHILD-WELFARE LITERATURE.

THE National Baby Week Council, 27A, Cavendish-square, London, W., have published a series of pamphlets which should prove useful to workers in the cause of infant and child life conservation. *Nation's Wealth* (price 6*d.*) is a collection of "messages" from medical men and women, clerics, social workers, and others, pointing out the importance of child welfare work and containing useful ideas for speakers and lecturers. A sentence in the foreword by Dr. Eric Pritchard puts the case in a nutshell: "In the last analysis," he says, "the causes of infant mortality are want of knowledge and want of character, two wrongs that it is within human power to redress." This message is further emphasised in *Danger Ahead, or the Difficulties of a Young Mother*, a play in three acts, while the subject is developed with particular reference to the dangers of syphilis in the *Factors of Infant Mortality*, a lecture by Dr. C. W. Saleeby. *Baby Week, its Objects and its Future*, by Miss Alice Elliott; *National Baby Week from the Working-Class Mother's Point of View*, by Mrs. H. B. Irving; and *Civic Responsibilities with Regard to Child Welfare*, by Dr. H. Scurfield, are other lectures which deserve to be widely distributed and read. With the exception of the first mentioned publication the price in each case is 4*d.*

DISINFECTION OF PUBLIC VEHICLES IN CALCUTTA.

AT a recent meeting of the Calcutta municipal council the attention of the health department was directed to the report of Major Glen Liston, I.M.S., on the danger of infection from vermin in public vehicles, such as railway carriages and tramcars, and to the method of fumigation with hydrocyanic acid gas to get rid of the parasites. The council agreed to discuss the practicability of disinfection by this means with the Calcutta Tramways Company.

MORE MOULTING.

BETWEEN the issues of June 7th and June 14th the cover of the valuable weekly Public Health Reports, issued by the U.S. Public Health Service at Washington, turned from green to grey.

Dr. A. J. Rice-Oxley has been appointed justice of the peace for the County of London.

F. W. P.'s communication would have gained in value if the clinic to which he alludes had been described in detail. If this can be done it would be well not to obscure the issues by reflections on those responsible for the National Insurance Act.

Dr. J. L. Roux-Berger sends us a reprint of his paper in the *Presse Médicale* for May 30th, in which he dwells on the danger of late and incomplete operation in gunshot wounds of the pleura and lung. To leave an infected fracture of the rib or a retained fragment of clothing or projectile is to ensure the permanence of infections menacing the pleura. Early operation on the lines first recommended by P. Duval would avoid the chronic infections of the pleura and the pulmonary fistulæ which he has found always difficult to treat and liable to fatal complication.

Communications, Letters, &c., to the Editor have been received from—

B.—Baby Week Council, Sec. of; Sir J. W. Byers, Belfast; Major A. S. G. Bell, R.A.M.C.

C.—Dr. R. Craik, Lond.; Mr. B. Cridland, Wolverhampton; Dr. E. L. Collis, Lond.; Major W. A. Chapple, R.A.M.C.; Dr. J. B. Christopherson, Khartoum; Mr. W. G. Cooper, Chester; Surg.-G. F. Cobb, R.N.; Dr. A. S. Currie, Lond.

D.—Dr. B. Dunlop, Lond.

E.—Dr. G. Elliott, Toronto; Major R. Eager, R.A.M.C.

F.—Factories, Chief Inspector of, Lond.; Miss E. F. Ford, Lond; Capt. W. Fletcher, R.A.M.C.

G.—Dr. W. Gordon, Exeter; Dr. J. D. Grant, Lond.; Mr. J. Galsworthy, Lond.

H.—Messrs. J. L. Hatrick and Co., Lond.; Mr. J. N. Harris, Lond.; Major H. Hemsted, R.A.M.C.; Dr. C. M. Hough, Ambleside; Major A. F. Hurst, R.A.M.C.; Mr. C. A. Hill, Lond.

I.—Capt. A. C. Inman, R.A.M.C.

J.—Major-Gen. Sir Robert Jones, A.M.S.

K.—Dr. H. C. Kidd, Bromsgrove; Capt. E. B. Kitching, R.A.M.C.; Capt. E. B. Krumbhaar, M.R.C.; Messrs. P. S. King and Son, Lond.

L.—Staff-Surg. T. D. Luke, R.N.; London Hospital Medical College, Sec. of.

M.—Mr. C. Mayfield, Bristol; Sir J. W. Moore, Dublin; Dr. J. B. Mennell, Lond.; Mr. L. Morris, St. Albans; Mr. F. S. Miles, Hove; Mr. L. Mundy, Lond.; Dr. B. W. Martin, Leicester; Dr. J. A. Murray, Lond.; Dr. H. A. Macewen, Lond.; Mr. T. S. McCallum, Huddersfield; Messrs. Alex. Morison and Co., Edinburgh; Ministry of Food; Ministry of National Service.

N.—Mrs. G. Newham, Dublin; Dr. C. R. Niven, Liverpool; National Health Insurance, Joint Committee of.

P.—Dr. H. R. Phillips, Lond.; Poplar, Medical Officer of Health of; Dr. F. W. Pilkington, Kencott; Dr. E. E. Prest, Glenafton; Dr. C. A. Parker, Lond.

R.—Royal College of Surgeons, Edinburgh; Dr. H. S. Reynolds, Wisbech; Dr. W. B. Russell, Colwyn Bay; Royal Academy of Medicine in Ireland, Dublin; Dr. A. J. Rice-Oxley.

S.—Dr. J. W. Scharff, Tramore; Mrs. J. E. Speak, Halifax; Sir W. J. Smyly, Dublin.

T.—Major P. Turner, R.A.M.C.; Mr. A. Thornton, Marlborough; Dr. C. H. Thatcher, Edinburgh.

U.—University of London; University of Glasgow.

W.—Prof. G. S. Woodhead, Cambridge; Dr. T. Wakefield, Haslemere; Mrs. M. M. Wallace, Peebles; Dr. L. A. Weatherly, Bournemouth.

Further Experiences IN COLONY TREATMENT AND AFTER-CARE.[1]

By P. C. VARRIER-JONES, M.A., M.R.C.S., L.R.C.P. LOND.,

FOUNDATION SCHOLAR, ST. JOHN'S COLLEGE, CAMBRIDGE; HONORARY MEDICAL OFFICER, CAMBRIDGESHIRE TUBERCULOSIS COLONY; AND ACTING TUBERCULOSIS OFFICER FOR THE COUNTY OF CAMBRIDGE;

AND

G. SIMS WOODHEAD, V.D., M.A., M.D., LL.D.,

BREVET COLONEL AND LIEUTENANT-COLONEL, R.A.M.C.; FELLOW OF TRINITY HALL, AND PROFESSOR OF PATHOLOGY, UNIVERSITY OF CAMBRIDGE.

THE use of the word "cured" not being justified in connexion with any form of treatment yet brought to bear on tuberculosis, the term "arrest of the disease" has been substituted, though even this elastic expression has usually been superseded by still more guarded and tentative expressions.

The Cause of Relapse.

The arrest of the disease is said to take place only under certain ill-defined conditions. In the first place, treatment must be prolonged. That this may produce the desired result is quite in accord with pathological evidence. Moreover, from clinical evidence—from the general improvement in the condition of the patient, where we have the classical signs associated with want of activity of the disease in the lung, increase of weight and a normal range of temperature—it may be argued that if the treatment can be continued for a further period and improvement maintained, eventual arrest of the disease may be brought about.

In the case of the working man, however, no figures and no facts in support of this thesis can be adduced. Deductions from the experience gained in the treatment of the well-to-do are obviously open to many sources of error, for it has been demonstrated that well-to-do people who return to their former unsuitable, unmodified mode of life are in no way less liable to relapse than are their less fortunate brethren. The patients that do well are those diagnosed early, who have the sense and opportunity to carry on in their own home a modified form of sanatorium treatment—a well-regulated life without excesses of any kind, and in which the economic struggle is tempered to their conditions. Well-to-do patients who, either through their own fault or through the stress of circumstances, have to resume a strenuous existence amid surroundings not hygienically favourable are no less likely to relapse than is the working man. We have certainly no definite statistics to the contrary. Under these conditions, "once a consumptive, always a consumptive."

Sir Arthur Pearson lately said to his blind pupils: "The first thing you have to do is to learn to be blind." So, too, the consumptive must "learn to be a consumptive," so to readjust his life that the ravages of the disease may make slower progress; to avoid the things that lessen resistance; and, above all, to guard against excessive fatigue, worry, and mental strain. In other words, to live a sanatorium life. With our present knowledge we are, indeed, compelled to assume that except under the most favourable conditions complete arrest is out of the question except in a very small proportion of cases, and that the thing to be aimed at is a retardation of the disease such that a reasonable amount of work and exercise may be indulged in without exciting a recrudescence of those symptoms and conditions which oblige the patient to cease work.

The question thus resolves itself into—"Under what mode of life is the greatest retardation of the disease effected, for we know that no prolongation of the period of sanatorium treatment will so arrest the disease that a permanent cure is effected if the patient is again allowed to return to undesirable surroundings, or if in good home surroundings he resumes his old ways and habits in workshop and in office?" Dr. N. D. Bardswell's Midhurst figures give us information on this point. That all the Midhurst patients return to undesirable surroundings cannot be believed. Most of them were in that grade of society which lives in well-built, well-ventilated houses in the better-planned suburbs of our large towns and cities. Many worked in offices which, whilst perhaps not ideal, would not be condemned as wanting in light, air, or general sanitary amenity, and yet Dr. Bardswell's figures appear to demonstrate that the results obtained by the treatment of the middle classes at Midhurst were very little better than those obtained amongst working-class patients at Frimley. What is the cause of this universal (or almost universal) breakdown or relapse?

The Essential Factors.

As a temporary expedient sanatorium treatment gives excellent results. By itself, as a means of permanently restoring the patient to health, it has proved to be a failure. It is a good thing in itself, but not by itself. Something more is needed, and that something is what is now known as "After-care," designed to assist the patient in the continual struggle for fresh air, rest, and good food, the shoal on which the consumptive is shipwrecked, a struggle which accounts for the recrudescence of the disease and for the weakening of the protective forces essential for the final victory over infection. The less the economic struggle the slower the advance of the "arrested" disease remaining after a short course of sanatorium treatment. Bad surroundings are but a result of the economic struggle; without the struggle bad housing might be eliminated. Both must be swept away if the vicious circle is to be broken.

We see the results of the economic pressure, but cannot realise the fundamental principles on which any adequate system of after-care should be based. Build better houses by all means, but do not imagine that by building better houses, the sources of infection still remaining, much headway will be made in lessening the disease. A worthy squire in one of the eastern counties was so impressed with the importance of good housing as a factor in the struggle against tuberculosis that he erected a series of model cottages in his village. He is now pained and surprised to find that there is as much (if not more) tuberculosis in those cottages as in any other part of the county. One or two advanced cases were allowed to remain, with the inevitable result that the disease has spread; but then wages are no higher than elsewhere, and work, worry, and anxiety are as dominant as in other parts of the country. The struggle goes on, *massive* infection remaining ever ready to attack the depressed and claim fresh victims.

Two factors, then, are essential for the transmission of the disease from one member of the community to another. The one is complex, subtle, a force rather than a visible entity, but the results of that force are manifest every day—bad housing, insanitary dwellings, want of rest, want of food, anxiety, all already referred to, are the results of economic pressure, or, if we prefer the term, the struggle for existence. The other factor is material; we can see it, handle it, know it in a vague sort of way, test its properties—the tubercle bacillus, by which massive infection has been demonstrated. Build up resistance, and even massive infection may not prevail; lower the resistance, and less massive infection will suffice to set up the disease.

What means do we take to build up this resistance? We supply the ordinary dispensary patient with a little "cod-liver oil three times a day." A pious wish is expressed that the patient's windows will be kept open and "take all the fresh air you can and don't over-exert yourself." In a more progressive community preventive measures assume the form of the building of a few model cottages, which, however, are quickly filled with a mass of struggling humanity. The struggle to make ends meet, pay rent, and try to "carry on" continues—and the tuberculous cases are still allowed to remain—ignorance as to the preparation of meals, lack of time for rest and recreation, worry, anxiety are scarcely lessened. We have not raised the resistance even in a small degree.

The mere formation of an after-care committee will not afford any solution to a problem which must be attacked simultaneously from all sides by well-directed efforts, every one of which is to be welcomed, not only in respect to tuberculosis, but because the resistance of the race against all disease should be raised. Clear away slums, build garden cities, do all these things by all means, but at the same time make sure that other measures are adopted.

The Control of Massive Infection.

We must, above all, deal with one of the main sources of trouble, the "carrier of massive infection," for pathology

[1] THE LANCET, 1917, ii., 779.

teaches us, and with no uncertain voice, that though small doses of tuberculous virus *may* be harmless, large doses *must* be guarded against.

All are agreed that without infection by the tubercle bacillus there can be no tuberculosis. The usual argument that infection takes place in childhood and need not be taken into account in later life cannot, to-day, be discussed without impatience. Were there no specific bacillary infection, lowered resistance in adolescence would not induce tuberculosis, whatever other disease might manage to obtain a foothold. That we cannot in every case demonstrate the source of infection is no evidence that such infection may be overlooked or disregarded. Men and women are now going about their homes suffering from a disease which, either knowingly or otherwise, is labelled "bronchitis." Soldiers are granted recurrent sick leave on account of bronchitis, and 12 months later are found to be expectorating numbers of tubercle bacilli and *eventually are sent to a sanatorium for three months' treatment.* What an absurdity! The infective material is being expectorated in massive doses, but no means to prevent pulmonary infection are taken. We *could* keep the disease under control. Why have we not controlled it? Instead of going to the root of the trouble we have preferred to put on a patch here and a patch there, until we are obliged to condemn our own methods and are now seeking an excuse to "save our face." With regard to ex-soldiers, at any rate, we are now making no pretence that we select "early cases" for sanatorium treatment, and we are assured that unless cases are selected "early" the results will be eminently unsatisfactory; nor are we making the slightest effort to prevent the spread of infection, to deal with which adequately we must first determine the stage at which the consumptive is most infectious.

To the outer world, at any rate, the *bed-ridden* consumptive in charge of a village nurse is not, when adequate precautions are taken, a danger to the community. The real source of danger is the man who, just able to work, feels well on some days and rather bad on others; who struggles on with his work, often for long hours; who frequents crowded places, such as tramcars, buses, and eating-houses, and comes into contact with children and young people; is careless in habits and manners, coughs a good deal and carelessly, and is said to be suffering from "bronchitis"; the "early case" returned from the sanatorium, or an out-patient at one of our great hospitals. Our sanatoria are not available for these cases; nor are the few homes for the dying willing to receive them—they are probably such a long way from death—and they will not go to the poor-house infirmary.

The Function of the Dispensary.

Most of the consumptives now with us are "advanced cases." They flock to our new dispensaries, and the extensive statistics compiled from the records of the visits of these poor unfortunates are accepted as evidence of splendid things achieved. The higher the figures the more proud are we of the results of our labours; indeed, the efficiency of the tuberculosis officer is judged by the number of clients attending his dispensary—unfortunates, "out of works," the unemployable—a burden to the insurance committees, a trouble to councils and guardians. It is the proud boast of some dispensaries that the number of patients "seen" in a morning amounts to a grand total of 200. Are these 200 there to be cured by means of tuberculin, or cod liver oil, or otherwise? Are they instructed as to the mode of life they should lead? If so, the instruction must be delivered at a very brisk rate, and with scanty respect to detail as to how it is to be put into practice. Many of these patients are sources of infection, but little or no adequate attempt is made to protect the community from the danger to which they are exposed from their presence.

Instead of taking pride that we see 200 in a morning, should it not rather be counted to the dispensary doctor for righteousness that, examining but few patients, he deals with them thoroughly, and then in the interests of the community asks that he may give the unfortunate consumptive an opportunity to live a reasonable life, to do his 50 per cent. or 30 per cent. of work under conditions in which the danger of infecting others is absent or reduced to a minimum.

Sir Robert Philip's well-thought-out scheme is being distorted and turned to very wrong uses. The dispensary—perhaps an unfortunate term under the circumstances—was designed as a centre of activities in a well-defined scheme, but the very keystone of the situation is often turned into a mere adjunct—an out-patient department with none of the special advantages of a large hospital. Here the "material" cannot be used for teaching purposes, for obviously few dispensaries can be attached to medical schools, though were these dispensaries "run" properly they might, in large towns at any rate, become centres at which post-graduate courses of lectures and demonstrations could be given to the general practitioner of the neighbourhood.

The Problem of the Chronic Case.

In the meantime how are we to deal adequately with the mass of infection left untouched by our present dispensary or sanatorium organisation? Most of the patients who spread infection are those for whom there seems to be no niche into which they can be fitted. "Chronic case," says the physician, and as a "chronic case" it is dismissed. But it is this chronic case which day by day obtrudes itself upon our notice. It is this type of patient who steadily descends the social ladder, pulling his family down with him. Did this affect the patient himself, merely, the matter would not be so urgent. The whole family, however, may be brought to the verge of poverty—to abject misery; this quite apart from the risk of infection to which reference has been made, and the problem comes to be of importance from the social point of view. An acute illness of short duration, followed by the death of the bread-winner of the family, is borne comparatively easily. It is the long-drawn-out illness of that bread-winner, with increasing poverty extending over many years, that brings such havoc in its train.

At present we place a premium on infection, in so far as many of our benevolent after-care societies aim merely at the provision of sufficient help to keep the patient out of the workhouse infirmary. Far better that such help should cease and the man be taken into the infirmary and cared for and the infection circumscribed; better still that he be given the opportunity to recover some of his powers of resistance, receiving a sufficiency of food, living in the open, and, under supervision, working part of the day; for with the risk of infection effectually controlled at the source he is no longer a danger centre, especially if the family, also placed in favourable surroundings, have their resistance strengthened and their minds set at rest by the assurance of remunerative employment.

Is it a practical proposition, then, to give to a large number of consumptives the opportunity to carry on their usual or other avocation under conditions carefully controlled by a medical man? It is said that the problem is too vast, the expenditure too great, the immediate prospect of success too visionary. Is this the case?

The Tuberculous Ex-soldier.

It is certainly useless to spend money on treatment which neither cures the patients nor prevents infection of others, but we are justified in doing the best we can for tuberculous soldiers discharged from the Army if there is any prospect of prolonging their lives and protecting their families. Health, even life, has been sacrificed by these men, though the glory of sacrifice is wanting. Theirs is not the honour of dying facing the foe, of being wounded in battle, of losing an eye or a limb, of receiving a visible mark of conflict. Nevertheless, our sympathy and help can never repay the sacrifice made by the man who is wounded no less surely, and no less severely, though by an invisible foe—the man struck down by, and hopelessly invalided through, consumption, often, as we now know from wide experience, neglected and allowed to die a lingering death, through an agony prolonged perhaps for years. There is no lack either of sympathy or of money; neither is it for want of appreciation that the man is neglected—rather is it want of courage, lack of initiative, of imagination, that what at first sight appears to be a hopeless problem is allowed to drift on from month to month, from year to year.

It is argued that consumption is incurable. The physician is most emphatic that the best remedy is prolonged sanatorium treatment, and that, however prolonged, sanatorium treatment must be followed up by "after-care"—a phrase as elastic as it is vague.

Why, then, is sanatorium treatment not prolonged if by its means the "cure" may be made more certain, if lack of accommodation can be no answer nor lack of funds? It is a

problem of "human nature." Few ex-soldiers can be expected to consent to a prolonged course of sanatorium treatment under existing conditions. Has it ever occurred to us to ask the reason for this? Which among us would be content to do useless labour the year round? As one intelligent patient remarked: "We waste time; we wish to learn something, we have nothing to occupy our minds, we want to improve ourselves; you say that we cannot go back to our original trades, yet you do not attempt to provide us with a substitute; we cannot dig, to beg we are ashamed. If we cannot exert our bodies, can we educate our minds?" "Yes," it may be said, "but this was an exceptional patient! Are you going to educate your farm labourer, your van driver, your crossing-sweeper?" Yes. Our object is so to educate the man that he may realise that an intelligent application of what he is taught of his own trade will enable him to carry it on under favourable conditions and surroundings, and it must be our business to see that these surroundings are forthcoming.

To hold that we are at the moment unable to call into existence these circumstances is to beg the question. If it is a question of money, we spend £7,000,000 a day on destruction; a fraction of that sum, properly expended, would soon call the required conditions into existence.

Most of our ex-soldiers are intelligent, keen-brained workers. Two distinguished visitors who came to inspect the colony recently remarked that the patients seemed to be an extremely intelligent set of men, and that there could surely be no difficulty in teaching them a new trade. They were astonished to learn that the patients in question were a window-cleaner, a lodging-house cook, a common sailor, a theatrical scene-shifter, a jobbing tailor, and a plough-boy (this plough-boy showed such aptitude at carpentry that he is now, after six months' training at the colony, earning his living with a firm of carpenters in a large country village).

The patients, given no opportunity to show their intelligence, cannot be blamed if they evince no initiative or desire to start a new trade. If anyone of us were suddenly told—having spent any capital we may have possessed—to start on a new and unaccustomed line, should we not have one or two sleepless nights? And presumably we have been trained somewhat more thoroughly than has the window cleaner or the lodging-house cook.

How frequently we blame the working man when we should blame ourselves for want of imagination and lack of sympathy and foresight! We prescribe a treatment which without our help, often withdrawn at the critical moment, it is impossible for the patient to carry out.

Are we, then, to extend the treatment and our help for "a lifetime"? As far as our present knowledge goes we say, and unhesitatingly, Yes!—not only for the patient's sake, but still more for the sake of those with whom he comes in contact.

Prevention is better than cure, but if the two can be combined we are placed in a position to solve a very difficult problem and to do a really great work. Can the two questions be so linked that one set of machinery may be made to "control" both?

The Provision of Useful Employment.

Directors of sanatoriums find that ex-soldier patients discharge themselves even before the end of the regulation three months. Are there any reasons for this beyond those mentioned above? There are, and they are usually well founded.

1. The temperament of the patient is such that he cannot accommodate himself to institutional life. Such patients are not numerous, but are found in all institutions, and obviously it often becomes a question of the suitability or unsuitability of the patient for the particular type of institution in which he is placed.

2. Patients sometimes discharge themselves owing to domestic or home difficulties. This is generally considered by the medical superintendent as an excuse rather than as a reason, often before investigation is made into the real state of affairs of the man concerned. Can we expect a man who feels fairly well and able to do a certain amount of useful work to grind away for months at monotonous tasks, especially when he knows that his family is on the verge of starvation, or, at any rate, is in worse circumstances than if he were at home and could resume work at his own trade.

Here is the obvious remedy. Let the patient, instructed in a trade which if not his own is closely allied to it, realise that whilst undergoing his treatment he is being trained for a better berth, a more highly remunerative job.

It is the "waste of time" which the patient imagines is going on during his stay at the sanatorium to which he so strongly objects. For the ex-soldier the question of income is of little account, for his family allowances are good and in many cases are equal to the man's pre-war earnings. Still, without stimulus to the brain, with his muscular energy going to "seed" doing monotonous or useless work, a condition of mental discontent, easy to understand but difficult to overcome, seizes the patient, who "does his time" and longs for home.

Experience gained at the Bourn Colony and at Papworth Hall goes far to show that the mental attitude of the patient is materially improved by useful occupation, the nearer to his own trade the better, whilst it is found that with time and care, which assuredly are never wasted, there is no insuperable difficulty in grading any kind of work as may be desired.

What objection is there to a cabinet-maker following his own trade at a sanatorium? Difficulty in supervision? This, in the experience of the colony, amounts to nil. Not sufficient exercise? What, after all, are we attempting? Certainly not to turn a cabinet-maker into a navvy. Quarrying, indeed, is exercise, but it is not essential to the restoration of our cabinet-maker to health. Ours, fortunately, should not be a difficult task; it is to convince the cabinet-maker that he can follow his own trade in the environment of the colony. Make those conditions as favourable but as simple as possible, so that when your patient returns home he may "carry on" under the same conditions. Demonstrate to him that cabinet-making need not of necessity be carried on in a superheated atmosphere—that, at any rate, we have proved; also that lens-mounting and testing in scientific instruments may be carried out without a dark room! The ingenuity of the patients under treatment, properly directed, has already been responsible for the invention and construction of devices and apparatus which enable these men to carry on their occupations under good hygienic conditions.

The combination of sanatorium treatment (perhaps the term "colony treatment" is to be preferred) and industrial work is surely a step in the right direction. We have admitted that there is no "cure" for tuberculosis, and that the best results obtainable are a return to work and a prolongation of life, which may be very extended. If we can bring about the arrest of the disease whilst the patient is carrying on his own trade, have we not solved, partially at any rate, the problem which we set out to solve? Is it necessary that our cabinet-maker should return to an unhealthy workshop to struggle against a bad environment and work at a pressure which will mean a further breakdown? Having determined the conditions under which a cabinet-maker should live and work (we are now dealing with the ex-soldier enjoying a pension), he may obtain those conditions on the colony estate, with the inestimable advantage that his pension will be continued so long as he continues in residence and does part-time work, receiving a fair wage, doing work accurately graded to his strength—no more and no less—and surrounded by a social atmosphere in which he feels that he is a useful and satisfactory member of the community; the State in the meanwhile having the positive assurance that the bacilli which are coughed up by our patient as he goes about are rendered harmless and that the man is thus no longer a danger to his fellows.

The Colony at Papworth.

"The scheme sounds all very well in theory, but have you put it into practice?" Yes; on the colony estate at Papworth are at the present time families whose bread-winners are consumptives, with tubercle bacilli in their sputum, who by means of the State subsidy—a pension—are carrying on their original trade under ideal conditions—happy, contented, and earning their own livings. A concrete proposition has been placed before these men, and they have not hesitated to grasp it and avail themselves of what is its best feature—the shielding of the patient from the keen competition of the outside world.

"All this deals with a mere drop in the ocean! What practical result will be obtained?" Surely, it indicates a means of humane segregation—not making men inmates of an institution merely, but free men in a free English village. What can be done in one district should be possible in others. Progress may be slow at the outset, but once started on right lines may we not expect an increasing momentum?

To what can the success of the experiment be attributed (for that it has been a success we are now convinced)? To several factors, but undoubtedly the chief of these is the payment of the soldier's pension, a State subsidy.

At no previous time has there presented itself such an opportunity of subsidising carefully controlled and graduated labour—a control at once complete, humane, and sympathetic. The elimination of all harshness or scrimping is essential; the patient must be kept well away from the poverty line. A pension continued even for a number of years is a small price to pay for the doing away with infection even of a single individual, but from this cost must be taken the return in life and work, which is ample. But not only are the immediate members of the man's family protected, but his fellow workmen, his old acquaintances at the public-house, his fellow travellers in train, tramcar, and bus—all benefit from the removal of this single source of infection. And what of the patient himself? He enjoys a four- or a six-hour working day; his leisure hours are spent in a garden, his own, planted with his own hands, with which also the fruits of his labour are gathered in; he enjoys the entertainments given at the colony from time to time, and with a library placed at his disposal his mind is kept active, and also by the stimulus of popular and entertaining lectures.

A Hopeful Outlook.

What patient with these advantages would, if matters were explained to him, return to a crowded street, struggle on working 10 hours a day, gradually break down and be left to the tender mercies of the relieving officer? The social life of the colony, though touched upon incidentally only, is a vital part of the scheme, and must on no account be neglected. A patient used to town life cannot be expected to leave all its attractions and banish himself to the country unless he may look forward to some compensating advantages. Make an attractive proposition to him, and offer him a life worth living, and the community will receive—in value commensurate with the degree of infection removed—a full return for its outlay.

We are aware that we are limning a bright and pleasing picture, and it may be objected that the number of patients already dealt with is so small that such a picture is overdrawn, and further that it is impossible to generalise from so few special cases; but we may remind our readers that the idea of even one patient subjecting himself to the colony treatment has often been scouted, but the one came, and if one, we argued, why not two, if two why not more, and we were not wrong. Difficulties there were and will be—that of removing objections was admittedly great, but now with the experience gained there appears to be no reason why all or many should not be persuaded to come. As a matter of fact the applications for houses on the estate are at the moment more numerous than are the houses at the disposal of the committee.

It often happens, when it is first suggested to a resident patient that it would be well for him to bring his family on to the estate and work there, that he will not listen to the proposition, or he makes demands and conditions that it is impossible to meet. He tries to work at home but breaks down. Then it is that he is willing to bring his family with him and return to conditions which he finds were sound and under which he had a few months previously regained so large a measure of health and strength. He has learned his lesson in the hard school of experience; our advice is recalled and conviction is followed by action. The man is ready to make a sacrifice and we are ready to render that sacrifice as slight as possible. We place before him a concrete proposition ensuring work under favourable conditions for a number of years, this number now depending upon the funds available for the purchase of land and for the building of houses, and usually our terms are accepted.

We now know that there will be no lack of applicants for the houses on the estate. The non-infectious and the more able-bodied will not remain longer in the colony than is necessary to establish their health and working capacity. The chronic cases with numbers of bacilli in the sputum, patients who have no friends but who have a 50 per cent. working capacity when working under ideal conditions—we shall continue to welcome. They are the despair of the general practitioner and of the physician to the out-patient department, but there is no difficulty after gathering them in, in helping them. Their labour cannot be fully remunerative, it is not expected to "pay," but with their "subsidy" there will be no great loss, certainly no greater loss to the State in the long run than at present. Any deficit is the price the State must pay for the elimination of centres of infection, without which all the benefits of our building schemes will be neutralised and our good intentions brought to naught. By all means house the working classes properly—that is a far-sighted policy; but keep the new houses free from infection.

Outline of the Scheme.

It may be objected that a coöperative system such as that now suggested is far removed from the activities of an institution. This may be true, but the scheme of the colony is essentially more comprehensive than that of the sanatorium. On the one hand, it reaches towards an intelligent after-care movement, and on the other it is wide enough to provide hospital accommodation for a patient resident in a cottage who has a serious breakdown—and even under the most favourable conditions this is inevitable—and the hospital after all is the centre of the activities of the community as far as the restoration to health of its inhabitants is concerned, though the colony scheme embraces all the essentials of the ideal system which is the aim of "after-care" committees to establish.

It comprises hygienic housing conditions, abundant light and air, an efficient nursing staff available from the central institution—a staff known and trusted, friends rather than officials; a garden, the ideal exercise ground, combining that privacy and feeling of ownership so dear to the heart of an Englishman; and workshops, the property of the colony, where the work is strictly regulated according to the patient's health and strength. In some cases the work is done "at home" in a room or building specially adapted for the purpose, where the patient may learn to live the life that is best suited to his special condition. The income earned by the patient at his trade is, with the pension earned as a soldier, sufficient for his needs, but the necessary incentive to do more and better work is never wanting, for although the amount of the pension remains the same the wage earned depends on the skill and assiduity of the patient and the number of hours during which he can train himself to work.

It has been hinted that the colony is admirably suited to the development of slackers—an idlers' paradise. A consumptive patient with numerous tubercle bacilli in the sputum can never be set down as a slacker. He is definitely diseased. There can be no question of malingering. The proof of the presence of the disease can be demonstrated. The oft-repeated mistake of accusing the consumptive of slackness is a sure road to disaster. With all the good will in the world he is unable to do a full day's work. It must not be expected of him. Once the presence of the bacillus is ascertained and the diagnosis established the greatest caution must be exercised in dealing with so-called slackness, for be it remembered that the consumptive is a strange psychological phenomenon, and as a rule is ready to do more work than is good for him rather than too little. This is not the experience of all officers of sanatoria, but we believe that the explanation is that the work given is monotonous and irksome, and often not well adapted to the man's temperament. Here we assume that the man is working at his own trade or one nearly allied to it, that he is earning some money by it and is looking forward to earning more, and it is our experience—now not a negligible quantity—that the patient far from slacking takes pride in showing how well he can do his work. The more advanced the disease—within, of course, well-defined limits—the more anxious is he to "carry on." The exceptions, few in number, have to be dealt with specially.

The Colony a Complete Scheme.

As yet it is scarcely realised that the colony, hospital and settlement constitute a complete scheme to deal with tuberculous cases of all kinds. Here is no picking or choosing of the type of case to be treated. Some critics object that the work is not strictly limited to the so-called early cases, whilst others, especially corporate bodies, appear to think that the colony should be filled with cases practically hopeless from the beginning, and with these only.

We have given our reasons for following a line laid down at a very early stage of our work, and we are convinced that any departure from this line would interfere most seriously

with the working of the scheme as a whole. If, on the one hand, any but curable cases are refused admittance, the most dangerous and pitiful cases are left at large to injure others and to suffer alone; whilst if nothing but advanced cases are admitted the colony at once becomes a hospital—nursing staff, hospital accommodation, expenses all increasing out of proportion to the good effected—and the colony, instead of taking its place in a well-rounded scheme, becomes a hospital for incurables, a home for the hopeless, and a place to be avoided by the hopeful, with the great moral elements of hope and encouragement essential to success for the treatment of all tuberculous patients completely eliminated.

Naturally, it is a source of intense satisfaction to us that the £75,000 voted by the British Red Cross Society to her sister society in France is being devoted by that society to the provision of a colony for the treatment and training of tuberculous soldiers—a colony to be laid down and administered on similar lines to those on which the Papworth Colony is run.

COLONIES FOR CONSUMPTIVES.

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BROADLY speaking, there are two alternative policies relative to the treatment of the consumptive worker: either the patient must be kept at an institution until he is cured and can return with reasonable confidence to his former life and employment—this may be a matter of years—or, following a shorter course of sanatorium treatment, we must so change his environment as to render his conditions at home and at work such that recovery from tuberculosis is possible. It is the realisation of these facts that has led to the evolution of after-care organisations and, more recently, to the conception of colonies for consumptives.

The Two Types of Consumptive Colony.

The term "colony" is used to describe two types of institutions. These two colony schemes, though having much in common, present certain distinctive features which sharply differentiate the one from the other.

Scheme 1, associated with the name of Sir Robert Philip, provides for an institution for the exclusive reception of the early and most curable cases, with a view to giving them prolonged treatment and a training in some agricultural employment. Though linked up with the sanatorium from which the colonists are drawn and with the other elements of a comprehensive anti-tuberculosis administration, it is designed as a separate institution. Equipped upon simpler lines than a sanatorium, it is less costly to administer. Moreover, the patients, by performing useful work in the institution and in the grounds, gardens, and farm, are able to reduce somewhat the cost of their maintenance. To give the favourable case some 12 or 18 months' institutional treatment in place of the more usual period of three to four months should, apart from any question of re-education, appreciably improve his outlook. The patient returns home, having made substantial progress on the road to recovery. With some after-care he may be expected, in many instances, to attempt successfully a return to his ordinary life and employment.

Scheme 2 is more comprehensive in scope, in that it makes provision for all kinds of cases, irrespective of the extent and character of their disease. Thus it comprises, under the same administration, a sanatorium, a colony as in Scheme 1 for vocational training, and a home for advanced cases. The opportunity for occupation and vocational training, however, is not limited to the most favourable cases, but is offered to every patient who desires it and who has a prospect of some degree of restoration of working capacity. Further, recognising that many patients can never be so restored to health as to be able to hold their own in the open labour market, the colony seeks to establish suitable trades and industries which, by offering remunerative employment under favourable conditions, will not only give scope for re-education, but encourage the permanent settlement in the neighbourhood of the colony of ex-patients and their families, thus forming the nucleus of a community living under the healthy conditions of a garden city. It is hoped that by this means the voluntary segregation of the consumptive will gradually be achieved.

This type of colony owes its inception to Professor Sims Woodhead and Dr. P. C. Varrier-Jones, and it is upon these principles, just briefly outlined, that the Settlement at Papworth is now being developed, under the care of these two pioneer workers. The experiment of Papworth cannot fail to be most instructive. Should it prove that the setting up of industries for the employment of consumptives is a practical proposition, a vista of great possibilities will be opened up.

Experience of Sanatoriums in the Colony Principle.

Hitherto, for lack of money, neither prolonged treatment nor re-education has been possible except on a modest scale. What these measures might effect if adopted systematically is therefore, to some extent, a matter of speculation. However, many sanatoriums present striking examples of the efficacy of suitable employment under favourable conditions among their personnel. To name two institutions—at Peppard Common over 50 per cent., and at Nayland 70 per cent., of the staff are made up of former patients. These individuals are all earning their livelihoods. Some are on the permanent staff, to all appearances cured, others will remain for a year or two, then to return to the outside world; others again will remain indefinitely, performing work within their capacity, partially disabled for all time, but still useful members of society.

Similarly, after-care organisations furnish many instances of the maintenance of health and capacity for work by consumptives for whom healthy and sufficiently remunerative employment has been secured. That the principles underlying the colony idea are sound need not be insisted upon it is rather a question as to how far they can be put into practice on a large scale.

Experience of Existing Colonies.

As yet colonies in the country are too recently established to provide data of much value. None the less, the experience of a few institutions is sufficient to give some idea of the probable usefulness of colonies, and of the lines upon which these institutions may best be promoted.

The Edinburgh Colony.—The Springfield Colony, near Edinburgh, was organised by Sir R. Philip and opened in 1910.

The colony consists of a mansion house and 30 acres of land, comprising two acres of fruit and vegetable garden, a poultry farm, pig-rearing department, and a mixed farm of 12 acres. There is accommodation for 25 patients, who under the direction of the resident staff, assist in the various activities of the colony.

Data kindly given me by Sir R. Philip relative to the period 1910 to 1914 show that during these years 88 patients transferred from the associated sanatorium passed through the colony, the average length of stay being some 12 months. Of this number, 11 on their discharge changed their employment for work other than on the land. Nine returned to their former occupation, 20 returned to work on or in connexion with the land, mostly in the colonies, 2 were taken on to the colony staff, and 5 female patients emigrated, domestic service seemingly being the occupation usually followed. The remaining patients returned home but to no stated occupation.

The condition of these 88 patients in 1917, exclusive of 4 who had been dismissed from the colony and 6 who have been lost sight of, was as follows: Well and in full work, 44; in poor health, 4; died of injuries or disease contracted on active service, 3; died of tuberculosis, 25; died, cause not stated, 2.

The Leicester Colony.—The experiments in this colony, carried out under the direction of Dr. Killick Millard, medical officer of health of the city of Leicester, date from 1914.

The 1914 scheme consisted in the placing during the summer months of a small number of convalescent sanatorium patients upon a large nursery in Derbyshire, practically a summer camp. Though on a small scale, the experiment was a success. The patients all benefited greatly, and allowing for the income they earned by their work on the nurseries the cost of their maintenance worked out at approximately 11*s.* a week.

By the 1916 and 1917 schemes convalescent male patients were employed under a skilled gardener in a large fruit and vegetable garden within easy access of the sanatorium. Though living within the sanatorium precincts, the colonists, limited in number to 20, were accommodated in a separate pavilion and followed a different routine from that of the patients in the main sanatorium. In particular

they enjoyed the privilege of being allowed to go home at week-ends. The average stay at the colony worked out at three months. It was found difficult to persuade the most suitable of the sanatorium patients—namely, the able-bodied, to enter and remain in the colony, the men preferring to return to work at which they could earn a high wage. Clinically the results were most satisfactory. Financially, the cost of maintaining the patients in the colony department was the same as the weekly cost ruling in a sanatorium, the return from the colonists' work being sufficient approximately to pay the wages of the skilled instructor.

Nayland Sanatorium and Colony.—At this institution, conducted by Dr. Jane Walker, a good deal of pioneer work upon colony lines has been carried out during the 16 years of its existence.

Although essentially a sanatorium, the work at Nayland has always been governed by the desire to promote the interests of the patient after his discharge from the sanatorium. As previously stated, every available post on the staff is filled by an ex-patient. Some of these former patients thus employed in the institution live in a hostel some distance from the sanatorium, and form the nucleus of a settlement. With regard to employment and vocational training, apart from instruction in gardening and vegetable growing no attempt is made to give an agricultural training. However, the sanatorium possesses a mixed farm of 200 acres, should the future see any demand for a training for the land. Considerable attention has been devoted to handicraft. At the present time there is provision for instruction in carpentry, toy-making, and boot-repairing for men, and for dressmaking and embroidery for women. These facilities are open to all the patients. Another feature which has a distinct value as an education is the sanatorium shop run on the lines of a village store. Here patients can learn the management of a small village business. More definitely upon colony lines is the dressmaking shop in the neighbouring village of Nayland staffed by four former sanatorium patients, and the school of high-grade metal craft recently established in the same village. This latter technical training colony is accommodated in picturesque premises, equipped with admirably fitted workrooms, formerly a leather factory. It accommodates 25 patients, who will be taught an interesting and remunerative trade. Certainty of employment is assured to the proficient by the Artificers' Guild, with which this enterprise is closely identified. Mention also should be made of the department for the treatment and education of tuberculous children, which forms another interesting feature of Dr. Walker's establishment.

The Papworth Colony, near Cambridge.—The Papworth Colony, directed by Dr. Varrier-Jones, is a development of the earlier enterprise carried out at Bourn. Its characteristic features have already been referred to.

The colony comprises a large mansion, with grounds of 16 acres, which include a large walled-in kitchen garden and orchard, and 100 acres of agricultural land. The mansion is devoted to administrative purposes and to the accommodation of advanced cases. Accommodation for the more favourable cases is furnished by shelters built in the grounds. To provide means of useful employment for the patients, a carpenter's shop, forge, and mechanical workshops are in course of construction. Already the carpenter's department is well developed, and is in a position to execute orders for open-air shelters and other portable wooden structures. This department is managed by an ex-patient, a skilled carpenter, and is run on business lines; the actual work is carried out entirely by the patients. The making of parts for the Cambridge Scientific Instrument Company is another enterprise which has passed the experimental stage. Opportunity for the employment of some women patients is supplied by a neighbouring fruit and jam-making industry. The gardens and land offer an agricultural training to those who elect for it. With a view to the permanent settlement of ex-patients the colony has acquired some model cottages formerly occupied by employees on the estate; the erection of further cottages will be the work of the patients. Already applications by former patients for cottages exceed the available accommodation.

The Kinson Colony, Bournemouth.—This colony, under the management of the Y.M.C.A., is a unique experiment in that it offers facilities for a complete training extending over a period of at least 12 months in small-holding management and intensive culture.

Admission is limited strictly to fully convalescent patients who, while resident in a sanatorium, have proved themselves equal to at least six hours' manual work daily. There is accommodation for 21 colonists. The work is directed by an honorary resident superintendent, a gentleman of long experience of farming. Dr. E. H. Greves, of Bournemouth, acts as honorary visiting physician. Some difficulty has been experienced in obtaining the full complement of 21 colonists; the length of the training required and the uncertainty of employment subsequently would appear to be the chief deterrents. Further, the physical standard required of candidates is a high one and excludes many would-be colonists.

The Hairmyres Colony, Lanarkshire, N.B.—Though not yet fully organised, the Hairmyres Colony demands notice, since it is the most ambitious scheme yet projected.

The colony is intended for the after-treatment and training in an outdoor occupation of favourable cases and for the treatment and education of children. The colony, situated within easy access of Glasgow, extends to 200 acres. The buildings, which are well advanced in construction, will accommodate approximately 50 men, 50 women, and 50 children. A model farm and the best possible equipment for training in poultry-keeping, fruit and vegetable growing—in short, all kinds of agriculture and horticulture—are being provided. A noticeable feature is the Associated School of Forestry, at which suitable patients will receive a thorough training in theoretical and practical forestry. Each department of the colonists' activities will be in charge of a skilled foreman. Dr. A. H. McPherson, under whose care the colony is developing, will be responsible for its general direction.

Space will not permit of reference to other colony undertakings.

The Financial Aspect of Colonies.

Running expenses.—It has been shown that an institution for convalescent patients can be run at a lower cost per head than a sanatorium. Simple accommodation and equipment and quite a small staff are sufficient; moreover, the labour of the colonists can contribute considerably to the running and upkeep of the establishment. Apart from thus reducing current expenses, it has not been demonstrated that patients by their work can add appreciably to the income of the colony, much less render the institution self-supporting. At the Edinburgh Colony the cost per head of 20 patients for the year 1915–16 worked out at 22*s.* a week. At Coppings Green Market Garden Colony, managed by Dr. J. E. Chapman, in 1906, the cost per bed per week of 25 patients was 21*s.* Under peace conditions the cost of maintenance per head at a colony should not exceed approximately 20*s.*, and might well be a lower sum. That efficient treatment can be given at a low cost has been proved conclusively.

Capital cost.—The capital cost of colony schemes varies enormously, depending upon their scope.

The Hairmyres scheme has been budgeted for at some £100,000. The Edinburgh Colony cost approximately £4000 to establish. The cost of the proposed colony at Hull is estimated at £10,000, inclusive of the purchase of freehold, adaptation, equipment, and endowment; the colony will accommodate at least 35 patients. In respect to purchase, a capacious house, two cottages, buildings, and other out-offices, with 29 acres of land, valued at £3750, have been purchased by Sir James Reckitt and placed at the disposal of the Hull Tuberculosis After-care Committee, with option to purchase at any time for the sum of £2000.

The capital cost of the original colony at Bourn for 15 patients was a rental of £20 a year for the main building and 10 acres of land and £400 for alterations and additional buildings. The Coppings Green Colony for 25 patients was established on a similar economical basis, the rent of the buildings and 10 acres of land having been £20 per annum, and the cost of alterations and equipment having been covered by an outlay of £400. The Y.M.C.A. Colony for 21 patients, complete with buildings, including farm buildings, equipment, and 30 acres of freehold land, cost £4000.

At Nayland the premises which comprise the colony for technical training are rented for £80 a year, and the sum of £300 has covered the cost of equipment. The instructor receives a salary of 90*s.* a week.

At this moment, when labour and material are scarcely to be obtained, the most economical method of establishing a colony is by renting and adapting suitable premises, as has been done at Bourn and Nayland.

Experience shows that a colony can be run with equal success as a distinct institution or as a department of an existing sanatorium. A colony on the Papworth principle could be built up round the nucleus of a sanatorium. A distinct advantage in grafting a colony on to an existing institution is that thereby an experienced medical staff is immediately available, and that various essentials, such as light, drainage, power, water, transport, &c., are already provided for. It is necessary that the work of the patients,

whether on the land or in workshops, be directed by whole-time skilled officers, since the medical superintendent is too occupied to spare the time for teaching, even should he possess the requisite knowledge.

The Probable Rôle of the Colony.

It is the general experience that few things are more difficult than satisfactorily to change a consumptive patient's occupation. Light employment requiring little training is usually ill-paid, and in consequence unsuited to anyone with dependants. For the more skilled trades, which command a good wage, long training and experience are necessary. It can readily be understood, then, how that the most successful efforts of after-care organisation have been associated with the principle of enabling the patient to follow his usual occupation, or something akin to it, under reasonably healthy conditions.

Hitherto the training given to patients in a sanatorium has been valuable, chiefly as providing an interest, and thus relieving the monotony of a somewhat stereotyped routine. Comparatively rarely has a patient been enabled to earn his livelihood in a new calling learnt at the sanatorium. In the past most success has followed the training of patients as chauffeurs, but in future this avenue of employment seems likely to be closed.

It seems probable, therefore, that colonies will achieve more in virtue of the prolonged treatment they will give than as the result of their facilities for vocational training. So far as the civilian is concerned, vocational training cannot meet with any great measure of success unless it be accompanied by the provision of employment for those trained. This truth is reflected in the suggestion of sanatorium workshops and factories in connexion with certain trades which would permit of consumptive employees following their usual occupation under favourable conditions.

With regard to agriculture, it is the general experience that farming operations are too skilled and too arduous to be suited to many patients, although they are admirably adapted to the treatment of the more robust; moreover, few individuals born and bred in a town take kindly to a rural life. Except in the case of institutions serving rural areas, more may be expected from handicrafts than from agriculture in the way of re-education. Every institution, however, should be able to give the townsman some practical knowledge of kitchen gardening and allotment culture.

Financial Aspect of Colonies from Standpoint of Patient.

Hitherto the work of the colonies and of sanatoriums has been handicapped by the fact that, owing to lack of means, patients with dependants cannot afford to remain away from home for long periods. At Edinburgh the colonists during 1910–14 were limited almost entirely to the unmarried. Latterly the depleted labour market has made it possible for even the less fit to obtain profitable employment. It is not easy for the able-bodied consumptive to acquiesce in working at a colony for no wage, while a good income awaits him outside. The Leicester Colony was forced to close in 1916 on this account. The future may well see the payment of a wage to patients in a colony, a principle which has been adopted at some colonies in Germany.

Unless arrangements can be made for the care of dependants it is difficult to see how, in the cases of civilians, prolonged treatment and training can be made possible except on a small scale. Some form of subsidy will be needed to render the principle capable of general application. The discharged service man in enjoyment of a pension is much better situated. The fact that he can leave home in the knowledge that his dependants are provided for gives him advantages which the civilian has never enjoyed. There exists, therefore, an exceptional opportunity for testing the feasibility of subsidised training and treatment, an opportunity which it is to be hoped will be fully exploited, since the results cannot fail to be of far-reaching importance.

UNIVERSITY OF LONDON.—Of the 57 successful candidates at the recent Second Examination for Medical Degrees, Part II., 35 were women and 22 men. Of the former 29 were students at the London (R.F.H.) School of Medicine for Women (two of these also studied at other schools), 4 at King's College, London, 2 at University College, Cardiff, and 1 each at Cambridge and Manchester Universities.

THE RAPID CURE OF HYSTERICAL SYMPTOMS IN SOLDIERS.

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INCREASED experience in the treatment of the hysterical symptoms which form one of the largest classes of war neuroses has led to gradual simplification of methods and increasing certainty and rapidity of cure.

Earlier Experiences.

From the earliest days of the war we realised that recent cases could generally be cured quickly and completely by a variety of methods, including simple persuasion and re-education, suggestion with the aid of electricity in the waking state, and suggestion under hypnosis or light anæsthesia. But occasionally improvement was slow and incomplete, and when patients reached us after being under treatment for long periods in other hospitals we did not expect such good results.

Even in hysterical aphonia and mutism, which almost invariably disappeared after a few minutes' treatment, sometimes after lasting for a year or more, the more serious speech defect was often followed by a stammer, which might require careful re-education for several weeks before complete recovery occurred. Indeed, we regarded stammering as one of the conditions in which a rapid cure was rarely possible even in early cases.

Another condition of this sort was tremor: we were confirmed in this conclusion by the opinions which had been expressed by two such distinguished neurologists as Babinski in Paris and Oppenheim in Berlin, both of whom regarded the tremor of soldiers as a special neurosis of emotional origin, which differed from hysterical symptoms in being much less amenable to psychotherapy. We were fortunately less influenced by the writings of Babinski and Froment on reflex neuroses, acceptance of which would lead to the belief that contractures associated with vasomotor and secretory changes are not hysterical and could at the best improve very slowly with physicotherapy.

During the last few months we have come to realise that stammering and tremor, except the fine tremor of the hands and head in pure neurasthenia and hyperthyroidism, and all the cases we have seen which corresponded with Babinski and Froment's description of reflex contractures, are as amenable to treatment as hysterical mutism, aphonia and paralysis, and that they are undoubtedly of pure hysterical origin.

Rapid Cure.

Our more recent experience has shown that the prolonged re-education which we had thought was required to convert into a cure the great improvement which followed the active treatment of long-standing cases directly after admission is unnecessary, and we are now disappointed if complete recovery does not occur within 24 hours of commencing treatment, even in cases which have been in other hospitals for over a year.

If a man with severe hysterical paraplegia of many months' duration is taught to walk in half an hour, and treatment is then discontinued on account of his fatigue, although his gait is stiff and unsteady, he will probably not walk normally until he has undergone re-education for several weeks. But if the officer in charge not only ignores the patient's fatigue, but also his own, and continues the treatment for another half-hour or hour, or even for two or three hours, the patient will end by walking with a normal gait, although, of course, some time will elapse before he completely regains his strength. In the same way a mute or aphonic soldier, who stammers on recovering his voice, should not be left until the stammer is also cured, or he will only recover completely after receiving daily lessons for some weeks.

It is thus not merely in casualty clearing stations that immediate recoveries should occur in the vast majority of cases, but they should occur with equal frequency in hospitals in England. Unfortunately, the hysterical nature of many cases is not always recognised, and patients are

kept in bed for months together for the supposed organic results of shell shock or spinal concussion, or are regarded as suffering from some incurable disease of the spinal cord. Thus we have had seven cases of hysterical paraplegia sent in as disseminated sclerosis and two as primary lateral sclerosis in the last 12 months. Rapid recovery followed the recognition of the true nature of their condition.

Many errors in diagnosis are quite excusable, as organic conditions are often very closely simulated, and without the large experience gained in special hospitals during the war we should have had much difficulty in reaching a correct diagnosis. It is for this reason that all cases of nervous disorders in soldiers, apart from those due to actual injury of the central nervous system or peripheral nerves, should be admitted direct or transferred as quickly as possible into special hospitals, the number of which should be largely increased. Hysterical symptoms would then be diagnosed at an early stage and appropriate measure would be taken to cure the patients at once. Men would be fit to return to duty or to earn their living in civil life in a few weeks instead of having to be invalided from the service more or less completely incapacitated after being in hospital for months or even years.

Prognosis.

The following cases, all of which were treated in the neurological section of the Royal Victoria Hospital, Netley, between December, 1917, and February, 1918, illustrate how rapidly a cure may follow when the hysterical nature of the symptoms has been recognised, in spite of having persisted for many months or even for more than a year.

The question may be asked whether such cures are permanent. Experience shows that relapse is rare if a cure is obtained within three or four weeks of the onset. It is more common the longer the symptoms have lasted, but the liability to relapse is greatly reduced if the patient is given open-air work and kept under observation at the hospital where he was cured for a few weeks before returning to duty. It is for this reason as well as for the sake of the numerous neurasthenic and psychasthenic patients that country hospitals with sufficient grounds to give opportunities for a variety of open-air employment whilst still under military discipline are so desirable.

In very long-standing cases it is generally wise to invalid the patient from the service even if recovery is complete, as a return to the front would be likely to cause a relapse, particularly if the patient is also neurasthenic or otherwise unfit, but a pension of more than 20 or 30 per cent. should never be necessary. So far as we know relapses have not occurred after discharge, except during air raids among men living in London. This is an additional argument, if any are still necessary, for the removal of all patients, officers as well as men, suffering from war neuroses out of London.

Essential Points in Treatment.

We have almost entirely given up hypnotism in the treatment of hysterical conditions, as our results were uncertain, and we have seen so many patients with whom prolonged treatment by hypnosis before admission had proved unavailing and had even given rise to new symptoms. Suggestion with the aid of electricity we rarely employ, except in some cases of flaccid paralysis, in which contractions produced in the paralysed muscles powerfully appeal to the patient's mind, and in resistant cases of speech defects.

Our method now is simple persuasion and re-education continued with manipulation. But an all-important preliminary is the creation of a proper atmosphere. After admission the sister encourages the patient to believe that he will be cured as soon as the doctor has time to see him. If paraplegic or mute, two or three patients in the ward who have been rapidly cured of paraplegia or mutism tell him of their cure. The medical officer sees him some hours later, and after examining him and coming to the conclusion that the condition is hysterical he tells him as a matter of course that he will be cured the next day. By the following morning the patient is fully convinced that the hoped-for cure will take place. As the medical officer is equally convinced that he will cure the patient, the two essentials for recovery are present. The nature of the actual treatment is really immaterial, but simple persuasion has the great advantage of making the patient take an active part in his own cure, and it removes any suspicion of charlatanism from the proceedings.

Illustrative Cases.

1. *Hysterical paraplegia of 8 months' duration following shell shock cured in half an hour 14 days after being awarded a 100 per cent. pension for total incapacity.*—Driver T., aged 22, was blown up by a shell in April, 1917. He felt dizzy, but carried on. In August the regiment was sent to England, and in September, 1917, he collapsed in the barrack square. He was transferred to Netley from another hospital on Feb. 2nd, fourteen days after he had been invalided from the service and awarded a 100 per cent. pension for four months on account of total incapacity. He was suffering from a typical "watch spring tremor" of his legs, and was unable to walk for more than a step without assistance. Putting on shoes or socks was an impossibility. He was treated a few hours arter admission. Relaxation of his muscles was obtained in half an hour by passive movements accompanied by verbal suggestion. He returned to his ward unaided, and next day was able to take part in outdoor employment.

2. *Hysterical paraplegia, talipes, tremor, and stammer of 14 months' duration cured in 1 day.*—Sergeant-Major P., aged 32; blown up in December, 1916; unconscious for some days. He was paraplegic, stammered badly, and had generalised tremor on admission to hospital in England, where he remained 3 months. Then transferred to hospital in London; remained until Dec. 20th, 1917. Treated with massage and electricity; no improvement occurred until air raid in September. This upset him for several days; then found he could walk a few steps, but shook violently whole time. A piece of bone was removed from left foot in October to correct talipes equino-varus which had developed. Operation seems to have had no good effect.

At Christmas he was sent to convalescent hospital; admitted to Netley on Feb. 14th, 1918. He stammered badly and had severe tremor involving both legs, which increased with every voluntary movement, unable to stand; could walk a few unsteady steps with sticks, when further progress was prevented by violent tremor of legs.

As no signs of organic disease were found he was told that treatment on following day would cure him. The presence in ward of three men recently cured of paraplegia helped to convince him. Next morning first one leg and then the other was passively flexed and extended until all rigidity and tremor had disappeared. He was then told to take part in movements by voluntary action, and finally to continue them without assistance. In five minutes he could move both legs whilst lying in bed without any tremor. Up to this time on attempting to speak his expiration became extremely unsteady; he was now told to breathe slowly and deeply, and with each expiration he repeated a single word until he could do this without any stutter. The next stage was to repeat two and then three and four words with each expiration.

Having now had a rest for his legs for ten minutes, the passive and active movements were repeated sitting up. After this he was persuaded to stand and finally to walk without shaking, at first with very slight support to outstretched hands to give confidence. In a couple of minutes he was able to walk without any help, and five minutes later was walking almost normally. As he was feeling faint he was now allowed to rest.

He repeated the talking and walking exercises by himself at intervals during the next few hours. By 5 P.M. he was talking slowly but without any hesitation, and he walked a quarter of a mile with a gait normal except for a slight limp due to talipes equino-varus.

As it seemed impossible to overcome deformity of left foot by manipulation it was thought at first to be be due to some organic injury, especially as an operation had been performed upon it. Moreover, it was colder than right foot and was always wet with sweat, whilst right foot was dry—evidence accepted by Babinski as excluding hysteria and suggesting a "reflex" origin. More vigorous manipulation two days later, continued for 1½ hours, resulted, however, in complete disappearance of the deformity; patient now able to walk without any limp. It is obvious, therefore, that the talipes was hysterical in origin, and any improvement following operation in London must have been due to suggestion.

3. *Hysterical gait and swaying movements and nose-wiping tic of six months' duration following shell shock cured in two hours.*—Pte. B., aged 32, went to France in April, 1917; buried by high-explosive shell in August. In hospitals in France until Dec. 21st, 1917; then sent home; transferred to Netley on Jan. 21st, 1918. No evidence of organic disease, but he could only walk with difficulty; gait extremely unsteady; he threw right leg outwards, somewhat suggestive of organic hemiplegia. On standing his body incessantly swayed backwards and forwards; unless he received support would fall after a couple of minutes. He moved right hand up to nose as if to wipe it all day without intermission, both when resting and trying to walk.

We told him he would receive treatment which would certainly cure him two days later, but we did not intend to do so at once, as we wished to obtain a kinematograph record of gait and tic. This was done at 10 A.M. on Jan. 23rd. He was then treated by active persuasion and re-education without any help by electricity or any other methods of suggestion; improvement was so rapid that by 12 o'clock another kinematograph record was taken; abnormal gait, swaying movements, and tic had disappeared. He not only was able to walk quite well, but could actually run.

4. *Hysterical paraplegia of three months' duration following shell shock cured in 20 minutes.*—[Details of some cases are omitted owing to lack of space.]

5. *Hysterical paraplegia following trench fever and complicated by malingering; mistaken for primary lateral sclerosis; cured by persuasion after persisting for three months.*—Pte. H., aged 38, some weakness in legs ever since he got wet in trenches in February, 1917. In beginning of November, 1917, he developed trench fever with pains in legs. Pain severe; it was noted in France on Nov. 10th that he was disinclined to move his legs. Admitted to English hospital on 19th; both legs rigid and completely paralysed. Diagnosis of primary lateral sclerosis. Knee-jerks exaggerated and followed by excessive spasms of extensor muscles of thigh; ankle clonus said to be well marked.

On admission to Netley on Feb. 1st still unable to make any movements of legs or to sit up. No evidence of organic disease; no ankle clonus; knee-jerks normal when muscles were completely relaxed. Patient was told that he would be rapidly cured, but it was obvious he

did not believe this. The next day an effort was made to cure him in the usual way by persuasion. For five minutes improvement was unexpectedly rapid, the spasms being quickly overcome and passive movements followed by normal active movements. He then suddenly appeared to realise that he was getting well, but did not wish to do so; his legs became extremely rigid again, and every effort to move them met with violent struggles. Repeated efforts were made to overcome his resistance during rest of day; he fought and screamed; no improvement resulted.

As it seemed clear there was now a large element of malingering he was isolated behind screens; nobody allowed to speak to him; not allowed to smoke, read, or write. Diet of only water, bread, and meat. At end of 48 hours he said he would try to walk. With no preliminary passive or active exercises whilst lying down, he sat up without assistance and walked for a few steps with body bent far forward. He then refused to move any more; again isolated.

On Feb. 5th Pte. P., who had come in previous day with hysterical paraplegia and was already completely cured, was shown to him, and he was told there was no reason why he could not walk equally well. He at once got out of bed and walked almost normally. The isolation and food and other restrictions were removed, and after a few days of further re-education recovery was complete.

6. *Hysterical tremor and stammer following shell shock cured in one day seven months later, 25 days after being awarded 100 per cent. pension for "total incapacity."*—Gunner McG., aged 22, was admitted with board papers fully made up, from which the following points are extracted: "(1) It is very difficult to get any definite history out of this patient; (2) A. F. W. 3494 signed with X as he was unable to write owing to the tremor; (3) the special medical board recommended 100 per cent. pension for four months for total disablement."

When admitted 25 days after the board he was suffering from marked tremor of arms and head. Eating was extremely difficult as he could not approximate his hand to his mouth. He spoke with a severe stammer. He was treated within three hours of admission; passive movements of arms and head accompanied by verbal suggestion carried out for 15 minutes caused relaxation of muscles and cessation of tremors and stammer. He returned to ward; next day was on out-door employment and has remained well. The history subsequently obtained is that he was blown up when on duty at an ammunition dump in July, 1917. He was dazed, but returned to duty for one day and then collapsed. His symptoms were increased by an aeroplane raid on his hospital in France. Since then he has passed through seven hospitals.

7. *Hysterical paraplegia and tremor of jaw and limbs following shell shock cured in one day after lasting 16 months.*

8. *Tremor of jaw of three months' duration cured by six hours' continuous treatment.*—Pte. B., aged 36, admitted with tremor of jaw, present for three months, and dating from attack of fever associated with a rigor. Tremor was intensified as he had an extremely bad set of false teeth; rattle heard 50 yards away. The man was a typical "martial misfit." Treated by passive movements of jaw accompanied by verbal suggestion with aid of faradic brush. After six hours' continuous treatment the tremor ceased. He was detained for two months; no sign of recurrence. Then boarded as unfit for service, but able to earn his living in civil life.

9. *Tremor of hands greatly improved in one day after lasting 13 years*

10. *Hysterical nodding movements and coarse tremors of the head and arms following exposure to shell fire cured in an hour after lasting five months.*

11. *Hysterical paraplegia and generalised tremors for three months cured by manipulation and suggestion in half an hour.*—Pte. R., aged 32, was admitted to hospital in France on August 15th, 1917, with trench fever. Hospital bombed while he was sleeping; this seems to have resulted in hysterical paraplegia and generalised tremors. He was sent to us from neighbouring hospital on Nov. 29th, 1917. He could only walk a few steps with sticks; shuffling ataxic gait. A kinematograph record was taken, and he was promised an immediate cure. Passive movements were given; in half an hour complete muscular relaxation and cessation of tremor. A kinematograph record again taken; patient then pushed his bath-chair back to ward, half a mile away. Discharged to Command Depôt on Dec. 10th, 1917.

12. *Hysterical monoplegia and tremor following a mercurial injection cured in a few minutes after lasting for three months.*

13. *Hysterical "main d'accoucheur" and anæsthesia following concussion of median nerve by gunshot wound of forearm cured by manipulation and persuasion in ten minutes after persisting for eight months.*—Sergt. M., wounded in right forearm on April 10th, 1917; compound fracture of middle third of radius. When splints were removed three weeks later typical "main d'accoucheur" deformity, the fingers being rapidly extended and pressed together. Total anæsthesia in area of median nerve. No improvement by November; operation; tendons and median nerve freed from adhesions; contracture aggravated; patient transferred to Netley on Dec. 21st, 1917.

The condition was at once recognised as hysterical, although the well-marked vasomotor disturbance and excessive sweating might have suggested a "reflex" origin, as the deformity was identical with photograph of so-called reflex contracture in Babinski and Froment's book. On day of admission hand was continuously manipulated, patient being persuaded at the same time that it would rapidly relax. In ten minutes complete relaxation; deformity had disappeared. The fingers not moved voluntarily for eight months, could now move normally, but still complete anæsthesia.

The anæsthesia was, doubtless, at first organic in origin, but as it extended considerably beyond area supplied by median nerve we thought it must be hysterical, at any rate in part. Suggestion with the aid of faradism for a few minutes on two occasions resulted in its complete disappearance.

With return of movements the vasomotor and secretory disturbance disappeared. A slight degree of wasting of small muscles of hand was now present; otherwise hand normal in every way. Patient was kept under observation for three weeks; now no incapacity; returned to duty.

February, 1918.

THE ROUTINE USE OF SPINAL ANALGESIA IN GYNÆCOLOGY:

A STUDY OF 1552 CONSECUTIVE CASES.

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BEFORE joining the R.A.M.C. in France Dr. Roy Dobbin, professor of gynæcology and obstetrics in the Egyptian Government School of Medicine, requested me to write an account of the cases operated on under stovaine in the gynæcological department of Kasr-el-Ainy Hospital. This series—1552—includes all the cases in which stovaine was used up to Dec. 31st, 1917. The stovaine injection was given either by Professor Dobbin or by myself, and the notes were written by one of us.

Technique.—Our technique does not differ from that of most other surgeons. We use an all glass syringe, holding 3 c.cm. and graduated in centimetres. The needles, made of steel, are of medium length and rather fine calibre. Thick needles are prone to get blocked by particles of skin or tissue. The puncture is made at different spots according to the operation. For abdominal operations we choose the third lumbar space and in rare cases the second. For dilatation of the cervix the third is also chosen, whereas for vaginal and perineal operations the fourth space is sufficient. The patients receive the injection sitting up with backs arched, and are then placed in the dorsal position with shoulders raised on pillow. A screen placed at level of ensiform cartilage prevents patient from watching operation.

Nature of Operations.

In all 1891 operations were performed. This exceeds the number of patients by 339; many patients have undergone more than one operation. 473 were abdominal operations.

Detailed List of Operations.

Obstetric Cases.

Cæsarean sections	14	Induction of premature labour and incomplete abortions ...	14
Ectopic gestation	9		

Ovaries and Tubes.

Ovariotomy	95	Enucleation of septic tubes ...	15
Partial ovarian resection ...	38	Salpingostomy	21

Uterus, Cervix, and Ligaments.

Wertheim's hysterectomy for cancer of cervix	7	Alexander-Adams's shortening of round ligaments	47
Subtotal hysteromyomectomy	85	Fibroid polypus of cervix ...	27
Abdominal myomectomy ...	19	Amputation of cervix	48
Kelly's ventro-suspension ...	129	Plastic operation on cervix ...	50
Baldy's operation	10	Dilatation and curettage ...	717
Liberation of adherent uterus	11		

Vagina, Vulva, Bladder, and Perineum.

Anterior colporrhaphy and posterior colpoperinæorrhaphy	303	Vesico-vaginal and cervical fistulæ	74
		Recto-vaginal fistulæ	22
Tumours, cysts, and bilharziosis of vagina	25	Complete tear of perineum ...	13
Hæmatocolpos and vaginal atresia	25	Tumours and elephantiasis of vulva	20

Miscellaneous.

Retro-peritoneal sarcoma ...	2	Stone in bladder	2
Peritonitis and perimetric abscesses	18	Ventral and inguinal hernia	5
		Piles	8
Appendicectomy	6	Exploratory laparotomy ...	12

We have successfully submitted to stovaine analgesia cases which would have run a very serious risk under general anæsthesia. Some of the myomata and ovarian cysts in this series reached the weight of 38 lb. In one ectopic gestation the pregnancy reached almost to full term without rupture of pregnant tube.

The duration of anæsthesia was sufficient for cases that required less than 90 minutes. Only cases of cancer done by Wertheim's method required so long, and in them a little chloroform was necessary to finish the operation.

Results.

The analgesia was considered complete when there was complete relaxation of the abdominal muscles, pain was entirely absent and patient admitted that she did not feel any pain whatever. The results can be summarised as follows:—

In 3 cases it was not possible to reach the canal.

In 20 cases the injection was given, but no analgesia followed. Ten of these occurred in the first 100 cases. It is noteworthy

that other ampoules from the same box were used on the surgical side without success. The failures occurred in groups of 3 and 4, and we believe that most, if not all of them, were due to defective solutions.

Partial failure occurred in 15 cases. A few drops of chloroform was all that was necessary to finish the operation.

We have therefore had about 1·28 per cent. complete failures and 0·90 per cent. partial failures. There were no deaths from stovaine.

Course and extent of the analgesia.—The course of the analgesia varied with amount injected and place of injection. Immediately after the injection perineal sensation was abolished. In about 3–5 minutes (in rare cases 8–10) the analgesia would have gradually extended up to the umbilical region if injection was made in fourth lumbar space and to the ensiform cartilage if in the third. In a few cases sensibility to heat was retained for some time after complete analgesia had been established.

Accompanying symptoms.—In a small proportion of cases (less than 2 per cent.) nausea occurred. Actual vomiting occurred in about 3 per cent., but never lasted more than a minute. Relaxation of sphincter during analgesia with incontinence of fæces occurred in a few cases. Signs of depression, such as yawning, pallor of face, and perspiration, rarely occurred and have seldom caused anxiety. Pulse at end of operation was in many cases stronger than at beginning.

Post-operative symptoms.—In about 1 per cent. of the cases a certain amount of headache, easily amenable to treatment, was complained of. The temperature rose a degree or even two on second and third days in some of our early cases. Vomiting after operation was conspicuous by its entire absence. Paralytic sequences, whether transitory or permanent, have never occurred.

The Solution Used.

Stovaine billon was used in about half the cases. Each ampoule contained a little over 2 c.cm. of the following: Borate of epirenin, 0·00013; stovaine, 0·04; sod. chlor., 0·0022; distilled water to 1·00.

The amount injected is the same for a big or small operation—viz., 2 c.cm. of the solution containing 0·08. In some cases we injected half or three-quarters of the dose, but the effect was not quite so good and passed off more quickly. As an exception we may mention colporrhaphies, in which half a dose is sufficient, but even there it is better to inject a full dose, as it may be found necessary to do something more.

We are now using with even better results a solution prepared in the school chemical laboratories under the supervision of Dr. Bahry Bey. The formula used is: Sod. chlor., 0·0011; stovaine, 0·04; water, 1 c.cm. It is prepared as follows:—

The sodium chloride is dissolved in the water. The solution is sterilised in the autoclave for 15 minutes and then left to cool down. The stovaine is dissolved in solution and filtered through a good filter previously sterilised. It is then heated on a water-bath for ten minutes at 80°–90° C. After cooling it is stored in sterilised ampoules. The whole process is carried on aseptically. Attempts to sterilise the stovaine solution by boiling have resulted in the decomposition of the stovaine and is not necessary, stovaine itself being antiseptic.

Conclusions.

Stovaine analgesia was greatly welcomed by our patients. Most Egyptian women have a great dislike to general anæsthesia. Many instances have occurred of patients refusing to have an operation done under chloroform, but agreeing to undergo the operation under stovaine analgesia.

The preparations are made and the stovaine injected before the students come into the theatre. The patient is covered up with sterilised towels, and is less exposed than during an examination in the out-patient department.

After having watched this number of patients during their operations and convalescence, and having followed many of them for years afterwards, we have no hesitation in asserting that stovaine is, in our opinion, far superior to chloroform in all gynæcological operations. During the operation the complete relaxation of abdominal muscles and the evenness of the analgesia are a great help to the operator. The absence of vomiting during the convalescence prevents any strain on the stitches. The freedom from shock and all respiratory troubles are points in favour of stovaine.

TWO NEW FRENCH METHODS FOR STAINING BLOOD FILMS AND BLOOD PARASITES.

BY L. TRIBONDEAU.
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THESE two methods,[1] now brought before the readers of THE LANCET, are very practical, not only because the technique of the colouration is simple, but especially because the staining solutions can be prepared without difficulty by anybody. They are related to the well-known methods of Leishman and provide efficient substitutes for the secret processes of Giemsa and other German writers.

I. *Colouration Method with Stain III.*

Of the two methods, this one (neutral solution of eosinate of methylene-blue converted by ammonia) is more rapid in execution and gives more complete results, but it requires very pure and neutral distilled water. Certain commercial distilled waters do not possess these qualities.[2]

Preparation of Stain III.—Heat some distilled water to boiling point. Divide.

(A)—50 c.cm. in enamelled basin; add 0·20 g. pure medicinal methylene blue; shake to dissolve.

(B)—75 c.cm. in a glass; add 0·30 g. water-soluble eosin (French eosin); shake to dissolve.

Pour B into A by successive fractions. After each addition of B mix for some time with glass rod; then place on glass slide drop of mixture from end of rod. This drop is at first deep blue and free from precipitate. Then, as proportion of eosin is increased, the blue becomes more pale and a precipitate appears. Finally precipitate increases and colour of liquid turns from blue to rose. Stop addition of eosin as soon as this change occurs. It generally requires a little more than 50 c.cm. of B to obtain this result, which is quite easy to observe.

Add 4 c.cm. of ammonia to mixture thus obtained. Mix. Heat to 120° C. in autoclave for 20 minutes in enamelled basin covered with inverted glass funnel. Remove from autoclave; stir with rod and allow to cool completely.

Filter through small white filter-paper well folded all contents of basin. Discard filtrate. Keep only precipitate, which is almost entirely retained on filter, and of which a small portion remains deposited on side of basin. Dry precipitate by placing in incubator at 37° C. the filter widely open on several layers of absorbent paper, and also basin.

When drying is complete (no trace of water must remain in order that ammonia may be completely volatilised) place filter in basin and dissolve as much as possible of dried stain by pouring into basin, in successive fractions, 100 c.cm. of glycerinated alcohol (absolute ethyl alcohol, 90 c.cm.; neutral glycerine 10 c.cm.) and crushing powder with large glass rod. Transfer the 100 c.cm. of solution into flask, taking care to transfer also all undissolved stain. Shake flask from time to time. Filter after 12 to 24 hours.

Technique of staining.—First fix preparation with undiluted Stain III. For this, slide carrying blood (previously spread in thin film, dried simply by moving in air, and marked off by a glass pencil line) is placed on table, film upwards. Cover film with 0·2 c.cm. of Stain III. (approximately 12 drops). Cover with half of Petri dish to prevent too great evaporation, especially in summer. Allow to act three minutes.

Then stain by adding to Stain III., on slide itself, 0·6 c.cm. of distilled water (approximately 12 drops). Mix water and stain by few movements of slide. Replace on table. Allow to act for average time of 12 minutes without moving. Wash rapidly with jet of distilled water. Dry immediately (by passing wet preparation for two seconds over flame and blowing vigorously on it).

II. *Colouration Method with Stains I. and II.*

When good distilled water is not available this second method (*neutral solution of eosinate of natural methylene blue and alkaline solution of eosinate of methylene blue converted by ammonia*) is preferable to first; it is less delicate.

Preparation of Stain I.—Pour into heat-resisting flask—

Neutral glycerine	5 c.cm.
Absolute ethyl alcohol	45 c.cm.
Pure medicinal methylene blue	0·20 g.
Water soluble eosin (French)	0·05 g.

Dissolve rapidly by plunging flask in very hot-water bath and shaking. Allow to cool. Pour into glass-graduated

[1] C. R. Soc. de Biologie de Paris, May–June, 1918.

[2] One can correct a defective water by redistilling, after addition of a little silver carbonate obtained by precipitation of a silver nitrate solution with carbonate of soda, but this is complicated.

measure; make up to 50 c.cm. with absolute ethyl alcohol. Filter and cork in a flask.

Preparation of Stain II.—Pour into heat-resisting flask—

Neutral glycerine	25 c.cm.
Ethyl alcohol at 95 per cent.	15 c.cm.
Pure medicinal methylene blue	0·20 g.
Water-soluble eosin (French)	0·05 g.

Dissolve in water bath as with I. Allow to cool. Pour into glass-graduated measure, and make up to 40 c.cm. with 95 per cent. ethyl alcohol. Return into flask.

Add 4 c.cm. of ammonia. Mix. Heat to 120° C. in autoclave for 20 minutes in open flask. Remove from autoclave and allow to cool somewhat. Pour into glass-graduated measure and make up to 50 c.cm. with 95 per cent. ethyl alcohol. Return into flask, which is corked only after a day or two.

Technique of staining.—First fix preparation with undiluted Stain I. For this, place slide on table, film upwards. Cover film with Stain I. Cover with Petri dish. Allow to act three minutes. Wash with jet of distilled water. Get rid of surplus water by shaking; wipe under side of slide; place it on edge of glass or crystallising dish without drying film.

Stain by pouring on preparation Stain II. diluted and hot. For this have small test-tube of 1 cm. diameter marked at 2 c.cm.; pour distilled water to mark; heat tube held aslant in flame until appearance of first bubbles of air; add to the 2 c.cm. of hot water 4 to 5 drops of Stain II.; pour hot over film. Allow to act 15 minutes.

Wash with jet of distilled water. Dry immediately (heating and blowing). Remove excess of blue by pouring on dry preparation held aslant watery solution of tannin (1 in 20) until film becomes rose-coloured. (It is necessary to avoid differentiating moist films because preparations would become spotted with blue. The solution of tannin is prepared by dissolving 1 g. of tannin "à l'alcool" in 20 c.cm. of very hot water. One adds a little camphor to prevent growth of moulds.) Wash at once with distilled water. Dry immediately.

N.B.—One can omit I., fixing simply with alcohol, but it is then necessary to stain with II. for 30 minutes.

THE ISOLATION OF DYSENTERY BACILLI FROM THE FÆCES.

BY HENRY WHITEHEAD, M.D., D.P.H. MANCH., M.B., B.S. LOND.,
TEMPORARY CAPTAIN, R.A.M.C.; BACTERIOLOGIST TO —— GENERAL HOSPITAL;
AND
J. KIRKPATRICK,
LANCE-CORPORAL, R.A.M.C. (T.F.).

OUR object is to describe what we consider the best method of isolating *B. dysenteriæ* from the fæces.

Collection and Selection of Fæces for Examination.

(*a*) *Duration of disease.*—Specimen must be obtained during and as early as possible in acute stage of illness. After a week isolation of *B. dysenteriæ* becomes increasingly difficult, and at end of fortnight the organisms have disappeared in a large majority of cases unless the cases have relapsed.

(*b*) *Appearance of specimen.*—1. *Naked eye:* The typical stool is almost completely composed of pus and mucus, in most cases streaked with blood; usually pinkish in colour, giving the impression of greyish-white opaque flakes of pus in mucus tinged with blood. In these cases the collection is simple. When the stool is of a mixed character the pus and mucus portion must be selected for investigation. The sample should be free from urine. The bed-pans must not be washed out with disinfectant before being used for obtaining specimen. In some cases of Flexner-Y infection the stool is fluid, containing flakes of mucus and pus. As duration of disease increases character of stool changes. Instead of blood-stained pus and mucus one finds *bile*-stained pus and mucus, especially in Shiga infections.

2. *Microscopic:* Every specimen must be examined microscopically for protozoa. Microscopical examination is most important as a guide to selection of stools for culture. The appearance in an acute case is almost diagnostic in itself. The field is covered by numbers of cells of various kinds—pus cells chiefly, red blood corpuscles, and epithelial cells, especially macrophages. Pus cells and macrophages are the important guides. If the sample is non-cellular, although mucus be present, it is of little use culturing it except in case of possible carrier. We have cultured many hundreds of stools of this nature with negative results.

(*c*) *Age of specimen.*—*The stool must be cultured in a fresh state*, as the bacilli of dysentery quickly die off in a stool. If the sample cannot be obtained at a convenient time it should be placed in an ice-chest. A fresh specimen from a case on second day of disease was examined and *B. dysenteriæ* Shiga was isolated in almost pure culture. Another specimen from the same case was examined as follows:—

Fresh specimen (fifth day of disease) plated immediately, 27 colonies of *B. Shiga*.

The specimens plated after standing at room temperature or in ice-chest gave the number of colonies of *B. Shiga* stated:—

After standing at room temp.:		After being in ice-chest:	
For 1 hour	21 colonies.	For 1 hour	27 colonies.
,, 2 hours	17 ,,	,, 2 hours	23 ,,
,, 3 ,, ...	12 ,,	,, 3 ,, ...	24 ,,
,, 12 ,, ...	3 ,,	,, 12 ,, ...	11 ,,
,, 24 ,, ...	1 colony.	,, 24 ,, ...	3 ,,
,, 36 ,, ...	No ,,	,, 36 ,, ...	2 ,,

A fresh specimen from an acute case was cultured, and *B. dysenteriæ* Flexner was isolated easily, the majority of colonies on the plate being of this organism.

The day after a six hours' old sample from the same case, with similar naked-eye and microscopical appearances, was cultured. Not one colony of *B. dysenteriæ* was present on the plate.

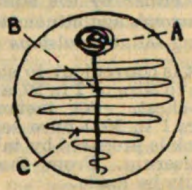
These are most striking facts which prove the absolute necessity of culturing *fresh specimens*. We have recorded many similar examples.

It is recommended that the MacConkey's medium used be made up with *double the strength of neutral red*—i.e., 0·5 c.cm. of a 1 per cent. solution to every 100 c.cm. of agar.

Method of Plating.

(*a*) With sterilised platinum loop pick from fresh specimen of fæces a small portion consisting of pus and mucus.

(*b*) Wash it well in sterilised normal saline and remove it *immediately* with loop, allowing excess saline to drain away along sides of tube.



A, Pus and mucus. B, Vertical stroke. C, Horizontal strokes.

(*c*) Rub and spread washed pus and mucus well on to surface of MacConkey plate at position (A) shown in diagram.

(*d*) Sterilise loop and make vertical stroke (B) from first inoculation.

(*e*) Again sterilise and make a series of horizontal strokes (C) across vertical one without removing loop.

(*f*) Incubate 18–24 hours at 37° C.

By this method the portion of specimen most likely to contain *B. dysenteriæ* is selected. The washing helps to remove various coliform organisms, &c., not wanted. The rubbing and spreading of pus and mucus tends to break up pus cells, liberating bacilli sought for. The stroke method with two sterilisations of loop gives three dilutions, a good separation of colonies on plate, and does away with necessity of using two or more plates for same case sometimes recommended.

Selection from Plate of Likely Colonies.

(*a*) Discard lactose fermenters.

(*b*) Of the others, pick off with sterilised straight platinum wire one of each type of colony present. Care must be taken to touch only one colony at a time. It is impossible to distinguish, either by naked eye or by means of a lens, between *B. dysenteriæ* and many other non-lactose fermenters, especially typhoid group, some forms of *B. fæcalis alkaligenes*, Morgan No. 1, and paracolon bacilli, with any degree of certainty.

It should be remembered that colonies of *B. dysenteriæ* are not clear, as sometimes stated, but are dull grey in colour and slightly opaque. *B. Shiga* colonies are always more opaque than *B. Flexner* or *Y*.

It is interesting to note here that *B. dysenteriæ* are sometimes retarded in growth and appear on plate after standing at 30° C. for 24 hours. We have isolated on an average an additional 20 per cent. of *B. dysenteriæ* by incubating in usual way for 24 hours and then allowing plate to stand another 24 hours at 30° C.

Identification of Organisms.

This is shown by their effect on sugars, indol, and litmus milk, and by agglutination with specific sera.

(*a*) Subculture colonies selected in Durham's fermentation tubes containing litmus-lactose-peptone-water.

(*b*) Incubate 10–12 hours at 37° C.

(*c*) Again discard lactose fermenters. (*Note.*—It is possible to pick off lactose fermenters from the plates, as some may be quite pale when young, and the presence of *B. fæcalis alkaligenes* sometimes neutralises the acid produced.)

(*d*) Subculture on to trypsin-agar slopes and into litmus-mannite-peptone-water.
(*e*) Incubate for 12 hours.
Then proceed according to the following:—

Lactose.—Acid or acid and gas: Discard. No change: Test as follows.
Mannite: No change.—1. Motile: May be (1) *B. fæc. alkal.*, or (2) *Morgan's No. 1.* Confirm by reaction with other sugars, indol, and litmus milk.
2. Non-motile: Test agglutination with Shiga antiserum. Negative: May be (1) *non-motile B. fæc. alkal.*; (2) *possible inagglutinable B. dysenteriæ* Shiga. Positive: *B. dysenteriæ* Shiga.
Mannite: Acid.—1. Motile: Further investigation if necessary. Not *B. dysenteriæ.*
2. Non-motile: Test agglutination with Flexner and Y antisera. Positive: *B. dysenteriæ* Flexner or *B. dysenteriæ* Y. Negative: Test effect on other sugars, indol, litmus milk for possible atypical *B. dysenteriæ.*
Mannite: Acid and gas.—Further investigations if necessary. Not *B. dysenteriæ.*

Note on Agglutination.

When a rapid diagnosis is required likely colonies may be investigated direct from the plate; this is often possible in early acute cases where a large number of colonies of *B. dysenteriæ* appear.

An emulsion having been made in normal saline of suspected colonies, a small loopful of this is put on slide, a similar loopful of Flexner-Y antiserum (1 in 100) is mixed thoroughly with it; dilution 1 in 200. A cover-slip is placed upon mixture and fluid examined microscopically. Immediate agglutination is diagnostic. A control, with saline instead of antiserum, is necessary, as some organisms, notably *B. fæcalis alkaligenes*, and one type of paracolon bacillus sometimes clump in normal saline. The same may be done using Shiga antiserum. These rapid results must be confirmed later by sugars, &c., and by careful agglutination by a macroscopical method.

The agglutination tests referred to above may be carried out either by the admirable method described by Garrow (Garrow's agglutinometer [1]) or by the ordinary tube method, using saline emulsions from trypsin-agar slopes.

It is convenient to standardise the specific sera for stock use to titre of 1 in 50, and these stocks must be stored in an ice-chest. For instance, if the antiserum supplied is titre 1 in 5000 pure serum and already diluted 1 in 10 the stock is prepared by taking 9 parts of saline to 1 part of the antiserum. From the stocks any dilution required can easily be made.
It is advisable whenever possible to use a separate antiserum for Flexner and for Y, because we have noted that some Flexners do not come down to Flexner-Y serum, but do so with Flexner serum alone. Many Flexner infections may be missed in this way.

Note.—If Widal controls are made with patients' sera it is necessary to take into consideration any previous administration of antidysenteric serum or vaccine, and to draw conclusions accordingly.

Results.

We have isolated only two *B. dysenteriæ* Flexner out of some 5000 examinations of stools which contained neither pus nor mucus; and never a *B. dysenteriæ* Shiga. This shows the futility of examining stools of this character.

Our findings of the classical types of *B. dysenteriæ* in stools containing pus and mucus or mucus alone are as follows:—

200 cases investigated by method described.
101 typical stools containing pus and mucus. Findings: 46 *B. dysenteriæ* Shiga, 30 *B. dysenteriæ* Flexner-Y—i.e., *75 per cent. positive results.*
Remaining 99 had not the typical naked-eye appearance, but contained mucus.
The findings in the 200 cases were: *B. dysenteriæ* Shiga, 68; and *B. dysenteriæ* Flexner-Y, 41—i.e., 54 per cent. positive results.

From results obtained we are bound to conclude that the classical types of *B. dysenteriæ*—Shiga, Flexner, and Y—are the true causes of bacillary dysentery. The 75 per cent. positive findings in selected cases is surely proof in itself. It is probable that the 25 per cent. negative findings may be explained by (1) specimens collected too long before being cultured, (2) duration of disease too long, with disappearance or paucity of dysentery bacilli. Moreover, the results fully demonstrate the value of the methods described.

As regards atypical forms of dysentery bacilli, on which so much work has been done recently, it is more than likely that these are associated organisms and not the true causes of bacillary dysentery. The so-called inagglutinable types of Shiga and of Flexner-Y are often morphologically unlike the classical types, being distinctly smaller and thinner, and the colonies are more "slimy" in character. We have often isolated these types from plates on which the classical types were found, and from many stools apparently normal. In many cases the reaction of the patient's serum has been tried in its effect on these atypical forms with negative results. In no case have we failed to get positive (controlled) reaction when classical types have been isolated, the test being done before any administration of anti-dysenteric serum.

Sept. 30th, 1917.

[1] THE LANCET, 1917, i., 262.

Clinical Notes:
MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF TRENCH FEVER IN A CIVILIAN.

BY J. H. E. BROCK, M.D. LOND., F.R.C.S. ENG., D.P.H.,
LATE HONORARY PHYSICIAN TO THE WESTMINSTER GENERAL DISPENSARY.

AN account of the following case may prove of interest and indicate the possibility of an outbreak of the disease amongst the general population. During the case I had the privilege of meeting two consulting physicians. The first, after probably the end of the second rise of temperature, hesitated to accept my diagnosis of trench fever, but would commit himself to no opinion, merely saying that, whatever the infection, he thought it was at an end, and that the patient would soon be on the road to recovery. The second, Dr. Farquhar Buzzard, unhesitatingly accepted the diagnosis at the end of the probable third rise in temperature, and four days before it rose again and the final stage of the illness began.

I have used the word "probable," as applied to the rises in temperature, because I think, from the subsequent course, that the patient first consulted me during an afebrile interval following the initial rise. His temperature on that day was perfectly normal; and a careful examination revealed nothing to explain the severe pains in his legs. I could arrive at no conclusion; and it was not till I was sent for five days later, when the patient had returned from a week-end in the country, that my suspicions as to the real nature of the illness were aroused.

Patient, aged 62, a business man, consulted me on May 17th, 1918, complaining of a general aching, severe pains in legs, headache, and slight chilliness during previous three days. No vomiting; bowels quite regular. T. 98·4° F. P. 84, irregular. Tongue dry and furred. The physical signs were only those of old mitral stenosis, of which I had been aware for 20 years—viz., apex beat in sixth left space, 1½ inches outside nipple; presystolic thrill, loud presystolic murmur running up to first sound and followed by second sound at apex; base nil. Over base of left lung numerous moist râles; few moist sounds at right base. Liver a good hand's breadth below costal margin; spleen not palpable. Urine normal. I wrote him a salicylate and alkali mixture. Patient was going to stay with his brother for week-end; I offered no objection.

I next saw patient on evening of May 22nd. T. 102·6°, P. 108, irregular, agonising pains in lower limbs from hip to feet, worse on right side; some pain in arms. Pain was most severe in shins; some tenderness on pinching calf and thigh muscles. Cardiac and pulmonary signs as already described. No strabismus; he could flex chin on to sternum; no rigidity of legs, arms, or back; Kernig's sign not present; knee-jerks absent; plantar reflex flexor, sensation normal; no loss of motor power in limbs; sphincters normal. Abdomen was flaccid; liver enlarged as before; spleen beneath left costal margin for about three fingers' breadth, not tender; lymphatic glands not enlarged. Urine was acid, sp. gr. 1034; no albumin, sugar, or casts; trace of bile pigment. The patient was put on gr. 6 acetosalicyl acid, 2 gr. of quinine, and 1 gr. of caffeine cit., every four hours. This gave him a certain amount of relief from pain, and enabled him to have short sleeps.

On May 24th T. fell to normal. On this evening, at first consultation, an entirely favourable opinion was expressed. With remission of temperature partial relief from pains. Phenazone and bromide of sodium were next tried for relief of pain; not much benefit.

At 8 P.M. on May 25th T. rose again to 99·6°; return of pains in legs with severity. From this date till May 30th T. elevated; 101° on evening of 28th. On 30th T. again normal. Throughout this period pains in limbs and sleeplessness were chief symptoms. For former a mixture of salicylate of soda and bicarbonate of soda t.d.s. with 5 gr. of quinine once a day were tried, and next salicylate of soda and iodide

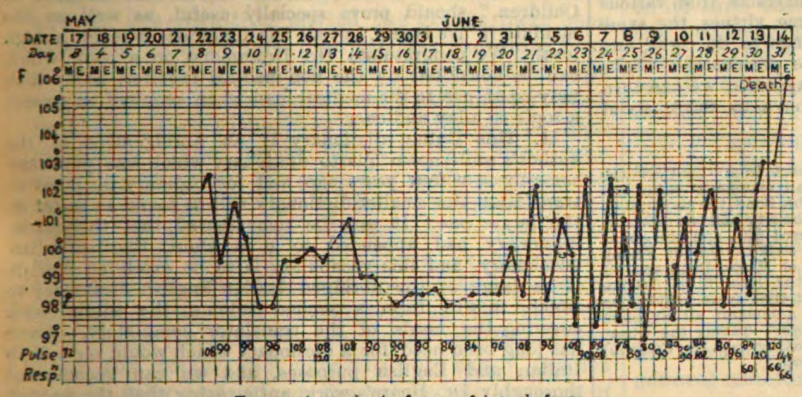
of potassium, but without success. Bromidia and then chloralamide were prescribed, the former with some relief, the latter without any.

On May 31st patient was seen by Dr. Farquhar Buzzard, who confirmed my diagnosis. He advised guaiacol carbonate, 10 gr. t.d.s., for the pains; results no better. On June 1st slight œdema of feet. Put on mixture of am. carb. gr. 3, tinct. digitalis m. 10, and tinct. nux vom. m. 5. t.d.s.; also three cachets of guaiacol carbonate a day. At night a draught of bromide of potassium, chloral hydrate, and tinct. opii.

On June 3rd T., normal for 5 days, rose again; pains again became severe. Digitalis mixture was continued from this time onwards till death; the digitalis being gradually increased until he was taking 18 m. t.d.s. Guaiacol discontinued; put on salol 5 gr., quin. sulph. 2 gr., calomel 1/12 gr., t.d.s., for the pains; certain measure of relief. For sleeplessness he had medinal, at first with great success. This was, towards end, replaced by paraldehyde 3i. The latter took five or six hours to act, and then produced prolonged and deep sleep.

From June 3rd onwards T. followed a characteristically septic course, 101° to 102·6° at night, subnormal in morning. On June 8th he had two rises of temperature to 101° and 102° respectively, normal between; no rigor. Despite the increasing doses of digitalis, œdema of lungs and feet increased, moist sounds being audible over both lower lobes in front and over whole back; œdema of lower extremities extended nearly to knees. On June 13th signs of pneumonia were audible over middle lobe of right lung. T. 103°, gradually creeping up to 106° on the afternoon of June 14th. Patient died same night.

Comments.—It is now established that the virus of trench fever is transmitted by an infected louse, either by scratching and rubbing in the excreta, or apparently sometimes by a simple bite. It has been recognised for some time that being actually in the trenches or fighting zone is not a *sine qua non* for contracting the disease. Given infectious material and lice to carry it, the disease may spread to those in contact. If that can happen in France, there is no reason why the same thing should not occur in this country, to which large numbers of men are constantly returning from the front, many of whom have had the disease.



Temperature chart of case of trench fever.

An outbreak of trench fever being a possibility amongst the civilian population, the point to be settled is the accuracy of the diagnosis. Was this case one of trench fever or not? The organism of trench fever not having been isolated up to the present, bacteriology can afford us no help. The diseases that would require to be ruled out as possible explanatory causes are typhoid or paratyphoid, malaria, acute rheumatism, Weil's disease, and sepsis.

The course of the pyrexia, broken by days of normal temperature, disposes of the typhoid group. The patient had not been out of England for years, had never previously suffered from malaria, showed no periodicity in the elevations of temperature, and had no vomiting, chills, or sweats. From first to last no joint was affected; the pericardium escaped, and no fresh valvular lesion appeared—points that make acute rheumatism a very improbable diagnosis.

The pyrexia, pains in the limbs, enlargement of spleen and liver, made me think of Weil's disease or epidemic jaundice as a possibility. The enlargement of the liver, however, was of old standing, only that of the spleen being recent. The urine contained some bile pigment, but there was an absence of intense jaundice, and no nephritis. A careful examination showed no septic focus anywhere.

Up to June 3rd the pyrexia followed the course usually described in trench fever. I think it highly probable that when the patient first consulted me on May 17th, after he had been ill three days, he was at the end of his first bout of pyrexia, and that the rise that began on June 3rd was therefore the fourth in the series. From this date onwards the temperature was unmistakably septic in its course, due, in all probability, to the damaged mitral valve being attacked by the organism of trench fever. The myocardium was also profoundly affected and showed a progressive failure to cope with the circulation, evidenced by increasing œdema of the lungs and lower extremities. The pneumonia of the middle lobe was in all probability embolic in origin and part of the same septic process.

Hampstead, N.W.

A CASE OF TRANSIENT HEMIPLEGIA.

BY H. H. MILLS, M.D. LOND.

THE case reported below is remarkable in view of the passing of the signs of a complete hemiplegia under actual observation.

At 7 A.M. on May 1st patient, a Jewish lady, aged 28, woke with her left side paralysed. I was telephoned for and very soon was able to note an apparently complete left-sided hemiplegia. Left leg and arm completely flaccid and useless. Face drawn to right; speech much impaired. Tongue protruded straight; pupils reacted normally; no strabismus. In considerable mental distress, the patient was able to say that "she knew what she wanted to say, but could not say it properly." She was mentally clear, and had gone to bed the night before perfectly well. This was confirmed by her sister, who occupied the same room. I secured a nurse. At 11 A.M. the condition was precisely as in early morning, but to my surprise I heard that between 8 and 9.30 the paralysis had passed away. Heart sounds normal; no signs of cardiac degeneration; blood pressure normal; urine gave no indication of disease.

At 9 P.M. Dr. Lauriston Shaw saw the patient; condition precisely as before. As we were watching the patient and had satisfied ourselves that there was no loss of sensation and that the jerks and reflexes were normal, the facial muscles of the left side gradually resumed their normal function and the facial expression became equalised on the two sides. In a similar way the muscles of the arm and leg resumed their function. Beyond a certain feeling of "crampiness" there was nothing to remind us of the clinical picture we had observed five minutes before. It should be stated that at 6 P.M. there was frontal headache on right side and patient had vomited. Tongue clean throughout.

On May 2nd patient was perfectly normal, but the nurse informed me that there had been a return of the paralysis for about a quarter of an hour in the night. The patient was conscious of the onset and the passing of the attack. From this time on until July 7th there has been no return of the paralysis and the only sign of anything possibly abnormal has been a certain amount of fatigue and some mental irritability (similar to such symptoms as are so commonly seen after any illness causing shock). There is not the slightest sign of any lesion affecting the nervous system or the musculature of the left side. Wasserman reaction negative; cerebro-spinal fluid not examined.

The previous history is interesting, as in August, 1917, for about three days, there was a feeling of "creepiness" in left side of face and numbness and feeling of weight in both arm and leg of left side. Also for years past patient has suffered from very cold feet and hands, for which "she has often put her hands in hot water for a time."

The diagnosis presents an interesting problem. The signs were so extensive as well as so transient that a temporary deficiency of blood-supply to the upper nervous centres seems to be the most likely explanation. Local spasm of the cerebral arteries has been regarded as a possible cause of migraine, and spasm of the retinal arteries has been actually observed with the ophthalmoscope during an attack of hemianopia. It would be interesting to know if any of your readers have notes of a similar case.

St. Mary Abbott's Terrace, W.

THE garden party held on July 16th resulted in a benefit to the Royal Medical Benevolent Fund Guild of £1350 after expenses had been paid, an outcome of practical benevolence upon which all concerned must be congratulated.

Reviews and Notices of Books.

Social Life in Britain from the Conquest to the Reformation. Compiled by G. G. COULTON, M.A. Cambridge: At the University Press. 1918. Pp. 540. Price 15*s.* net.

EVERYONE who is interested in the life of the Middle Ages knows Mr. Coulton's former books—namely, "A Mediæval Garner," "From St. Francis to Dante," "Chaucer's England," "Mediæval Studies," and the possibly less known "Friar's Lantern." His latest book, which is now before us, should be studied in connexion with "A Mediæval Garner," which gives a more general view of mediæval life, not being confined to Britain. For one feature which characterised mediæval life, and one which fell into abeyance between the Reformation and the end of the Napoleonic wars, was a great intercourse between these islands and the continent. This was due to several causes, among which may be mentioned the general use of Latin as a spoken language among "clerks" as well as of French, among the upper classes at any rate, until about 1360. Also, except for the great division between the East and the West, there was for all practical purposes religious unity, though there were plenty of divisions amongst the various regular orders, and between them and the seculars, neither were religious-minded lay folk always free from doubts. Mediæval university students, too, wandered from one university to another far more than they did in later years. Human nature, however, has changed but little in the main, and any one who reads Mr. Coulton's extracts from various mediæval chroniclers will find the same virtues, the same faults and weaknesses, the same strivings to do right, and failures, as are evident every day in the present age. Take a concrete instance. Most of us to-day when we can turn our thoughts from the battle front have to think about rationing and profiteering.

As to rationing:

On p. 376 of Mr. Coulton's book is an extract from the Coventry Leet Book noting that in 1520 "the price of all manner of corne and graynes be-ganne to rise," wherefore Master John Bond, the mayor, took a survey as to the number of people within the city and the quantity of the various grains. The population numbered 6601 and the grains at the time of the survey (October) 204 qrs. 5 strike. On the Friday before Christmas Day, owing to the exertions of Master Bond and his friend, there was brought "to help to susteyne the Cyte" 78 qrs. 6 strike of all kinds of grain; moreover, "ther was at that tyme xliij bakers within the Cyte, the wiche dyd bake wekly a-mongest all six score quarter of whet and xij besydes pese and Rye." Taking the wheat only, this gives over 9 lb. per head per week, making (says Mr. Coulton) "at least 6 lb. even of fine white bread per person."

As to profiteering:

In 1416 the wife of Hildy, the poulterer (London), and the wife of John Mede were committed to prison because against the proclamation of the Mayor the wife of Hildy sold four woodcocks for 20*d.* and the wife of Mede refused to take 12*d.* for two partridges. The tariff of 1343, which apparently was still in existence, fixed the price of a woodcock at 3*d.* and a partridge at 5*d.* Roughly speaking, we must reckon pence as shillings to convert them into modern values.

Food regulations are interesting:

In 1378 the Mayor and Aldermen of London issued a tariff fixing the prices of meat and poultry roasted or baked in a pasty; thus a roast rabbit cost 4*d.* and a capon in a pasty 8*d.* But in 1379 we note that the Pastelers of the City of London "have heretofore baked in pasties rabbits, geese, and garbage, not befitting and sometimes stinking, in deceit of people ..... therefore by assent of the four Master Pastelers ..... it is ordered and assented to that in the first place no one of the said trade shall bake rabbits in pasties for sale." Is this order an early example of the common idea that rabbit pie is poisonous?

In the Section on Medicine there is an interesting note showing the danger of unqualified practice—namely:

"In 1354 the Prior of Hogges, Master Paschal, Master Adam de la Poletrie, and Master David de Westmerland, surgeons, were sworn before the Mayor, Aldermen, and Sheriffs to certify as to an enormous and horrible hurt on the right side of the jaw of Thomas de Shene appearing, whether or not such injury was curable at the time when John le Spicer of Cornhulle took the same Thomas under his care to heal the wound aforesaid; Who say upon their oath that if the aforesaid John the Spicer at the time when he took the said Thomas under his care, had been expert in his craft or art, or had called in counsel and assistance to his aid, he might have cured the injury aforesaid; and they further say that through want of skill on the part of the said John the Spicer, the said injury under his care has become apparently incurable."

John the Spicer was, we suspect, an apothecary who tried to practise surgery.

After the regulations to which we have referred above concerning the food of the whole, it is sad to find that in 1356, in an agreement between the Chancellor, Masters and Scholars of Oxford on the one hand, and Richard d'Amory on the other, it was decided that the University should have jurisdiction over the market with power to seize all bad victuals and to punish delinquents in that matter, on condition that the things forfeited should be given to the Hospital of St. John the Baptist outside the East Gate.

Space fails us to deal with the many other sections into which this delightful book is divided, but we warmly recommend it to anyone who wishes to have a complete view of the life of his forefathers in the Middle Ages.

I. *A Medical Dictionary.* By W. B. DRUMMOND, M.B. Edin., F.R.C.P. Edin. London: J. M. Dent and Sons, Ltd. Pp. 625. Price 10*s.* 6*d.*

II. *A Short Italian Dictionary.* By ALFRED HOARE, M.A. Vol. I., Italian-English. Cambridge: At the University Press. 1918. Pp. 443. Price 9*s.* net.

I. THE title of this volume is a misnomer in that the volume is much more than a dictionary, being intended by the author to supply (1) information concerning our advances in medical knowledge which every inquiring mind desires; and (2) materials for supplementing the doctor's advice so that his directions may be carried out more faithfully and intelligently. Under the former category come a series of illustrated articles on Anæsthesia, Antiseptics, Bacteriology, Eugenics, and the like; under the latter, others on Athletics, Bandaging, Cooking, Ventilation, and so forth. We have found in a series of articles, chosen at random, the information in each case clearly and attractively written, and in most cases well illustrated. The four beautiful coloured plates of chicken-pox, rubella, measles, and scarlatina, from the "Hand-Atlas of Diseases of Children," should prove specially useful, as well as the manikin in five layers, but all the illustrations reach a high level. We congratulate Dr. Drummond on a book which can be consulted by the non-medical inquirer, and which may be of use to the medical man when required to present a topic to a lay audience.

II. This Italian dictionary is an abridgement of the author's well-known quarto dictionary which was published some three or four years ago, and for ordinary purposes of translation the smaller dictionary will be found as useful as the larger one. It may be remembered that the quarto dictionary had appended to it a short English-Italian vocabulary, and this vocabulary is to be extended until it is as large as the abridged Italian-English dictionary to which it will form a second volume, the whole work covering the needs of the translator completely. There has long been need for a dictionary which would serve both Italian and English purposes, and we can recommend thoroughly Dr. Hoare's work, anticipating that the second volume will be as good as the first. A prefatory synopsis of the conjugation of the Italian verbs will be found very useful. Included in a list of strong, irregular, defective, and other difficult verbs are all the verbs of the third conjugation, so that the student may know which of the two models is to be followed.

The Dispensatory of the United States of America. By J. P. REMINGTON, Ph.M., F.C.S., and HORATIO C. WOOD, Jr., M.D. Twentieth edition. London and Philadelphia: J. B. Lippincott Company. 1918. Pp. 2010. Price £2 10*s.*

IT is 11 years since the appearance of the last edition of this encyclopædic work and 85 years since it was first published, during which time it has doubled its number of pages and nearly quadrupled their printed content. The original object of the Dispensatory was "to present an account of medicinal substances in the state in which they are brought into the shops, and to teach the modes in which they are prepared for use." This scope still holds good, although with the development of therapeutic agents the actual "substances" are now very different from those at first contemplated, and bacterial products and serums, as well as hundreds of synthetic remedies, are fully dealt with. This has necessitated a complete rewriting of the text, for which purpose the two editors in chief have called in the help of professors of chemistry, pharmacy, and botany, and a director of a research laboratory, who are now associated with them on the title page. The whole is based upon the newest editions of the U.S. and British pharmacopœias and the U.S. National Formulary. On both sides of the Atlantic it will be found to be an inexhaustible mine of accurate information.

THE LANCET.

LONDON: SATURDAY, AUGUST 3, 1918.

The Principles and Ideals of Medical Education.[1]

SIR GEORGE NEWMAN, Chief Medical Officer and Principal Assistant Secretary of the Board of Education, has addressed to Mr. H. A. L. FISHER, President of his Board, a Memorandum on medical education in England, which is alike a valuable résumé of the subject and a repository of useful suggestions for future developments. Grants in aid of medical education were first made by the Board of Education in 1908, and from that date the Board has taken official cognisance of what is being done at the various medical schools to which assistance has been given. This cognisance has consisted of periodical visits, made by Sir GEORGE NEWMAN in conjunction with distinguished medical visitors, and on the resulting advice the grants have been assessed. Sir GEORGE NEWMAN has therefore been able to compose his Memorandum out of the fullness of personal knowledge acquired by discussion with local education authorities and reinforced by high assistance. The Memorandum is introduced by a section setting out the nature of medical education in the country at the present moment, in the course of which the educational functions of the General Medical Council are reviewed, and the principles set down upon which medical schools have been recognised as fit subjects for Grants in Aid by the Board of Education. That the scope and necessity of these Grants may be fully understood, the succeeding sections of the Memorandum have been written, for it is really the justification of a public department for spending money upon sectional training. And the justification is complete.

The 12 chapters which follow the introduction subdivide the subject of medical education in an orderly manner. First the functions of the medical practitioner are considered, as well as the conditions of medical practice, and the place which a University education should have in medicine. These general matters are discussed with clearness, and the way in which the information is brought together should make plain many questions which have hitherto been found difficult, because debates upon them are so often loose, indefinite, and inconclusive. Coming next to the study of the preliminary sciences, chemistry, physics, and biology, Sir GEORGE NEWMAN discusses in Section 4 of his Memorandum the divergences of view among educational authorities. For upon two important issues—namely, what should be the "content" of each subject as an adequate preliminary to medicine, and when in the student's curriculum should each subject be introduced—no two educational experts ever seem to be wholly in accord. The question of "content"—i.e., of the syllabus or range of study to be required of the student—has been settled on a more or less comparable plan by the various universities of the country possessing a medical faculty, but this must not be taken to mean that all the universities and corporations can or do provide equal facilities for the education of their students according to a common design. It is exactly here that the Board of Education can play a most valuable part in helping to provide the means whereby education can be levelled up, and to supply some of the necessary information in a clear form has been the direct object of the Memorandum. Turning to the second issue, which is concerned with the time in the student's education at which the preliminary scientific subjects should be attacked, relegation of these subjects to the student's career at a secondary school is recommended. While improvement has been made in the teaching of these subjects in certain medical schools, the advance in medical knowledge has in its turn shown more intimate relations between the subjects and practical medicine, so that the ground which the teacher has to cover is being rapidly extended, while the outcry against an overloaded curriculum becomes yearly more distinct. The perplexing position is thus reached that, with regard to the amount and standards of preliminary science to be acquired, while the medical school is the ideal place to learn the subjects, having regard to their later application, at this ideal place there is no longer opportunity for their acquisition comparable to the opportunity that could be offered at a good secondary school properly equipped. Sir GEORGE NEWMAN comes to the following general conclusions. He considers that the foundations of chemistry, physics, and biology for the medical student should be laid in the secondary schools in a thorough grounding in inorganic chemistry, mechanics, elementary physics, natural history, and botany. In some of these schools, he points out, it would be practicable in two years to cover the ground of all preliminary science ancillary to medicine, making it unnecessary for the student to devote any time at the medical school to study of these basic sciences. While indicating that in this way it would be possible both to unload the medical curriculum and yet give to the student a better start than formerly, the Memorandum recognises that such schools are not to be found in all divisions of the United Kingdom, and in so doing indicates one of the chief difficulties ahead. But while relegating the preliminary sciences to the secondary schools, Sir GEORGE NEWMAN'S further conclusions on the subject provide for linking scholastic studies up with medical studies proper, finding that there is no visible continuity throughout medical education between subjects and departments. In short, the professor of physiology may know nothing of the work of the professor of pathology, while the essence of medical education is that the student should see in pathology an altered physiology. Our educational authorities

[1] Board of Education. Some Notes on Medical Education in England. A Memorandum addressed to the President of the Board. By Sir George Newman, K.C.B., M.D., F.R.C.P., Chief Medical Officer and a Principal Assistant Secretary of the Board of Education, and Medical Assessor to the Universities Branch of the Board. London: Published by His Majesty's Stationery Office. Cd. 9124. Price 9*d*.

should realise that, when any considerable mass of teachers and students can ask seriously, "Why do we learn, or why do we teach, just these things and up to just this point?" then the system employed has failed in logical reason and sequence.

The remaining sections of the Memorandum deal with the position and conditions of study in the medical curriculum of anatomy and physiology, which lead in their turn to the study of pathology and of the clinical subjects, surgery, medicine, gynæcology, and therapeutics. The defects in the curriculum here are as frankly pointed out as the value of the work which is done is acknowledged. The criticisms come under four heads, to one of which, the insufficient coördination between subjects and departments, we have alluded to; the others are:—Default from university standards in the medical teaching; Absence of a proper association between medical education and medical research; and Insufficient organisation of the post-graduate study of medicine. Sir GEORGE NEWMAN is, above all things, a practical and constructive critic, and is not afraid to suggest remedial action. From the four principal defects which he sets out, "two fundamental necessities," he says, "emerge; the need of further financial assistance and need of guidance and direction." He holds that the old-fashioned way, the literally mediæval way, of running the medical education of the country out of the students' fees for tuition must end in failure. "It is impossible, to-day," he says, "to teach medicine as it ought to be taught out of students' fees or uncertain endowments. The result is that medical education and research are starved." We entirely agree with him, and agree also with his corollary, that if financial assistance be the first requirement, the next requirement, a further and collateral necessity, is wise, economic, and purposive outlay of any funds provided by the State to meet the proved needs. Such money will be public money, it will be disbursed, if it is granted, in aid of the improved standardisation and the detailed reform of medical education, and with regard to the allocation of such grants the medical profession alone cannot expect to have the disposing voice, though it can and must demand to be consulted in circumstances making it likely that medical views will receive proper weight.

The Memorandum is not only a long one but very closely written. We have only attempted here to indicate its contents and outline the more controversial sections at the beginning of the document. We urge our readers to obtain and read the Memorandum.

Malaria in England.

DURING the summer and autumn months of last year 178 cases of malaria of indigenous origin occurred in the south-eastern counties of England. The form of disease in each case was benign tertian of not very severe type, and no single death resulted. Of the total number of cases 136 were men serving in the Army, 19 in the Navy, and 23 were in civil life. Only in two districts—namely, the Isle of Sheppey and the neighbourhood of Sandwich—was there anything which could properly be called local prevalence. As an actual cause of sickness the outbreak was therefore almost a negligible factor. These are the facts set out by Dr. G. S. BUCHANAN, assistant medical officer to the Local Government Board, in his introduction to a volume of papers just issued by the Board as a Special Report (New Series, No. 119). The larger part of this introduction, dealing with the principles of preventive action, we give in slightly abridged form on another page, as well as the headlines of the various papers, but we should like to draw special attention here to Lieutenant-Colonel S. P. JAMES'S paper, entitled "Practical Points in the Study of the Disease and its Diagnosis," as we find in it a practical summary setting out clearly and logically the principal facts of malaria, its parasitology, diagnosis, treatment, and practical prevention, in a way which will meet a need long felt by those at home who have not been brought in actual contact with the problems of malaria. In spite of the mildness and comparative smallness of the outbreak Dr. BUCHANAN regards the appearance of indigenous malaria as disquieting in view of the fact that in old days when ague was common in this country there were often epidemic years, particularly those with hot, dry summers, in which its prevalence became very severe. Anophelines have been shown[1] to occur practically in any part of England where conditions are favourable to their breeding, and an increasing number of men returning from the Eastern campaigns are carriers of the malaria parasite. Exigencies of military service, or the termination of the war, may at short notice provide all the material necessary for intensive local infections. The most important question now is to know what methods of protection have been decided upon by the two Government Departments chiefly concerned, and these are epitomised by Dr. BUCHANAN. An anti-mosquito campaign such as has been attended with striking success in Panama and the Sudan is regarded at present as impracticable in this country. Segregation of the human carrier in special hospitals is possible enough for the men actually suffering from malaria, but to do the same with convalescents would entail serious loss of man-power and grave hardship on the men. The Army authorities rely, therefore, upon getting results largely equivalent to those theoretically obtainable by segregation by systematising the method of curative administration of quinine. These and other matters are ably set out in the special report. Obviously the first requisite is the dissemination of accurate knowledge both of the disease and of its causes, as well as of the administrative measures so far shown to be desirable. This purpose the volume admirably meets.

[1] The Trustees of the British Museum (Natural History), Cromwell-road, London, S.W., have just issued a map showing the known distribution in England and Wales of the anopheline mosquitoes, with explanatory text and notes, by W. Dickson Lang, M.A., assistant attached to the Department of Entomology (price 2s. 6d.).

Annotations.

"Ne quid nimis."

CURRENT MEDICAL POLITICS.

THE Annual Representative Meeting of the British Medical Association which was held in London last week was not dominated, as in 1917, by any one burning question of medical polity. The activities of the Central Medical War Committee were taken for granted, the only resolution bearing upon its work expressing the desire that Government assistance should be welcomed towards its expenses, short of making the Committee subservient to War Office instructions. After full consideration given to the scheme drawn up by the Council of the Association the desirability of the establishment of a Ministry of Health was assumed by the meeting, the Council being called upon to coöperate with the Royal Colleges and other medical bodies or corporations interested in the matter in pressing the formation of such a Ministry upon the Government. The immediate urgency of legislation in this direction was alleged in a resolution of the meeting, which is being forwarded direct to the Prime Minister and the Home Secretary. We note in this connexion Sir George Cave's statement in the House of Commons, reported by our Parliamentary Correspondent, that the Committee of Home Affairs hopes shortly to get its proposals for a Health Ministry into shape in a non-contentious form.

The representation of the medical profession in Parliament was debated, revealing a wide divergence of view in regard to principles. The Council of the Association, as such, gave the meeting no direct lead, but a unanimous resolution was passed to the effect that the medico-political education of the profession should be improved in order to secure for medical candidates the medical vote at University elections. But in regard to Parliamentary representation in general opinion was divided between a policy of securing candidates who should adopt the political tenets of one or other of the great parties whilst pledging themselves to represent medical interests as they arose, and the other policy—frankly regarded by many as Utopian—of returning to Parliament one or more candidates as direct representatives of the medical profession. The opposite view was strongly expressed that medicine has no need for representation of this kind in Parliament, inasmuch as the medical profession, speaking as a united force to the nation on any matter, would ensure its voice being heard without Parliamentary representation, on the principle that when the public listens Parliament is obliged to act. The distinction between the representation of medicine, as a science whose development is of the first importance to the public, and the representation of medical interests in the conduct of public affairs was not very clearly brought out at the meeting.

The relations of the medical profession to the certified midwife came up on a series of recommendations from the Council. The Association had one voice in opposition to any measure calculated to place the practice of normal midwifery solely in the hands of the midwife, or to commit to her sphere antenatal work other than advice on general domestic hygiene. It was laid down at the meeting that any further diminution in the practice of normal midwifery by the registered practitioner would result in the loss of experience necessary to deal with abnormal cases. The transference of the conduct of normal labour to the midwife has already gone a very long way, quickened but not started by the war-time conditions. The Association foresees that the large increase in the number of women medical students is likely in the near future to provide a sufficiency of practitioners to meet the whole needs of midwifery, as well as of antenatal and postnatal care and treatment. We are not ourselves aware of any experience justifying the belief that the woman practitioner is likely to devote more attention to normal labour than the man. A resolution, which was largely but not unanimously supported, expressed the opinion that the private medical practitioners in any locality should have the clinical supervision of the midwives' practice; and we think that the meeting hardly realised the extent to which the Local Government Board is already aiding the midwifery service in rural areas under the supervision of the medical officer of health or of deputies appointed by him. We have referred but briefly to some of the more important topics discussed at a business-like meeting.

TRANSIENT HEMIPLEGIA.

IN another column of this issue will be found a clinical note, by Dr. H. H. Mills, on a case of transient hemiplegia, which presents certain features of interest. The patient, a young woman of 28, had a sudden attack of apparently complete left hemiplegia, which lasted for an hour or two, is said to have disappeared thereafter, began again on the same day at an hour not specified, and disappeared during Dr. Mills's visit in the evening. It came on once more for about a quarter of an hour during the night. Some 10 months previously the patient had complained of "creepiness," numbness, and heaviness of the left limbs for about three days. The Wassermann test in the blood was negative; the cerebro-spinal fluid was not examined. Transient hemiplegia is a not very infrequent neurological condition, and may be due to a variety of causes. In the first place, it is often stated to be caused by a temporary ischæmia in some cerebral area due to local spasm in the artery or arteries of supply. The possibility of cerebral seizures due to such arterial spasm has apparently been accepted widely, but it is not yet clear whether a condition of intermittent claudication occurs in cerebral vessels analogous to that of peripheral vessels. Dejerine's "intermittent claudication of the spinal cord" remains an hypothesis. Sir William Osler grants the occurrence of cerebral arterial spasm only in cases of hyperpiesis or of well-marked cerebral arteriosclerosis. Dr. Mills's case is not stated to have had either of these pathological conditions. Dr. O. K. Williamson, however, believes that arterial spasm may occur without signs of these, arguing from the phenomena of migraine. Now, secondly, there is a similar uncertainty in regard to the latter condition. It is known that temporary local motor weakness may accompany an attack of migraine, although such weakness as a rule lasts only for minutes, and in any case the sensory symptoms of migraine are much more prominent and, in fact, constant. Dr. Mills's patient does not appear to have had any of the usual sensory phenomena of migraine, while the paralysis was more absolute than is seen in that "neurosis." But there are objections to the local arterial spasm or

local vasomotor change theory of migraine, as was clearly pointed out by Gowers. It should always be borne in mind that some of the phenomena of migraine are "positive," in Hughlings Jackson's sense, and others "negative." Irritative and paralytic phenomena cannot both be caused by the same morbid process at the same time, yet local arterial spasm is invoked to explain both sets of symptoms. A third possible cause of transient hemiplegia is cellular exhaustion after an epileptic cortical discharge. A fourth condition is associated with infective states such as measles and other fevers, where transient motor paresis has been not infrequently found. Again, in the *état lacunaire* described by Pierre Marie and his pupils—a "subacute vaginalitis" of the sheaths of small cerebral vessels—a transient paralysis of some hours' duration may follow an ictus not associated with loss of consciousness. Still another possibility to be envisaged is that of disseminated sclerosis, which may certainly begin as a hemiplegic variety, with none of the so-called classical or cardinal symptoms. In this connexion the previous unilateral paræsthesiæ of three days' duration in Dr. Mills's case are of considerable significance. Transient paresis in disseminated sclerosis is often in the foreground of the clinical picture. The negative Wassermann test in the blood is of importance, needless to say, yet examination of the cerebro-spinal fluid in so interesting a case might have been helpful. In a few cases of meningitis circumscripta serosa there has been sudden onset of paralysis, which has as suddenly disappeared after lumbar puncture. Reference may be made to a point of minor interest in Dr. Mills's case. The hemiplegia was on the left side, but the patient had much impairment of speech, as opposed, it may be gathered, to articulation, and "knew what she wanted to say but could not say it properly." We are not told whether the lady was left-handed; this, however, might be ascertained, for a crossed aphasia is of such clinical rarity and interest that every case deserves full investigation.

A WAR STUDY OF BRAIN SURGERY.

Mr. Harvey Cushing records in the April number of the *British Journal of Surgery* a detailed study of the treatment of wounds met with involving the brain and its enveloping structures. This is a valuable communication, since the methods adopted by him and his team of workers have resulted in a reduction of the mortality of dural penetration cases—133 in number—from 54·5 per cent. for the first 44 cases to 28·8 per cent. for the last 45 cases. It seems that there remains still, after three years, less unanimity of opinion as regards the principles of treatment of cranio-cerebral injuries than of any other type of wounds, and a summary of Mr. Cushing's methods will therefore be of general interest.

The material analysed is composed of 250 cases; of these, 10·1 per cent. were scalp wounds, 24·6 per cent. involved cranium as well but with intact dura, 60·7 per cent. had dural penetration, and 4·5 per cent. were massive or bursting fractures. The operative procedure adopted by the writer consists essentially in the removal *en bloc* of the area of bony involvement, the withdrawal by suction through a soft catheter of the devitalised cerebral tissue lining the track, and the extraction of bone fragments with the least possible increase in the trauma already produced. A classification of cases is adopted, less in accordance with the site or character of the cranial involvement than with the seriousness of condition of the cranial contents. One can only touch here upon a few of the interesting points detailed by Mr. Cushing. He warns us against underestimating the possible seriousness of scalp wounds, especially if situated on the longitudinal sinus. In those cases where there is depression of the inner table trepanation is indicated, of course, but recovery is often hastened by incision of the dura, the dangers of infection, it is stated, being less than has hitherto been feared. Wounds with laceration of the dura and cerebral contusion are favourable cases, in spite of the fact that the meninges have been torn; even though the scalp wound may be grossly contaminated, there is no immediate risk of intracranial infection, since the more or less intact mosaic of bone fragments intervenes, and extrusion of brain substance is uncommon. More serious are those cases, 39 in number in this series, where fragments are widely indriven; often also cerebral protrusion occurs. Most of these cases are wounds over the parietal area. An interesting feature in these cases is the progressive nature of the symptoms recognised by the patient who, after return to consciousness, is aware of weakness of one leg, or leg and arm, sometimes succeeded by paralysis or spasticity. When the ventricles were penetrated by a missile death occurred in all cases, probably due to early infection of the cerebro-spinal fluid. Not uncommonly the projectile lodges actually in the ventricle. In other cases in this series, where the ventricle is not penetrated, the mortality was 54·3 per cent., infection again playing the chief rôle.

Mr. Cushing, in a final review, holds that the clinical histories of the 219 operation cases have clearly shown a large number of the recorded fatalities to be avoidable—not only by the employment of a still more perfect technique, but by its more prompt application. He is in favour of operating on these cases in the earlier stages and eliminating, as far as possible, the delay in transit for even the more serious cases. The success of his methods certainly adds weight to these opinions.

THE ROUTINE USE OF SPINAL ANALGESIA IN GYNÆCOLOGY.

SPINAL anæsthesia has proved so useful in operations below the level of the umbilicus that it is not surprising to find gynæcologists are using the method more and more. Up to the present time, so far as we are aware, this method of anæsthesia has hardly been regarded as sufficiently free from risk to be employed as a routine procedure in all cases; but the series we publish (p. 141), from the clinique of Professor Dobbin at the Kasr-el-Aïny Hospital, Cairo, proves that it can be used, at any rate in Egyptian women, in all varieties of gynæcological operations with success and safety. A total of 1891 operations under spinal anæsthesia is sufficient to warrant us in regarding as trustworthy such evidence of the advantages and disadvantages of spinal anæsthesia in this class of case. From the conclusions drawn by Dr. Mahfouz—and the facts he adduces certainly warrant his conclusions—the advantages are many and the disadvantages few. The small number of cases in which complete or partial failure to produce analgesia occurred can almost all be explained as due to errors in technique, and the series is very remarkable for the infrequency with which dangerous symptoms occurred, either during or after the operation. The author remarks that the woman may find the lithotomy position distressing while she retains consciousness, but this is readily got over by putting the patient lightly under the influence of a general anæsthetic before the intraspinal injection is given, and if necessary keeping her sufficiently under to prevent her being conscious of what is actually happening. The plan has already been adopted by some gynæcologists. Very little general anæsthetic is required when the patient is under the influence of stovaine, and it is quite easy to keep her sufficiently under its influence to annul entirely any mental shock consequent upon her exposure in the lithotomy position or upon the discomforts of the extreme Trendelenburg. position. It is urged by some of its

adherents that spinal anæsthesia does away with the necessity for the Trendelenburg position; but this is not so; it is true that spinal anæsthesia gives complete abdominal relaxation, but the facilities for carrying out such an operation as an extended abdominal hysterectomy afforded by the Trendelenburg position are so real that it is the custom of many gynæcologists to invert their patients even when spinal anæsthesia has been employed. Some operators elevate the table as soon as the spinal injection has been given, others—and this, in our opinion, is the best plan—wait some 15 to 20 minutes before doing so. It is especially in such operations as extended abdominal hysterectomy for cancer of the cervix uteri that the combined method of spinal and general anæsthesia is so useful. The performance of the operation is facilitated, the shock lessened, and the convalescence of the patients rendered quicker. Dr. Mahfouz's paper is a valuable contribution to our knowledge of spinal anæsthesia, and Professor Dobbin's excellent results should do much to commend the method to gynæcologists.

THE hearing of the action brought by four members of the medical staff of the Coventry Provident Dispensary against the British Medical Association and certain of its officers was concluded on Tuesday last, when Mr. Justice McCardie, who was sitting without a jury, said that he would take time to consider his judgment.

IN answer to a request made by a county medical officer of health to the Medical Officer of the Local Government Board, the Registrar-General has arranged to supply to every medical officer of health for the year 1918, and in subsequent years, a statement of the number of deaths under one year of age in each sanitary area classified by legitimacy as well as sex. This is in addition to the statistical information already supplied to medical officers of health by the Registrar-General, and it is hoped that in this way further investigation will result into legitimacy of birth in relation to infant mortality.

THE death is announced of Dr. Frederick T. Roberts, consulting physician to University College Hospital and Emeritus Professor of Medicine in University College, London, which took place on July 28th, in his 79th year. Dr. Roberts, who was a Fellow of University College, London, and Hon. D.Sc. of the University of Wales, was the author of a text-book on the theory and practice of medicine, which was a standard manual for many generations of students. More detailed appreciation of Dr. Roberts's career will appear in a forthcoming issue.

AS we go to press we learn with regret the death of Mr. Henry Betham Robinson, Major, R.A.M.C. (T.), the well-known surgeon on the staff of St. Thomas's Hospital, London.

THE LANCET, VOL. I., 1918: THE INDEX.

OWING to the continued shortage in the paper-supply, the Index and Title-page to the volume of THE LANCET which was completed with the issue of June 29th have been printed separately, and copies have been supplied gratis to those subscribers who have, up to July 31st, intimated to us their wish to receive them. Other subscribers will be similarly supplied, so long as the stock remains unexhausted, on application to the Manager, THE LANCET Office, 423, Strand, London, W.C.

REPORTS AND PAPERS ON MALARIA CONTRACTED IN ENGLAND IN 1917.

A SERIES of important reports dealing with the occurrence of indigenous cases of malaria in this country has just been issued by the Local Government Board in a volume described as New Series No. 119 (price 4*s*.). The papers include:—

Notes on Military Cases of Malaria contracted in England in 1917, from reports furnished by the Army Medical Department.
Naval cases of Malaria contracted in England in 1917, contributed by Deputy Surgeon-General P. W. Bassett-Smith, R.N.
Civil cases of Malaria contracted in England in 1917, by Lieutenant-Colonel E. Wilkinson, I.M.S.
Malaria: Practical Points in the Study of the Disease and its Diagnosis, by Lieutenant-Colonel S. P. James, I.M.S.
English Mosquitoes, by A. J. Grove, M.Sc.
Tables showing Recorded Observations of Anopheline Mosquitoes in England.
General Abstract from a Report to the Army Medical Department on the Mosquito Survey of the Aldershot District, by Captain A. C. Parsons, R.A.M.C.
Reports of Surveys of Certain Areas in England with Reference to the Occurrence of Anopheline Mosquitoes, 1917, by A. J. Grove, M.Sc., and by Mrs. A. Macdonald.
Map showing the Localities in which Anopheline Mosquitoes have been Recorded. Prepared at the British Museum (Natural History) by direction of the Trustees.

The reports are introduced by Dr. G. S. Buchanan, assistant medical officer to the Local Government Board, with a comprehensive review of the present position of indigenous malaria and the principles of preventive action. With the former we deal elsewhere, and the following is a summary of the latter.

The Principles of Preventive Action.

There are several different methods of malaria prevention the adoption of one or other of which depends upon the particular conditions to be encountered and the particular principle which it is decided to apply. It is essential to decide which link in the chain of infection is to be the main object of attack. A little antimosquito work, a loose and ill-considered system for detecting and reporting malaria cases, and a haphazard administration of quinine will not greatly help, and may be dangerous by giving a false impression of security. Certain lines of preventive action have been considered at conferences between representatives of the medical departments of the Army and the Local Government Board.

Antimosquito Work.

A negative proposition as regards anti-mosquito work must first be stated. In this country we are used to gnats and midges. We do not often talk of mosquitoes, and think of them as rare. The appearance of a disease which is known to be "mosquito-carried" thus at once suggests that it should be dealt with first and foremost by striking at its insect host. Attention is at once drawn to certain well-known anti-mosquito campaigns with their systematic method of drainage, petrolage, and the rest, which have been so effective against the mosquito-carried diseases—yellow fever and malaria—in Panama. The way in which for many years past such campaigns have practically banished all anophelines and malaria from places in Egypt and the Soudan is also well known. It has already been urged that similar methods should be at once organised and taken in hand, if not in the country generally, at least in places like Romney Marsh, Sandwich, and the Isle of Sheppey, where mosquitoes in general, including anophelines, are numerous and often in themselves constitute a considerable local nuisance.

On this matter it is necessary to point out that the undertaking of such anti-mosquito campaigns must not be considered as the only method likely to be effective under English conditions, or necessarily the best method. And in considering its practical aspects it will be well to refer to the inquiries as to the distribution and prevalence of anophelines in England contained or reported in these papers, and particularly to the accounts of the detailed mosquito-surveys. Consideration of these facts of distribution, of the habits which distinguish the anopheline from other mosquitoes, and of the nature of the work which has been found necessary in malarious countries where anopheline destruction has been effectively dealt with points to the conclusion that the task, even when limited to small areas, would be one of very considerable magnitude if it is to be done in such a manner as effectively to prevent risk of the inhabitants being bitten by anophelines.

Much the same applies to measures which merely aim at the temporary reduction in the numbers of anophelines in an area where they are relatively abundant. Such a reduction might perhaps be attempted administratively by treating the matter as a war emergency requiring special powers to be obtained and exercised. But this proceeding, if carried out on any scale in the areas principally concerned, would make demands on the supply of available labour and entail an amount of interference with agricultural work that ought

not to be asked for at the present time without much stronger evidence of its necessity than could at present be put forward.

While thus setting aside comprehensive antimosquito work as impracticable at present, it should be said that from many points of view it would be desirable that some exact experimental work on mosquito eradication under English conditions should be undertaken in suitable areas on a small scale. Moreover, minor measures can sometimes be taken for destroying mosquitoes or mosquito larvæ by individuals or by the military or local authorities; for example, the clearing of particular ditches or ponds close to dwellings or camps which are found to be prolific mosquito breeding-places, or the cleansing and whitewashing of cowsheds which harbour the adult insect. Provided that the limitations of such methods are understood and primary reliance is not placed upon them for dealing with local risks of indigenous malaria, such measures are all very good and deserve encouragement.

Control of Human Carriers of the Parasite.

Another root-and-branch proposal has been considered in connexion with the alternative plan of checking infection by control of the human carrier of the parasite. Broadly, this is a proposal for Army action to segregate those men who return from the Eastern war areas or elsewhere, having there been attacked by malaria; segregation in special hospitals in the case of those actually ill, and in special camps or convalescent establishments in the case of all who are convalescent from recent malaria or who are liable to relapse. To a large extent the first is already secured by the plan which for some time has been followed by the Army authorities. Men actually suffering from malaria, not only those returning direct from abroad but also those who have now been transferred to home service, are already treated for the most part in special military hospitals, with precautions where they are needed against mosquito infection. If they are treated in other hospital units and there is any risk of mosquito infection, the hospital ward is screened and other precautions are taken.

With convalescents, however, the case is otherwise. A large and increasing number of men who in the intervals of attacks are well or in fair health, though liable to relapse of malaria, cannot be segregated and kept from their proper Army work or from going on leave to their homes for long periods—perhaps for years. The impossibility of doing this without great loss of man-power and grave hardship to the men themselves is self-evident, and it may be added that even complete segregation of all men known to have had malaria would not meet the whole difficulty, as some men harbour the malaria parasite without being aware that they have had the disease.

The Army authorities rely upon getting results which are largely equivalent to those theoretically obtainable by segregation, by systematising the method of curative administration of quinine. It is aimed at giving this drug in such a way as to secure as far as possible the "disinfection of the infected," or in any case to obtain a great reduction in the period during which the blood of the malarial case would contain the parasite and also in the intensity of possible infectivity. The methods referred to have been the subject of various Army orders and arrangements. In addition, a special system has been adopted for dealing with malaria cases returning from Salonika. This system provides for the inspection of men of this group at the port of disembarkation by a medical officer who decides as to the necessity or otherwise of their immediate admission to hospital. Those for whom admission to hospital is not considered necessary are sent to their regimental depôts, where they are granted 30 days' furlough before returning to duty, and by means of a malaria card and other arrangements steps are taken to secure that any necessary treatment is continued.

"Malaria-suspected" Areas.

It may be anticipated that to the extent that the Army system referred to is continued and developed the risks of extension of indigenous malaria will be reduced to small and manageable limits. Looking to these considerations, it seems sufficient at the present time to limit any exceptional precautionary measures to certain particular localities which may be termed "malaria-suspected areas," selected on account of the appearance in 1917 of multiple cases of indigenous malaria or because of facts which show that in these areas a considerable concentration of possible human malaria-carriers coincides with an exceptional abundance of anophelines. The areas at present noted for such exceptional treatment as agreed upon between the medical departments of the Army and the Local Government Board are:—

Military Areas.	*Sanitary District Concerned.*
(1) Isle of Sheppey and Isle of Grain.	Sheerness Urban; Queenborough Urban; Sheppey Rural; Hoo Rural.
(2) Sandwich.	Sandwich Urban; Eastry Rural.
(3) Romney Marsh.	New Romney Urban; Lydd Urban; Romney Marsh Rural.
(4) Borden and Longmoor (Aldershot area).	Alton Rural; Alton Urban.

The selection of these areas has been arbitrary, and it is intended to extend them should experience show that this is necessary. Guidance will be obtained during the present year, first, by the experience in these areas themselves; secondly, by the information obtained as to the occurrence of any groups of indigenous malaria cases outside these areas; and, thirdly, by arrangements which have been made in the Army Medical Department for watching the concentration in particular camps or districts of men who have returned from eastern war regions.

While it is not in present circumstances considered essential to take steps to make malaria a disease compulsorily notifiable throughout the whole of England and Wales, it is important that in any district where a medical practitioner suspects malaria of indigenous origin he should at once communicate the facts to the medical officer of health of the district, or direct to the Board, and should utilise the facilities provided for examination of blood specimens.

Special Measures in "Malaria-suspected Areas."

The following arrangements are at present in operation, or in process of being made, in the areas specified above.

On the military side a medical officer with experience of malaria (acting under the general direction of Sir R. Ross from the Headquarters of the Army Medical Department) undertakes the expert and supervisory work necessary in connexion with camps and troops. With the aid of this officer, and by means of special instructions, steps are taken on the military side:—

(*a*) To detect malaria (new cases and relapses) at the earliest moment among men reporting sick or sent to hospital; giving systematic attention to all cases of pyrexia of doubtful origin or otherwise suspicious of malaria, and taking and examining blood films in all such cases. (*b*) To give any instruction and expert assistance necessary with this object to all medical officers at military camps or hospitals within the area, making systematic visits for this purpose. (*c*) To move hospital cases found to be suffering from malaria to one of the special malaria hospitals out of the area, or, if they are treated at local hospitals, to place them in wards which are properly mosquito-proofed. (*d*) In each camp within the area, to obtain a roll of men who have been in any malarious war area beyond France, or who state that they have had malaria within two years. Men on this roll to be specially examined weekly; to sort out those who are anæmic, or out of sorts without complaining of definite illness, and to detect any malarious condition or relapse. (*e*) In each camp within the area to have mosquito-screened hut or huts for malaria cases on the above roll, with a reserve of mosquito nets to be used in ordinary huts if this accommodation is exceeded; and to secure that appropriate quinine treatment is being given to all malaria convalescents. (*f*) To arrange that the military malaria medical officers will give the aid of their special knowledge where desired to civil medical practitioners, &c., within the area, to interchange information as to the prevalence of malaria with the medical officer of health, and to coöperate with medical inspectors of the Local Government Board who visit the area in regard to civil precautions.

On the side of *civil administration* the councils of the sanitary areas concerned are advised by the Local Government Board temporarily to add malaria to the list of diseases made compulsorily notifiable under the Infectious Diseases (Notification) Act, 1899, and to transmit to the Board at once information as to any newly notified case. Malaria has now been made thus notifiable in all the districts specified in the list above. Medical inspectors of the Board have conferred on the subject of malaria precautions with the medical officers of health, and local visits will continue to be made as necessary by them.

Through these central and local medical officers steps are taken on the civil side:—

(1) To assist medical practitioners or medical officers of civil hospitals in the area in the early detection of malaria cases. Blood films taken for this purpose and transmitted to the Local Government Board are examined and the result reported to the sender. The London School of Tropical Medicine has undertaken to assist in making these examinations. (2) To secure that any civil case of malaria is suitably treated in hospital or, if treated at home, is supplied with mosquito nets; receives necessary quinine treatment; is advised how to continue quinine so as to prevent relapses, and how to prevent other occupants of the house from becoming infected. (3) To obtain, through the medical staff of the county, a periodical examination of children at public elementary schools in the area, with a view to detecting cases of enlargement of the spleen or anæmia in which the possibility of malaria should be considered, and confirming the diagnosis by blood film examination. In this connexion the importance of inquiry as to absentees suffering from fever should be remembered. (4) To supply medical officers of health with information obtained from Army sources or otherwise regarding men who have had malaria and have returned to civil life or civil employment within the district. (5) To arrange that medical officers of health coöperate with the military malaria officer who has expert charge of the area as regards the camps and troops therein.

Conclusion.

The appearance of indigenous malaria as a consequence of war conditions in regions from which the disease has long been absent is not special to England. Civil and military cases in small numbers, which were comparable to those in England in 1917, were reported during the same year from certain parts of northern France. Close attention has lately been given by an inter-departmental committee, presided over by the Director-General of the Medical Department of the Royal Navy, to the occurrence of malaria in 1917 among passengers arriving from West African ports.

Correspondence.

"Audi alteram partem."

THE LATE RICHARD GRAINGER HEBB.

To the Editor of THE LANCET.

SIR,—I regret that the only notice of the death of the late Dr. R. G. Hebb which has appeared in THE LANCET should consist in the bare record of the fact. I know you will permit me, even at this late date, to pay some tribute, inadequate though it must be, to his memory. To all the men who have worked at Westminster Hospital during the past 38 years Dr. Hebb, consulting physician and physician-pathologist to the hospital, stands out as a unique personality. To us Dr. Hebb has meant pathology personified. Year after year, week in, week out, whatever changes might happen in the rest of the hospital, when not in his out-patient department or in the wards, he was always to be found in the pathological clinical laboratory or in one of the rooms of that department. To some of the students in their third year just entering into hospital work Dr. Hebb's manner may have seemed somewhat cold, but when they had passed through his classes in morbid histology and clinical pathology, and, better still, had had the great privilege of working under him as clerk in the post-mortem room, all became his devoted followers. Later, as resident officers in the hospital, Dr. Hebb's room was the resort where they always went with the problems that perplexed them and to talk over the physical signs and the various symptoms which they could not fit in with any description in the text-books. There from his vast experience they gained what they sought. For he was a physician-pathologist. He knew the patient as a clinician, and through all the years he was constantly verifying or disproving diagnoses in that place where errors cannot be complacently talked away. And therefore he habitually saw through clinical signs to the underlying pathological cause.

There have been few pathologists like Dr. Hebb. There will be still fewer, for he *lived* for pathology. He left no time for anything else; he cared for nothing else. He never laid himself out to gain private practice. He took part in no controversies, with the result that his true worth was scarcely known to anyone outside Westminster Hospital. Nevertheless, the offices he held and the posts he filled show that the range of his activities was far from limited.

Of all the memories that crowd upon an old Westminster man one stands out most vividly. It is 12 o'clock on any Wednesday morning. The men have hurried up to the weekly pathological demonstration—I say hurried, for only the bravest, or rather only the most obtuse, would venture to be behind time—and as Big Ben booms out the first stroke of the hour the door of Dr. Hebb's private room opens and the master of the situation walks to the table where the past week's specimens are arranged, waiting for that illuminating commentary which he knew so well how to fix in the memory of his listeners by caustic asides. This was the most dramatic moment of our Westminster week. It is no wonder that men interrupted whatever they were doing and hurried off so as not to lose one moment of that instructive hour. When in later life these men came up to London from the country, or home from the ends of the world, one of the great centres of attraction was this Hermit of Pathology. Even amongst the men who admired and valued his intellectual vigour, only few knew the heroism of those last years when, suffering from such pain as would have incapacitated many a younger man, his sense of duty held him unfailing to his work.—I am, Sir, yours faithfully,

Devonshire-place, W., 25th July, 1918. ARTHUR EVANS.

THE TREATMENT OF FUNCTIONAL NERVOUS DISORDERS IN THE ARMY.

To the Editor of THE LANCET.

SIR,—In your issue of July 20th you publish a request that medical men who are now being called up to serve with the R.A.M.C. should send in their names to the Director-General if they are desirous of undergoing a special course of training and of undertaking therapeutic work in functional nervous disorders. The enormous strides which have been made during the war in the treatment of these disorders, and the increasing recognition that the mental factors of strain and anxiety are primarily responsible for so many of the minor ailments met with in general practice, should surely attract an adequate number of applicants. The need for a special course of training, by means of systematic lectures and clinical demonstrations and instruction, is emphasised by the fact that different cases of functional disorder require different methods of treatment, and that electricity, manipulation, isolation, and the more purely psychological methods of analysis, suggestion, and hypnosis each have their value in appropriate cases if their limitations, their uses, and abuses are clearly recognised. The most successful medical officer is he who has learnt to select the particular treatment best fitted for each case, and who realises that he must familiarise himself with the different therapeutic methods. These can be learnt only by instruction in the hospitals which have been so successfully established throughout the kingdom for the treatment of functional nervous disorders.

I am, Sir, yours faithfully,

July 26th, 1918. M.

THE FUTURE OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—Thanks are owing to THE LANCET for bringing together the three thoughtful papers on this subject in the issue for July 20th. Without subscribing to any visions of advanced "socialism"—that half-witted offspring of ignorance and envy, and parent of decay—one cannot conceal from oneself the assurance that the war has hastened the recognition of a new "natural right of man"—viz., *the right to an equal chance of health* and of its inevitable corollary, the imperative necessity for a reorganisation of medicine to accord with it. That such a reorganisation must include a unification of direction and a status of sufficient authority needs no argument. All unbiased opinion demands a Ministry of Public Health with a Minister of Cabinet rank. This is already much overdue.

In framing any scheme for it, certain obvious defects in existing medical conditions and certain essentials of reform must be borne in mind.

Certain Existing Defects.

1. Preventive medicine is not yet independent of hindering local interests. It can only be so freed by becoming a whole-time State service.
2. Medical education is still in the hands of financially interested corporations, to the detriment not merely of medical training proper, but still more so of that preliminary general training of the mind which counts for so much in the making of the practitioner. A uniform State qualification with compulsory adequate minimum of general education is urgently needed, and medical education should be properly subsidised by the State—probably as part-time State service.
3. Something should be done to give the less-well-off equal advantages to those enjoyed by the wealthy and the poor. At present these advantages are denied them.
4. In the Insurance Act the evil principle of the control of a highly skilled industry by insufficiently trained minds was introduced. This must be remedied.
5. The financial *saving capacity* of the medical profession is ridiculously inadequate. A man doing such valuable public work as a doctor has a right to expect that his earnings will maintain himself, his wife, and children in health, pay for education, and provide for his and his wife's old age or for his family's support in case of his death or complete disablement. How many realise such expectations? Why, also, should medicine bear the greatest part of the burden of the medical charity of the nation?

Certain Essentials of Reform.

1. The new Ministry must control the whole of medicine. The Navy, Army, and Colonial Medical Services should certainly come under it. We must know in peace our liabilities in war, provide for them, and, as a profession, organise them.
2. Medicine must be controlled by adequately trained minds, and the Minister must be a medical man, since such alone can properly voice the medical needs of the country.
3. Except in such instances as the Navy and Army administrations and the Public Health Service, whole-time service must be restricted to administration. Those hopeful souls who think medicine could continue to flourish under whole-time conditions of service all round, however learned they may be, have not studied either history or human nature. Part-time State service for the great bulk of the profession is probably the most practical solution of the problem of State control.

4. Free choice of doctor by patient and patient by doctor is enormously important, as the chief means of maintaining the very peculiarly human relationship of doctor and patient, so vitally essential to getting the best out of medicine.

5. The labourer is worthy of his hire. Adequate pay and pension must be insisted on. It should be borne in mind that reluctance to press for these is far more often due to cowardice than to generosity.

6. "Leave" to recruit body and mind must be assured.

7. "Study-leave" to bring every man up to date periodically must be provided.

A Warning.

Whatever happens, the mere extension of the Insurance Act conditions to the entire profession must be resisted "to the last ditch." It is manifestly the desire of certain trades unionists to bring the medical profession into subjection to the "working classes." No one has a greater respect than I have for the "knights of labour," where indeed they are "knights." We have all felt for the men who have gone out to the war from the ranks of "labour" and returned to our care in hospital, something far more than wonder and gratitude, what one may call without affectation an ineffaceable affection; but with what feelings can we regard the men, safe at home, who have made of their country's dire peril a financial opportunity, whose callous disregard of their fellows in the trenches has inspired thinking men with contempt and detestation. Hands so unclean must not control the helm of national health.

I am, Sir, yours faithfully,

Exeter, July 21st, 1918. W. GORDON.

Postscript.

It is idle for any political wirepuller to imagine he can either bribe or bludgeon English medicine into any course it disapproves. The Insurance Act was based on such a misconception and it has failed. If the whole-hearted service of the profession is to be gained over for the nation in peace as it has eagerly given itself in war it must be under terms of service both equitable and enlightened. What is fairly due to its vast importance and responsibilities, to its arduous and highly-skilled labour, must be fairly met. But also, and vastly more important, its control must be in the hands of adequately trained minds, its mental and moral equals. We medical men do not care a straw from what class a legislator comes—observation and history alike convince us that the makers of England have come from her People in the broadest sense—but we care a great deal that those who control the progress of the physical welfare of the nation shall be men of trained intelligence and unquestioned probity. The profession which has been second to none in self-sacrificing patriotism in this unequalled war is not going to bow to the dictates of the Bolsheviks of Coventry.

The most important utterance in the discussion on Sir Bertrand Dawson's able paper was that of Sir Robert Morant, who said: "The medical profession should get to work to decide as to the particular characteristics the scheme should possess." What is now, therefore, necessary to bring matters to a head is the appointment of a committee of the profession, representative of every considerable section of its work, to draw up a definite plan for a reorganisation of its activities. Such a plan would be neither political nor protective in any real sense, but just as scientific and far vaster in scope than any proposals for the prevention of syphilis or the cure of tuberculosis. The personnel of the committee should be such as to command alike the confidence of the public and of the profession.

The proper body to call such a committee into existence must be a wholly non-political and recognisedly scientific body, representing already all important scientific medical activities. The Royal Society of Medicine answers to that description.

July 25th, 1918.

"TRYPAGAR."

To the Editor of THE LANCET.

SIR,—In his article in your issue of July 27th on a new medium for Pfeiffer's bacillus which he calls "trypagar" Dr. John Matthews refers to a medium composed of Douglas's trypsin broth and agar described by Captain S. R. Douglas in an article in THE LANCET of Oct. 10th, 1914. As we had always believed that the name "trypagar" was our own invention for another medium, I turned up this article and found that Captain Douglas does not use it. Had he wished to give his medium a name he would probably have called it "trypsagar." In the communication by Lieutenant-Colonel M. H. Gordon and myself to the *British Medical Journal* of Nov. 18th, 1916, we gave the name trypagar to the medium we therein described for the meningococcus, and which consisted of Douglas's trypsin broth and extract of peaflour combined with agar. The name "trypagar" was supposed to represent "try" for Douglas's trypsin broth, "p" for peaflour extract, and "agar," of course, for the agar. Sir Walter Fletcher suggested that we should call it "trypsagar," using the "ps" for the Greek ψ, until we pointed out that the "p" stood for the peaflour extract. Perhaps the difficulty would be best met by calling Douglas's trypsin broth agar "trypsagar," while retaining the name "trypagar" for the medium for which it was introduced—namely, trypsin broth containing pea extract and agar.

I am, Sir, yours faithfully,

T. G. M. HINE,
Major, R.A.M.C.

Central C.S.F. Laboratory, Caxton-street, S.W., July 29th, 1918.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions and donations to the Fund have been received during the week ending July 29th:—

	£	s.	d.
Dr. L. Gwillim Davies...	2	0	0
Mr. J. H. Frost	1	1	0
Cheltenham Doctors [1] ...	0	18	0
Mr. J. Gay French ...	5	5	0
Dr. Elizabeth Wilks ...	5	0	0
Dr. H. W. Arbuckle ...	1	0	0
Mr. Robt. Read	0	10	0
Dr. G. MacDonald ...	1	1	0
Mr. L. J. Giles	1	1	0
Mr. J. G. Atkinson ...	1	0	0
Dr. W. D. Spanton ...	1	1	0
Dr. J. S. Muir...	2	2	0
Lt.-Col. A. Baird, R.A.M.C. (R.P.)... ...	1	1	0
Dr. J. Cowan	1	1	0
Dr. Scott [2]	10	10	0
Roy. Coll. Phys. Edin. [3]	26	5	0
Messrs. Dent, Palmer and Co. [4]...	10	0	0
Sir John Duthie [5]	10	0	0
"Coningsby"	1	0	0
Mr. J. Jones, M.P.S. ...	1	1	0
Mr. G. W. Lewis, M.P.S.	1	0	0
Capt. J. R. Currie, R.A.M.C.	1	1	0
Dr. G. McIntyre	3	3	0
Dr. J. L. Jackson	2	2	0
Dr. J. Thomson	2	2	0
Mr. A. Chapman, M.P.S.	0	10	0
Dr. Agatha Porter... ...	0	15	0
Mr. F. E. Warmington	1	1	0
Dr. J. Black (for 3 mos.)	1	10	0
Southern Branch B.M.A. [6]—			
Dr. H. J. May	2	2	0
Dr. L. Cole-Baker ...	2	2	0
Dr. Livingstone	0	10	6
Dr. Mulcahy	1	1	0
Dr. Muggleton	1	1	0
Dr. Mein	0	10	6
Dr. Kirkness	0	10	6
Dr. Marwood	0	10	6
Dr. Lytle	0	10	6
Dr. Colt...	0	10	6
Dr. Sheahan...	1	1	0
Dr. Crawley...	1	1	0
Capt. Palser...	0	10	6
Dr. Briscoe	0	10	6
Dr. MacKeith	1	1	0
Dr. Le Quesne	0	10	6
Mrs. E. Collett [7]	1	0	0
Lt.-Col. G. F. Nicholson	1	0	0

[1] Balance of Fund raised by Cheltenham doctors for hospitality to Belgian doctors (per Dr. G. A. Cardew). [2] Per Mrs. Scharlieb.
[3] Per Dr. N. Walker. [4] Per Dr. Des Vœux.
[5] Per Dr. Herbert Spencer. [6] Per Dr. A. A. MacKeith (Hon. Sec.).
[7] Per Dr. Cameron Kidd.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

INFLUENZA IN SWITZERLAND.—Our Swiss correspondent writes: "An epidemic of influenza, or *grippe espagnole* as it is called here, has been widely prevalent in Switzerland during the last two months. At the beginning of July the severity of the attacks suddenly increased and fatal cases are being recorded daily in many cantons, especially Berne, Basle, Lucerne, and Zurich. In Berne the civilian population has been attacked to one-fifth or more of its total number. At Château d'Oex 6 out of 250 English internés are reported to have succumbed to it, and among Swiss soldiers the official bulletin recorded 11,000 cases with 305 deaths down to July 15th. The American Red Cross has voted a sum of $100,000 to provide better accommodation for sick soldiers, a large hotel at Interlaken having been secured for convalescents. The symptoms are those generally associated with influenza, but of a severe type, pneumonia being a common complication. In canton Vaud notification has been made compulsory, meetings are forbidden, and no visits allowed to patients in hospital. The medical profession has not escaped, and a certain number of fatal cases are reported, among them Dr. Steiger, first assistant to Professor Eichhorst in the cantonal hospital at Zurich."

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Killed.

Surg.-Prob. J. J. A. Lord-Flood, R.N.V.R.

Wounded.

Lieut. S. Riddiough, R.A.M.C., attached Highland L.I.
Capt. A. J. Spuy-Vanger, South African M.C.
Capt. F. W. Schofield, R.A.M.C.
Capt. W. Hall, jun., M.C., Canadian A.M.C.

Previously reported Prisoner, now reported Wounded and Prisoner in German Hands.

Capt. E. H. Griffin, D.S.O., M.C., R.A.M.C.

Previously reported Missing, now reported Prisoners in German Hands.

Capt. W. F. Dunlop, R.A.M.C.
Major F. G. Lescher, M.C., R.A.M.C.
Lieut.-Col. H. B. Kelly, D.S.O., R.A.M.C.

Previously reported Wounded and Missing, now reported Prisoner in German Hands.

Lieut. G. V. W. Anderson, R.A.M.C.

Missing.

Capt. M. Donaldson, R.A.M.C.
Lieut.-Col. A. C. H. Gray, R.A.M.C.
Capt. E. H. Jones, R.A.M.C.
Major E. J. Tilbury, R.A.M.C.
Major A. M. Wood, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualty among the sons of medical men is reported :—

Lieut. W. K. Wallis, attached East Lancashire Regiment, killed in action, eldest son of the late Dr. J. A. Wallis, of Preston.

THE HONOURS LIST.

The following awards to medical officers for services rendered in connexion with the operations against Zeebrugge and Ostend on the night of April 22nd–23rd, 1918, are announced :—

Distinguished Service Order.

Surg. FRANK PEARCE POCOCK, M.C., R.N. (*Iris II.*).—By his devotion to duty he undoubtedly saved many lives. When *Iris II.* was hit he at once commenced tending the wounded, and as all the sick-berth staff were killed, had all the work to do alone. After the dynamo was damaged he had to work by candle and torchlight.

Distinguished Service Cross.

Surg. WILLIAM LITTLE CLEGG, R.N. (*Vindictive*).—Was in charge of the stretcher parties on the upper deck of *Vindictive*. Landed on the mole to recover casualties. Later, when he was proceeding with his party along the forward mess deck of *Vindictive*, a shell entered and burst close to him, killing one of his stretcher-bearers. He continued his work immediately, and by his personal example kept his stretcher-parties going.

The following are the statements of services of the medical officers promoted in connexion with the same operations, and recorded in THE LANCET of May 25th, 1918, p. 751 :—

Staff-Surg. JAMES MCCUTCHEON, R.N., *Vindictive* (promoted to Fleet-Surgeon).—Was the senior medical officer of the force. It would be difficult to exaggerate the splendid qualities displayed by this officer. He organised the medical arrangements excellently, and imbued his subordinates with a fine spirit, and by his own personal skill and attention contributed to the saving of the lives of many gallant officers and men.

Surg. HENRY ST. C. COLSON, R.N. (promoted to Staff-Surgeon).—Was attached to the R.M. storming party. Worked for many hours under the greatest disadvantages in gas fumes and by the light of a torch only with the utmost devotion to duty.

The names of the following medical officers are mentioned in a despatch from Vice-Admiral Sir Roger Keyes, K.C.B., C.M.G., C.V.O., D.S.O., commanding the Dover Patrol, for distinguished services in connexion with the same operations :—

Surg. S. W. Grimwade, R.N.; Surg. A. C. V. Green, R.N.; Surg. F. M. Payne, R.N.; Surg.-Prob. P. C. du Toit, R.N.V.R.; Surg.-Prob. G. F. Abercrombie, R.N.V.R.

The following awards to medical officers, all members of the R.A.M.C. unless otherwise stated, are announced. The dates in parentheses, in those cases where bars have been awarded, refer to the number of THE LANCET in which a record of the original decoration will be found. A further list of awards of the Military Cross will be published next week.

Bar to the Distinguished Service Order.

Capt. (acting Lieut.-Col.) FRANCIS CASEMENT, D.S.O.—For conspicuous gallantry and devotion to duty when he evacuated all the wounded and salved a large quantity of surgical material, blankets, and stretchers during a long retirement. His courage, coolness, and resource were most marked during the whole of this trying period. (June 9th, 1917, p. 894.)

Major (temp. Lieut.-Col.) HUGH ALLAN DAVIDSON, D.S.O.—For conspicuous gallantry and devotion to duty. When in command of his unit he maintained the advanced dressing station in spite of heavy shelling by the enemy, only withdrawing when ordered to do so. He visited the regimental aid-posts under heavy shelling, and by his example and energy many casualties were evacuated which might otherwise have been lost. (Jan. 6th, 1917, p. 37.)

Capt. (acting Lieut.-Col.) THOMAS SWAN EVES, D.S.O.—For conspicuous gallantry and devotion to duty. He was in charge of an advanced dressing station which was being heavily shelled by the enemy, and he personally and thoroughly carried out a complete change of organisation. Later he was superintending the loading of ambulance cars near a railway bridge which was a special target for the enemy's guns, and though twice thrown over and bruised by bursting shells he stuck to his post till all the wounded had been dressed and evacuated. His fine performance under continuous shell fire till the enemy were close upon him was a splendid example to all. (Jan. 12th, 1918, p. 78.)

Lieut.-Col. FITZGERALD GABBETT FITZGERALD, D.S.O.—For conspicuous gallantry and devotion to duty. When his casualty clearing station was heavily shelled he not only evacuated his patients to places of safety, but salved practically all the stores of his unit. This action was performed twice over, and on both occasions his courage and ability were pre-eminent. (Jan. 6th, 1917, p. 37.)

Major (Temp. Lieut.-Col.) HARRY BEATTY KELLY, D.S.O.—For conspicuous gallantry and devotion to duty. When the camp, in which over 40 stretcher cases were collected, was heavily shelled, he collected the bearers and removed the wounded to a position of safety. Again, when the infantry were being withdrawn, he collected casualties with the bearers and carried them through a heavy barrage to the ambulance cars, thus saving several lives and setting a fine example to his men. (Jan. 6th, 1917, p. 37.)

Lieut.-Col. JOHN POWELL, D.S.O.—For conspicuous gallantry and devotion to duty during a long period of active operations. Owing to the great number of extemporised formations from the divisions, which increased continually from day to day, the task of providing adequate medical facilities was one of extreme difficulty. By his indefatigable energy and powers of organisation he successfully met all demands, and completed the evacuation of all wounded with splendid efficiency. On one occasion, hearing some wounded had been left behind, he went himself, under heavy and continual shell and maching-gun fire, with three ambulances, and brought them in. Throughout his conduct was beyond all praise. (June 15th, 1918, p. 855.)

Temp. Capt. (acting Lieut.-Col.) LAWRENCE DREW SHAW, D.S.O.—For conspicuous gallantry and devotion to duty. He was placed in charge of the forward division of the combined field ambulances. Although constantly exposed to heavy shell and machine-gun fire he organised the system of evacuation and extended it to neighbouring divisional units. By his inspiring example and disregard of danger he ensured a complete and successful evacuation of the wounded. (June 9th, 1917, p. 893.)

Capt. (acting Lieut.-Col.) WILLIAM TYRRELL, D.S.O., M.C., Spec. Res.—For conspicuous gallantry and devotion to duty when in charge of a line of evacuation. He worked continuously for six days, and it was due to his gallantry, organisation, and energy that touch was maintained so efficiently with the brigades, and so many casualties evacuated. He displayed great courage and coolness throughout, and inspired those under him by his fine example. (Jan. 12th, 1918, p. 78.)

Distinguished Service Order.

Major ARCHIBALD JOHN COLLINS, M.C., Australian A.M.C.—For conspicuous gallantry and devotion to duty when in charge of the evacuation of wounded during intense fighting. Although the A.D.S. in which he was located was subjected to heavy enemy artillery fire, by his splendid energy, coolness, and courage he was enabled to evacuate safely several hundred casualties. His magnificent example inspired all who came in contact with him, and stimulated junior officers and exhausted stretcher-bearers to further efforts.

Temp. Capt. (acting Lieut.-Col.) KENNETH WILLIAM MACKENZIE, M.C. (late Capt. I.M.S.).—For conspicuous gallantry and devotion to duty when in charge of the forward evacuation, when he kept in touch with the retiring infantry, continually searching for and collecting the wounded. It was largely due to his great energy, skill, and foresight that so many of our casualties were so successfully evacuated.

Capt. (acting Lieut.-Col.) ARTHUR THOMAS PITTS, Spec. Res.—For conspicuous gallantry and devotion to duty. He established a dressing station in a forward and very exposed position. During two days and two nights he remained under continuous and terrific shell fire, dressing wounded and evacuating them. His courage and endurance under most trying conditions saved many valuable lives.

Capt. (acting Lieut.-Col.) LEOPOLD THOMAS POOLE, M.C.—For conspicuous gallantry and devotion to duty during a hostile attack. Hearing that a large number of wounded were uncollected, owing to normal communications having been cut by the attack, he proceeded at once to the area which was subjected to a sustained bombardment and organised stretcher parties, sending up all his available cars. It was owing to his fine courage and promptitude that upwards of 300 casualties were not left unattended.

Temp. Capt. FREDERICK NAYLOR STEWART, M.C.—For conspicuous gallantry and devotion to duty. He collected and dressed cases under the most intense shell fire, and on two occasions, by remaining behind after the order to withdraw had been given, succeeded in evacuating all the stretcher cases. He set a high example of courage and self-sacrifice. He was wounded in the face and thigh.

Temp. Capt. JAMES LENNOX STEWART, M.C.—For conspicuous gallantry and devotion to duty. Although his aid-post was in the open, a few yards behind the front line, he remained there, caring for the wounded, and through his efforts they were all dressed and evacuated. He was the only medical officer of the brigade left.

Capt. (acting Lieut.-Col.) CHARLES HERBERT STRINGER.—For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station. Owing to the whole force retiring, the collection and evacuation of large numbers of wounded, who were lying in thick woods, was a task of extreme difficulty in view of the rapid advance of the enemy. Although subjected to heavy fire, he remained behind till the enemy were almost up to his position, and by skilful organisation he succeeded in evacuating practically all the wounded. His magnificent courage and devotion saved many wounded from falling into the enemy's hands.

Capt. (acting Lieut.-Col.) JOSEPH HUGH WARD, M.C., Spec. Res.—For conspicuous gallantry and devotion to duty while in command of a cavalry field ambulance. During two days of intense fighting, in spite of the enforced moves of his unit, he continued to keep an A.D.S. open until the last possible moment to deal with large numbers of wounded, only retiring when all had been evacuated and when ordered to do so. Throughout this period he showed an example of pluck and determination beyond all praise.

Temp. Capt. ROGER LLEWELLYN WILLIAMS, M.C.—For conspicuous gallantry and devotion to duty during operations, when, with the C.O. and adjutant, he was the last to withdraw. Shortly after the C.O. was severely wounded, but, with the assistance of another officer, he carried him away for over half a mile under intense machine-gun and rifle fire at close range. Afterwards he continued to dress the wounded, including the adjutant, under the most intense fire, and throughout the withdrawal he showed the utmost energy and devotion to duty.

Temp. Capt. (acting Major) HERBERT GEORGE WILLIS, M.C.—For conspicuous gallantry and devotion to duty. When in command of a bearer division of the field ambulance throughout ten days' fighting he kept all in order by visiting the R.A.P.'s and ambulance relay posts, and when the trolley line was destroyed by shell fire he reorganised the system of evacuation, going round the posts and making the necessary arrangements at great personal risk. By his action he ensured the clearance of the wounded.

Second Bar to the Military Cross.

Temp. Capt. (acting Major) CHARLES BROMLEY DAVIES, M.C.—For conspicuous gallantry and devotion to duty while in charge of an advanced dressing station. His energy throughout whilst supervising the collection of the wounded was remarkable, and it was due to him that the collection and evacuation of the wounded was so quickly and thoroughly carried out. Though slightly wounded he remained at duty for another eight days, when he was severely wounded. His courage and energy were of a very high order. (M.C. Sept. 2nd, 1916, p. 450; bar, July 28th, 1917, p. 135.)

Temp. Capt. JAMES WALLACE MACFARLANE, M.C.—For conspicuous gallantry and devotion to duty in going under heavy shell fire to the assistance of a wounded man who was lying in the shelled area, dressing his wounds, and getting him safely to cover. He without doubt saved the man's life. (M.C. August 4th, 1917, p. 175; bar Feb. 9th, 1918, p. 234.)

Bar to the Military Cross.

Temp. Capt. PHILLIPPE BERNARD BELANGER, M.C.—For conspicuous gallantry and devotion to duty when the enemy had penetrated the defences on the left of his battalion in support and were outflanking battalion headquarters. He went across 300 yards of ground swept by severe machine-gun and rifle fire to assist a wounded officer, and had him carried into safety. He displayed great courage and self-sacrifice throughout operations. (Oct. 27th, 1917, p. 658.)

Capt. (acting Major) HENRY BRYAN FROST DIXON, M.C.—For conspicuous gallantry and devotion to duty. This officer remained behind in "No Man's Land" and dressed three officers under extremely heavy machine-gun fire, and helped to carry a wounded man more than two miles to a place of safety. Later he continued to dress all wounded, although practically surrounded by the enemy. His cheerfulness and disregard of personal danger under these exceptionally trying circumstances inspired all ranks. (Nov. 8th, 1916, p. 881.)

Capt. WALTER ELLIOT ELLIOT, M.C., Spec. Res.—For conspicuous gallantry and devotion to duty. He established a regimental aid-post and for 12 hours, assisted by two officers, and in spite of continuous shelling, attended to over 250 wounded and succeeded in evacuating all to the dressing station. It was due to his personal courage and example that this was successfully carried out. (June 23rd, 1917, p. 969.)

Capt. (temp. Major) JAMES DOUGLAS FIDDES, M.C.—For conspicuous gallantry and devotion to duty. In charge of an advanced field dressing station, which was heavily shelled, he successfully evacuated all the wounded to a safer place. He also went up to the front when the officer in charge there was exhausted and gassed, and superintended the evacuation of all the wounded. (Feb. 9th, 1918, p. 234.)

Temp. Capt. JAMES PHILLIPS JONES, M.C.—For conspicuous gallantry and devotion to duty. He was in charge of an advanced dressing station, and when the village had been temporarily evacuated he was entirely responsible for the getting away safely of many of the wounded. Throughout the ten days of the battle he displayed the most conspicuous ability, cool courage, and devotion to duty. (Feb. 9th, 1918, p. 234.)

Temp. Capt. RONALD SINCLAIRE KENNEDY, M.C.—For conspicuous gallantry and devotion to duty. When in charge of advanced bearers he collected and led forward reinforcing bearer squads in a most gallant manner through a heavy barrage and through lines of retiring infantry, until he gained touch with the regimental aid-post. He cleared many wounded who would otherwise have been left to the enemy. A splendid example of persevering gallantry and fearlessness. (Oct. 6th, 1917, p. 549.)

Temp. Capt. (acting Major) JOHN SAMUEL LEVIS, M.C.—For conspicuous gallantry and devotion to duty. When in charge of stretcher-bearers at the advanced dressing station, his courage and example in leading squads over heavily shelled ground were the means of saving many lives. When ordered to evacuate he displayed great ingenuity and resource in saving his personnel and equipment. Throughout the operations he has rendered most valuable services. (Feb. 3rd, 1917, p. 200).

Temp. Capt. JAMES MANUEL, M.C.—For conspicuous gallantry and devotion to duty, whilst battalion medical officer. During a withdrawal he frequently dropped back unaccompanied by medical staff and under very heavy fire attended to casualties. His conduct throughout the operations was of a high order. (Feb. 9th, 1918, p. 234.)

Temp. Capt. JOHN HAY MOIR, M.C.—For conspicuous gallantry and devotion to duty. During a withdrawal he repeatedly went out into the open, under heavy fire, to attend to the wounded. Throughout the withdrawal 7 officers of the battalion were wounded. That only one was left in the hands of the enemy was largely due to the magnificent courage which he displayed. (Nov. 18th, 1916, p. 881.)

Temp. Capt. GEORGE RANKINE, M.C.—For conspicuous gallantry and devotion to duty during a withdrawal. He superintended the evacuation of wounded without rest and at great personal risk, notably when the left flank became exposed, and he led the bearers with great courage near the railway embankment and evacuated all the wounded under heavy artillery and machine-gun fire. (Nov. 13th, 1915, p. 1111.)

Temp. Capt. CHARLES ROCHE, M.C.—For conspicuous gallantry and devotion to duty in evacuating wounded from the front line to the advanced dressing station. Four out of five collecting posts occupied by him were heavily shelled, but he continued to work incessantly, and evacuated a large number of wounded. (Nov. 4th, 1916, p. 806.)

Capt. THOMAS VICTOR SOMERVILLE, M.C.—For conspicuous gallantry and devotion to duty. When his battalion was about to withdraw and the wounded could not be brought to his aid-post in time, he went up to the firing line and stayed there attending to the wounded till all the troops had withdrawn. His gallant conduct saved many lives. (Jan. 22nd, 1916, p. 215.)

Capt. (acting Major) JOHN STEPHENSON, M.C., Spec. Res.—For conspicuous gallantry and devotion to duty in continuing to dress cases in the open under heavy shell fire. When the advanced dressing station was heavily gas-shelled and several casualties caused he saved many of the patients and staff from being gassed by his example and coolness. On one occasion he went through a heavy barrage to the regimental aid-post, and by his coolness and judgment all ranks were encouraged persevere in clearing the wounded. (Oct. 6th, 1917, p. 550.)

Temp. Capt. CHARLES GORDON TIMMS, M.C.—For conspicuous gallantry and devotion to duty during recent operations. He continued to collect and evacuate wounded from his post, though several times nearly surrounded by the enemy and under heavy shell fire. By his fine courage and self-sacrifice he was able to get away a large number of wounded under most difficult conditions. (July 28th, 1917, p. 135.)

Temp. Capt. JOHN WILFRED WATTHEWS, M.C.—For conspicuous gallantry and devotion to duty during the evacuation of a line. He displayed the utmost courage and coolness in evacuating wounded under very heavy shell fire, and it was entirely owing to his energy and personal example that the whole of the wounded were got away in safety. Later, having lost the whole of his medical outfit, he rendered invaluable assistance in rallying the men in his vicinity. (Dec. 1st, 1917, p. 838.)

FOREIGN DECORATION.

Belgian.

Ordre de la Couronne: Chevalier.—Temp. Capt. A. Stokes, D.S.O., R.A.M.C.

RECOGNITION OF WAR SERVICE.

A correspondent writes to us as follows:—

"Why is it that medical men who have been serving at home ever since the war started have no badge or mark to indicate how long their period of service has lasted? Those serving abroad have their Mons star and ribbon, or their chevrons, according to their length of service, although they may have been no closer to the enemy guns than we are here in London. And it is admitted that, although the medical men abroad have periods of continuous and severe work, they also have periods of comparative slackness, while the men at home have one constant flow of work all the time. The V.A.D.'s and the special constables have been given distinguishing marks to show their time of service, but no one seems to have given a thought to the doctor. The heads of the Army Medical Service, as Regulars, can hardly have intimate knowledge of the wants of the Territorial or temporary members of the Service. But it is not unfair to ask, What would have happened if we had had to rely entirely on the Regular members of the R.A.M.C. for the treatment of all of our wounded? And are not these men who have been doing good work in the auxiliary services entitled to recognition? Should they not at any rate receive some distinguishing badge to show the length of their service? It is unjust for men who have served right from the start to be classed with those who were virtually conscripted."

We agree with our correspondent in seeing no reason why those who have borne the burden at home should not have some mark of recognition.

THE CALL FOR EMERGENCY SUBSTITUTES.—The Central Medical War Committee has from time to time appeals made to it for temporary assistance in practices in which, owing to illness or death of a partner, the incumbent is not only unable to do the work, but is unable to secure adequate assistance from his colleagues. It is found impossible often to secure a locum tenent through the ordinary channels. Offers of assistance for two, three, or four weeks from practitioners, either men or women, who could be free at short notice would be greatly valued, and should be sent at once to the secretaries of the Central Medical War Committee, 429, Strand, W.C. 2.

Obituary.

FREDERICK EUSTACE BATTEN, M.D. CAMB., F.R.C.P.,

OUT-PATIENT PHYSICIAN TO THE NATIONAL HOSPITAL FOR THE PARALYSED; PHYSICIAN TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET; AND HONORARY PHYSICIAN TO THE KING GEORGE HOSPITAL.

Dr. Frederick Eustace Batten, who died two days after a severe operation on Saturday, July 27th, was a son of the late John Winterbotham Batten, K.C., and brother of Dr. Rayner D. Batten. He was educated at Westminster and Trinity College, Cambridge, and at St. Bartholomew's Hospital, where he was house physician to Sir William Church and casualty physician. He also spent a short time doing post-graduate work in Berlin, where he acquired an intimate knowledge of the German language. His medical qualification dates from 1891 when he took the Bachelorship of Medicine at Cambridge, followed by the M.D. degree in 1895. In 1894 he became a Member of the Royal College of Physicians of London, and seven years later was elected to the Fellowship of that body.

The whole of Batten's professional career was intimately associated with two adjacent institutions—the Hospital for Sick Children, Great Ormond-street, where he held in succession the posts of medical registrar, assistant physician, and physician, and the National Hospital for the Paralysed in Queen-square, where he was elected pathologist in 1899 and a member of the honorary staff in 1900. For more than 20 years he gave unlimited time and the greater part of his energies to the care and cure of his hospital patients in the quiet backwater of Bloomsbury, which has become an important medical centre. There it was that he continued to pursue pathological researches long after he had ceased to hold any official position in the laboratories, and there he built up his reputation not only as a scientific neurologist, but as a physician and teacher who inspired complete confidence in his patients, and who earned and held to the last the affection and respect of colleagues and students. "Great Ormond-street" and "The National" have lost one of their truest friends, one of their most loyal servants, one who never failed, was never late, and never shirked the call of duty, however great the sacrifice. In spite of a large consulting practice he was always ready to undertake the more thankless tasks connected with hospital or school administration. At the time of his death he was dean of the medical school and secretary of the medical committee at the National Hospital, and we have no hesitation in saying that his conscientious thoroughness and zeal in these positions have created a precedent which his successor will find difficulty in following. He was a constant attendant at scientific meetings, and he will long be remembered for his services to the Medical Officers of Schools' Association, of which he was honorary secretary and president, and to the Neurological, Ophthalmological, and Clinical Sections of the Royal Society of Medicine. He was a consulting physician in the highest and most exact sense; his patients invariably reached him through the medium of his fellow practitioners.

Batten made many contributions to medical literature, mostly neurological, generally short, always to the point, and invariably characterised by the accuracy of his observations and the critical acumen of his interpretation. His chief interest was undoubtedly centred on the pathological and clinical pictures of organic disease, and it would hardly be inaccurate to say that he faced psychological problems, and especially their modern aspects, with some diffidence and reluctance. If this was true of his attitude to the problem it was otherwise to the patient, who never failed to gain help in abundance from his fund of human sympathy and understanding. Perhaps his pet subject was that of acute poliomyelitis, and his Lumleian Lectures delivered at the Royal College of Physicians in 1916 constitute the most exhaustive monograph on that disease which has appeared in this country. The text-book on Diseases of Children which he edited with Sir A. E. Garrod and Dr. J. H. Thursfield, and to which he contributed two important chapters, was published in 1913, and many of his papers are to be found in *Brain* and THE LANCET.

But Batten's first claim to the memory of those who knew and loved him—and they are many—lay in his character. His simplicity, his directness of thought and word, his love of children and the children's devotion to him, his geniality and tolerance, endeared him to all who had the privilege of his friendship. With strong domestic instincts, he was at his best as a host in his own house, full of boyish interest in every subject, always keen to acquire knowledge and ever diffident to claim it. No one could spend an hour or two in his company and fail to draw some inspiration from the atmosphere of honesty, modesty, and kindliness which seemed to be his natural environment. Death came at the early age of 52, and swept away without warning a man still in his prime and full of life and of that energy which he had always given without stint to the furtherance of science and in the service of his fellows. He married in 1907 Jean, the daughter of the late John James Stevenson, F.R.I.B.A., who survives him, and to whom a host of friends extend their deepest sympathy.

A friend and colleague writes:

The death of Dr. F. E. Batten has caused a gap in the ranks of neurologists which will not readily be filled. Yet work such as his will always live, for it was characterised throughout by perfect accuracy and width of range of observation, profound learning, extensive research, and all the instinct of the trained investigator. His name will probably be chiefly associated with nervous diseases in children, and especially with the study of encephalitis and myelitis, the etiology, pathology, and treatment of which formed the subject of his Lumleian Lectures for 1916. In these lectures he abandoned his earlier theories as to the vascular or mechanical origin of poliomyelitis, and accepted the more modern view of its inflammatory and infective nature. But his essentially practical aim was, perhaps, most exemplified in the ingenuity which he displayed in designing and fashioning celluloid splints adapted for the treatment of every variety of infantile paralysis. In his wards at Great Ormond-street Hospital and elsewhere he was always ready to demonstrate and popularise the use of this form of apparatus and to show its value in preventing deformities, whilst enabling paralysed children to be up and about instead of lying helplessly in bed or painfully dragging heavy iron instruments attached to their withered limbs. Amongst his numerous contributions to neurological literature may be mentioned his admirable introduction to a discussion on the myopathies at the International Medical Congress in 1913. In this connexion he established the identity of myatonia congenita with congenital myopathy. Of many brilliant papers published in *Brain*, two at least may be regarded as classics—that on "Muscle Spindles" (1897–98), a reprint of which appears as an appendix to Gowers's "Diseases of the Nervous System," and another on "The Position of the Head in Cerebellar Diseases" (1903).

Batten's personality was attractive to all who knew him. To all he was genial, cheerful, and unaffectedly kind in manner, and he was ever ready to help and inspire his juniors with some of his own enthusiasm for work. Although naturally modest and retiring, he was fully capable of holding his own in public controversy, and his adversaries in discussion always found him a tough though scrupulously fair and courteous antagonist. To his intimate friends he revealed a strength of character, and depth of conviction, an uncompromising conscientiousness, and a code of morals almost puritanic, yet combined with kindliest toleration and sympathy with his fellow-men.

ROBERT OLIVER CUNNINGHAM, M.D. EDIN., F.L.S.,

EMERITUS PROFESSOR OF BOTANY AND ZOOLOGY, QUEEN'S COLLEGE, BELFAST.

WE regret to announce the death of Professor R. O. Cunningham, which took place at his home in Paignton on Sunday, July 14th. Professor Cunningham, who retired from his University chair about 16 years ago, had been in indifferent health for some time past, and before and immediately after his retirement he underwent severe operations for volvulus.

A son of the manse, his father, the late Rev. W. B. Cunningham, was Free Church minister at Prestonpans, N.B., for many years, and came out at the disruption in 1843, a fact of which his son was very proud. Robert Oliver Cunningham, who was 77 years of age at the time of his death, graduated in 1864 at Edinburgh University, writing his thesis on the Solan Goose. A fellow student and friend of the present Lord Chancellor, his tastes, like the latter's, did not turn to medicine or medical practice, and he from the start devoted himself to the study of natural history. Early in his career he was given an appointment as assistant surgeon in the Royal Navy, and went on an exploratory trip in H.M.S. *Nassau*,

an old 800-ton auxiliary steam brig. He spent nearly three years in the Straits of Magellan and the regions thereabout while the straits were being charted and sounded, and acquired a rich store of specimens, which were skinned, dried, and bottled in spirit within the narrow confines of the cabin allotted to an assistant surgeon.

Soon after coming home he was lecturer at the Agricultural College, Cirencester, and after holding this post for a short period he was appointed to a professorship at Queen's College, Belfast, in succession to Sir Wyville Thompson, who resigned on being appointed to the *Challenger* expedition. This office he held for upwards of 30 years and carried out the duties with immense zeal, and with acceptance to a great number of students. In 1882 the Royal University of Ireland, of which he was a Fellow, conferred on him the honorary degree of D.Sc. He was never very robust, and the heavy work entailed by the joint offices of professor not only in zoology and botany but also geology—with practical classes in the first two subjects—was a great strain on his physical powers. The long vacation was always welcome, and indeed formed a necessary opportunity for recruiting for the winter session.

Cunningham was not what is commonly termed a "popular" type of man. Indeed, for those who sought popularity he had something approaching contempt. He lived to a very high standard, was most absolutely sincere and straightforward, and for those of similar character among students or colleagues he readily acquired a regard which was reciprocated and often deepened into friendship. He would pick this or that man out of his class and note him down as "a very good fellow" or "a very able fellow," or both, but was equally quick to discern the shirker, whom he would designate as "very unsatisfactory." Many old students kept in touch with him years after they had gone out into the struggle of life to the colonies or elsewhere, and nothing gave him greater pleasure than to meet or hear from such an one. He had a profound and indeed encyclopædic knowledge of his subject, and taught his pupils to observe; but he rather erred in his lectures by trying to get too much in the time which was available, and in university extension lectures similarly would race away ahead of his audience and above their heads. He was one of the most outstanding men on the staff in his time and for many years sat on the College council.

Himself a staunch Presbyterian and deeply religious, though seldom speaking about religion, he was broad minded and was at all times critical of religious intolerance. He did not hesitate to criticise Orangemen or Romanists alike for this failing. One of his best friends for many years was a French Jesuit colleague at the Royal University, but he was not an admirer of the Catholic priest in Ireland, generally speaking.

Apart from his Notes as naturalist in the *Nassau*, it is to be regretted that so little is left as a contribution to literature by one whose knowledge, especially of the geographical distribution of plants, was so exhaustive, but he did not seem ever to contemplate writing a text-book with favour, and was singularly devoid of a desire to turn his abilities to such occupation as would materially benefit him in a monetary way. He was a scientist pure and simple, and would for choice have devoted himself purely to botanical work. He was predeceased by his two brothers, both of whom were in the medical profession (one of them, Dr. David D. Cunningham, well known in the I.M.S.), but is survived by a widow.

THE SERVICES.

ARMY MEDICAL SERVICE.

Major-Gen. (temp. Lieut.-Gen.) C. H. Burtchaell, C.B., C.M.G., is appointed an Honorary Surgeon to the King.

Temp. Col. Sir T. C. English, K.C.M.G. (Captain, R.A.M.C., T.F.), relinquishes his temporary commission on reposting, and is granted the honorary rank of Colonel.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. E. B. Knox relinquishes the temporary rank of Colonel on reposting.

Lieutenant-Colonels to be acting Colonels whilst employed as Assistant Directors of Medical Services of Divisions: A. M. MacLaughlin, FitzGerald G. FitzGerald, and W. R. Blackwell (whilst employed as Assistant Director-General of Medical Services, British Armies in France).

Majors relinquishing the acting rank of Lieutenant-Colonel on reposting: H. B. Kelly, C. W. O'Brien, R. F. M. Fawcett.

To be acting Lieutenant-Colonels whilst in command of a Medical Unit: Capt. (acting Major) M. O. Wilson and Majors J. M. H. Conway and G. A. K. H. Reed.

Officers relinquishing the acting rank of Major on reposting: Capt. F. G. A. Smyth; Temp. Capts. S. J. L. Lindeman, C. G. Sutherland, E. R. D. Maconochie, R. M. Handfield-Jones, H. Upcott, E. Biddle.

The undermentioned Captains to be Majors: (Acting Lieut.-Cols.) G. H. Stevenson, W. H. Forsyth, E. B. Lathbury, C. Scaife, E. D. Caddell, W. E. Lunn, F. L. Bradish, W. J. E. Bell, C. W. Bowle, W. J. Thompson, E. C. Phelan, J. J. O'Keeffe, E. J. Kavanagh, O. C. P. Cooke; (Bt. Majors) D. M. Corbett, (acting Lieut.-Col.) B. Johnson, R. W. D. Leslie, J. A. Bennett; (Acting Majors) T. W. Browne, C. H. Denyer; (Temp. Major) D. T. MacCarthy, A. C. Amy, A. H. Heslop, W. Mitchell, E. J. Elliot, E. Gibbon, J. R. Foster, A. M. Benett, G. P. A. Bracken, H. L. Howell, W. F. N. Loughnan, A. H. Jacob.

To be acting Majors: Capts. A. C. Jebb, C. Kelly, C. C. Jones, A. R. Wright, T. D. Inch, J. J. H. Beckton, T. L. Fraser; Temp. Capts. W. W. Wells, C. M. Kennedy, C. McM. Wilson, R. L. Scott, G. Richardson, W. H. W. Attlee, A. J. Blake, H. B. Walker, F. R. Brown, R. V. Dolbey, W. J. Pearson, R. H. Lucas, J. S. Joly, A. E. Rayner, L. Leslie, H. V. Leigh, H. J. Milligan, M. Donaldson; Temp. Lieut. P. Murphy.

Temporary Majors, Canadian A.M.C., to be acting Lieutenant-Colonels while specially employed: S. R. Harrison, D. A. L. Graham.

Temporary Captains, Canadian A.M.C., to be acting Majors while specially employed: A. B. Schinbein, J. E. Campbell.

Capt. R. A. Peters is seconded for service under Ministry of Munitions.

Temporary Lieutenants to be temporary Captains: F. Penny, N. B. Walker, O. Marshall, H. McKenzie, D. MacKinnon, A. P. Nicolle, C. E. A. Goddard, B. V. Ward, J. H. Clatworthy, H. C. Malleson, W. M. McDonald, J. Jenkins, J. A. Valentine, H. Daw, J. W. Trevan, J. H. Trench, W. B. Blandy, R. Jamison, T. E. Banister, A. B. Robertson, G. W. Stephens, G. W. Pope, G. C. F. Roe, J. P. Brennan, C. G. G. Winter, D. McGregor, J. R. Watson, C. Bernard, W. E. Procunier, R. R. H. Wonnacott, H. H. Stiff, C. Visger, J. B. Fearn, C. W. Freeman, R. R. Wade, H. C. Martin, E. D'A. McCrea.

To be temporary honorary Captains: Temp. Hon. Lieut. J. F. Cooper; J. Brereton-Barry, late temporary Captain, whilst employed at the Welsh Hospital, Netley.

W. R. D. Daglish, late temporary Lieutenant, is granted the honorary rank of Lieutenant.

Officers relinquishing their commissions: Temp. Major J. W. Struthers; Temp. Capts. J. D. W. Beavis, M. Cohen, F. B. Gurd, R. C. Muir, W. Sowerby, W. Enraght, P. J. Lydon, G. Fehrsen, O. E. S. Wishart, A. H. B. Pearce, L. M. Rosten, W. Harvey, S. R. Hunter, J. R. M. MacKenzie, T. M. Thomson, T. Sheehan, W. J. P. Lillis, L. D. I. Graham, P. A. Dykes, H. F. Holmden; Temp. Hon. Capt. A. T. Paterson; Temp. Lieuts. S. J. Kerfoot, G. Birch, R. E. V. Hale, W. Taylor, R. Larkin, C. J. Nellan, R. G. Williams, W. J. Lord, W. Chapman, F. G. Power, H. M. Thompson, J. K. Milligan, R. A. McCrea, A. R. Soady, H. A. Evans, B. S. Johnson, W. S. Alderson, H. W. Elwell.

SPECIAL RESERVE OF OFFICERS.

Capt. (acting Major) W. Barclay to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Capt. P. J. Gaffikin relinquishes the acting rank of Major on reposting.

Captains to be acting Majors: W. W. Wagstaffe, J. W. Gray, G. G. Alderson.

TERRITORIAL FORCE.

Lieut.-Cols. J. Clay and P. C. Burgess to be Assistant Directors of Medical Services and to be temporary Colonels whilst so employed.

Major E. C. Clements is seconded.

Major (temp. Lt.-Col.) M. Dunning relinquishes his temporary rank on ceasing to command a Field Ambulance.

Majors T. A. Barron and J. O. Summerhayes to be acting Lieutenant-Colonels whilst commanding a Field Ambulance.

The undermentioned Captains to be acting Majors whilst specially employed: G. Stevenson, T. C. Clarke, J. M. White (and remain seconded), H. Paterson, R. E. T. Tatlow.

Major H. C. Donald and Capt. H. N. Barnett to be acting Lieutenant-Colonels whilst specially employed.

Capt. (temp. Major) A. A. Martin to be Major.

The undermentioned Captains (acting Majors) relinquish their acting rank on ceasing to be specially employed: J. M. Plews, F. Wigglesworth, A. C. Alport, F. Ward.

Captains to be acting Majors whilst specially employed: T. B. McKee, A. E. Ironside, G. L. Chiene (and to remain seconded), H. Burrows (and to remain seconded), H. C. C. Hackney, F. Clayton, P. C. P. Ingram, A. C. Alport.

Capt. (temp. Major) J. Hamilton relinquishes his temporary rank on ceasing to be specially employed.

Capt. H. H. Rayner is restored to the establishment.

Capt. J. M. Milne to be a Deputy Assistant Director of Medical Services and to be acting Major whilst so employed.

Capt. (acting Major) A. Ramsbottom relinquishes his acting rank on vacating an appointment as Deputy Assistant Director of Medical Services and is restored to the establishment.

Lieuts. R. T. Pearl and J. Waterston to be Captains.

Cpl. (acting Staff-Sergt.) H. H. Clay to be Lieutenant.

ROYAL AIR FORCE: *Medical Branch.*

Lieut. Drury Pennington to be Captain.

T. H. James, A. A. Wilkinson, R. E. V. Hale, are granted temporary commissions as Captains.

C. M. John, K. Batten, G. Hughes, H. T. Rymer, J. Valerie, J. P. Wells, J. P. Hosford, C. Duggan, A. St. J. Hennessy, E. H. L. Le Clezio, O. S. Martin, O. P. Turner, are granted temporary commissions as Lieutenants.

DONATIONS.—The honorary treasurer of the Queen's Hospital, Frognal, Sidcup, Kent, has received through the King, a donation of £1000 from General and Mrs. Holdsworth, of Staveley Court, Eastbourne, towards the funds of the institution, and the Queen of the Belgians, through Queen Mary, has sent £100. The Queen of the Belgians has also sent £100 to the Queen Mary's Convalescent Auxiliary Hospitals, Roehampton.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary Comitia was held on July 25th, Dr. Norman Moore, the President, being in the chair. The following were admitted Members of the College:—

Geoffrey Bourne, L.R.C.P.; Francis Henry Mosse, L.R.C.P.; Ffrangcon Roberts, M.D. Camb., L.R.C.P.; William Willis Dalziel Thomson, M.D. Belfast; John Gratton Wilson, M.B. Lond., L.R.C.P.; Cecil Denyar Wood, M.B. Oxf.

—Licences to practise physic were granted to 73 candidates. The Diploma in Public Health was granted in conjunction with the Royal College of Surgeons to six candidates.—On the nomination of the President and Council, censors, examiners, and other College officers were elected as follows:—

Censors.—Dr. G. Newton Pitt, Dr. F. W. Mott, Sir Humphry D. Rolleston, K.C.B., Dr. Raymond H. P. Crawfurd.
Treasurer.—Sir Dyce Duckworth.
Emeritus Registrar.—Dr. Edward Liveing.
Registrar.—Dr. J. A. Ormerod.
Harveian Librarian.—Dr. T. H. Arnold Chaplin.
Members of the Library Committee.—Dr. Hector W. G. Mackenzie, Dr. A. F. Voelcker, Dr. H. Ritchie Spencer, Dr. Cyril Ogle.
Curators of the Museum.—Dr. J. Mitchell Bruce, Sir Seymour J. Sharkey, Dr. F. W. Andrewes, Dr. William Hunter, C.B.
Finance Committee.—Dr. Sidney P. Phillips, Dr. A. T. Davies, Dr. H. R. Spencer.
Examiners.—Chemistry: Mr. W. H. Hurtley. Physics: Mr. A. W. Porter, Mr. J. H. Brinkworth. Practical Pharmacy: Dr. R. A. Young, Dr. David Forsyth, Dr. W. M. Stevens, Dr. J. A. Gunn, Dr. E. Mellanby. Physiology: Dr. D. H. de Souza, Mr. J. S. Macdonald, F.R.S. Anatomy: Dr. E. Barclay-Smith. Medical Anatomy and Principles and Practice of Medicine: Dr. A. G. Barrs, Dr. F. J. Wethered, Dr. J. Calvert, Dr. William Hunter, Dr. H. G. Turney, Dr. J. Fawcett, Dr. J. S. Collier, Dr. Robert Hutchison, Dr. F. J. Poynton, Sir John F. H. Broadbent. Midwifery and Diseases peculiar to Women: Dr. G. F. Blacker, Dr. H. R. Andrews, Dr. T. G. Stevens, Dr. Hugh J. M. Playfair, Dr. W. F. Victor Bonney.
Public Health.—Part I.: Mr. J. H. Ryffel. Part II.: Dr. E. W. Hope.

Dr. L. G. Guthrie and Dr. P. Horton-Smith-Hartley were elected councillors in place of Dr. R. H. P. Crawfurd and the late Dr. Michell Clarke.

—Communications were received from the Secretary of the Royal College of Surgeons reporting proceedings of the Council of the College on May 9th, June 13th, and July 11th respectively; Mrs. Valentine Fleming, asking permission to have a copy made of the portrait of her grandfather, the late Sir Richard Quain (this was granted); the Minister of National Service, thanking the College for providing accommodation for the medical examination of doctors in the London district; and Sir George Kenyon, K.C.B., Director of the British Museum, returning thanks for a gift from the College to the Museum.—A copy of the revised edition of the "Nomenclature of Diseases," 1918, was received, in connexion with which it was resolved:—

1. That the thanks of the College be presented to Dr. Leonard Guthrie for his work as secretary of the Committee, and as editor of the Nomenclature, and that he be asked to accept an honorarium of 200 guineas.
2. That the Registrar do send to each of the extra-Collegiate Members of the Subcommittee engaged on the work the thanks of the College for their valuable aid.

—On the recommendation of the Council the Moxon medal was awarded to Dr. F. W. Mott, F.R.S.—A report was received from the adjudicators of the Weber-Parkes prize, and it was resolved that no award should be made this year.—Dr. T. D. Acland was reappointed a representative of the College on the Court of Governors of the University of Sheffield.—A report from the representative of the College on the General Medical Council upon the proceedings of the Council in the session held in May last was received and entered on the minutes.—The Registrar proposed temporary by-laws to the effect that Dr. S. W. Curl and Dr. H. B. Day, being resident abroad, should be admitted to the Fellowship *in absentiâ*, any by-law to the contrary notwithstanding.—Dr. Sidney Martin and Sir Arthur Newsholme were re-elected members of the Executive Committee of the Imperial Cancer Research Fund.—The following recommendations from the Committee of Management were received and adopted:—

That the Leeds Grammar School be added to the list of schools recognised for instruction in chemistry and physics.

That the following Universities and Medical Colleges be added to the list of institutions whose graduates in medicine are admissible to the Final Examination of the Examining Board in England, under the conditions of Para. IV., Sect. III., of the Regulations—viz.: University of Vermont, Burlington; University of Alabama, Mobile, Ala.; Women's Medical College of Pennsylvania; Union University, Albany, N.Y.; University of Louisville, Ky.; St. Louis University School of Medicine, St. Louis; Long Island College Hospital, Brooklyn, N.Y.; University of Pittsburgh; and Medical College of State of South Carolina.

That King's College for Women be added to the list of schools recognised by the Board for instruction in chemistry, physics, and biology.

That the following schools be added to the list of schools recognised by the Board for instruction in chemistry and physics—namely, Downside College, Stratton-on-the-Fosse; Royal Masonic School, Bushey; Shrewsbury School, Shrewsbury; and Merchant Taylors' School, Crosby, Lancs.

That Barry Intermediate Schools, which are already recognised for instruction in chemistry and physics, be also recognised for instruction in biology.

That Syracuse University, New York, be added to the list of institutions whose graduates in medicine are admissible to the Final Examination of the Examining Board in England under the conditions of Para. IV., Sec. III., of the Regulations.

—Books and other publications presented to the Library during the past quarter were received, and the thanks of the College given to the donors. After some formal business the President declared the Comitia closed.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a meeting of the Comitia of the Royal College of Physicians and of the Council of the Royal College of Surgeons on July 25th, diplomas of L.R.C.P., M.R.C.S., were respectively conferred upon the undermentioned candidates (including 10 women) who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Examining Board, and have complied with the by-laws:—

Abraham Abelson, B.Sc. Lond., Univ. Coll. Hosp.; James Franklin Adams, M.B. Tor., Toronto Univ.; Kaiku Ardeshir Anklesaria, Bombay Univ. and London Hosp.; Bernard Francis William Armitage, M.A. Camb., Cambridge Univ. and St. Bart.'s; Chas. Howard Backus, St. Mary's; Annie Hardy Banks, Royal Free and St. Mary's; *Frederick Grant Banting, M.B. Tor., Toronto Univ.; Gilbert Blurton, Birmingham Univ.; Martin Vincent Boucaud, St. Bart.'s; Maurice Charles Breese, Westminster; John Dutton Byrd, Manchester Univ. and St. Bart.'s; Francis Cavers, D.Sc. Lond., Univ. Coll. Hosp.; Edwin Alfred Clegg, Middlesex; Alfred Wilkinson Cocking, Guy's; Kathleen Mary Cogan, Royal Free and St. Mary's; Thomas Colley, Manchester Univ.; Norman Carwardine Cooper, Bristol Univ.; Cyril Charles Herbert Cuff, M.B., B.S. Durh., Durham Univ.; Pares Chandra Datta, M.B., Ch.B. Edin., Edinburgh Univ. and Middlesex; Evan Sherrah Davies, Westminster; Sidney Richard Eccles Davies, Cambridge Univ. and St. Bart.'s; Thomas Morris Davies, St. Mary's; Frank Swinburne Drewe, Oxford Univ. and St. Thomas's; Charles Bertram Dyson, Cambridge Univ. and Univ. Coll. Hosp.; Albert Eidinow, London Hosp.; Saad El Din Ahmed El Daab, St. Bart.'s; Frederick Knowles Escritt, Guy's; Lucie Gainsford, Madras and Charing Cross; Shanazar Galstaun Galstaun, Cambridge Univ. and St. Bart.'s; Edwin Stowell Gawne, Liverpool Univ.; Chapple Gill-Carey, Guy's; Stuart Victor Goldhurst, Cambridge Univ. and London Hosp.; Lawrence Handy, St. Bart.'s; Frank Tandy Harrington, Guy's; Geoffrey Gordon Havers, Cambridge Univ. and St. Bart.'s; Walter Anley Hawes, Guy's; Sydney Nuttall Hayes, Middlesex; Walter Ernest Heath, Cambridge Univ. and St. Bart.'s; Walter Sebastian Herman, Cambridge Univ. and London Hosp.; Thomas Cornelius Higgins, St. Bart.'s; Cyril Patrick Hines, St. George's; Jack Joffe, B.Sc., Guy's; Alfred Kenneth Ince Jones, L.D.S.Eng., Middlesex; *Edward Ek Dun Lau, M.B., B.S. Durh., Durham Univ.; Alexander Smirle Lawson, M.B. Tor., Toronto Univ.; Neville Hall Little, M.B. Tor., Toronto Univ.; Allan Wyndham Lloyd-Davies, Birmingham Univ.; Geoffrey Burman Lowe, Cambridge and Birmingham Univs.; Edith Mary Ponsonby Morris, St. Mary's; Kenneth Mullen, Guy's; Robert Alan Olphert, Cambridge Univ. and St. George's; *Irene Grace Parsons, Royal Free; Rowland John Perkins, St. Bart.'s; Gordon Frank Peters, Guy's; Mary Millicent Prior, Royal Free and St. Mary's; Percival George Quinton, Univ. Coll. Hosp.; Constance Amy Randall, Royal Free; Clifford George Jackson Rayne, St. Bart.'s; Frances Elinor Rendel, Royal Free and St. Mary's; Norman Rumboll, Cambridge Univ. and St. Bart.'s; John Andrew Adamson Prinski Scott, London Hosp.; Adolphe Gladstone Millott Severn, Guy's; William Henry Simmons, Guy's; Bertram Leslie Slater, London Hosp.; Victor Alexander Trevor Spong, St. Bart.'s; George Seymour Swan, Liverpool Univ.; Arthur Denis Symons, Bristol Univ.; Matthew Sydney Thomson, Cambridge Univ. and King's College Hosp.; Agnes Elizabeth Towers, Cambridge and Birmingham Univ.; Elsie Maud Visick, Royal Free; Yik Shing Wan, University College Hosp.; John Whittingdale, Cambridge Univ. and St. Bart.'s; and Vyvian Deane Wyborn, Charing Cross.

* Diploma of M.R.C.S. conferred on July 11th, 1918.

Diplomas in Public Health were conferred upon the following six candidates:—

Stephen Leonard Baker, L.R.C.P., M.R.C.S., Haslar and London Hosp.; Thomas Frederick Brown, L.R.C.P., M.R.C.S., Guy's; Gnanayudam Mangalanathan Dominick, L.R.C.P., M.R.C.S., University College Hosp.; Hyman Isaac, M.B., B.S. Lond., Guy's; Edmund Douglas Richardson, L.R.C.P., M.R.C.S., University College; and Edmund Leigh White, M.D., Ch.B. Edin., Edinburgh Univ. and University College.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on July 16th the following gentlemen, having passed the requisite examinations, were admitted Fellows:—

Claude Hamilton Blair Avarne, M.R.C.S. Eng., L.R.C.P. Lond.; Francis Brown Craig, M.B., Ch.M. Sydney, Captain, Australian A.M.C.; William Robert Higgins, M.R.C.S. Eng., L.R.C.P. Lond., M.B., B.C., M.D. Camb., Captain, R.A.M.C.(T.); Edward Wilfrid Kirk, M.B., Ch.B. Edin., Captain, R.A.M.C.; David Lees, M.B., Ch.B. Edin.; Leonard Newsom Morris, M.R.C.S. Eng., L.R.C.P. Lond., M.B., Ch.B. Bristol, Lieutenant, R.A.M.C.(T.); Frederick Lionel Spalding, M.R.C.S. Eng., L.R.C.P. Lond.; Kenneth Vincent Trubshaw, M.R.C.S. Eng., L.R.C.P. Lond., M.B., B.S. Lond.; and Alexander Stewart Wilson, M.B., Ch.B. Glasg., Captain, South African M.C.

QUEEN'S UNIVERSITY OF BELFAST.—At the summer graduation ceremony, held on July 10th, the following degrees and diploma were conferred:—

M.D.—George J. Jones.

M.B., B.Ch., B.A.O.—First-class honours: William J. Lytle and Charles A. Whitfield. Second-class honours: Gladys E. Chambers, Samuel E. Duff, and Henry F. Macauley. Pass: Herbert Abernethy, Samuel Acheson, David D. Anderson, Annie E. E. Beattie, Frederick C. L. Bradbury, Samuel F. Breakey, Frederick Campbell, Thomas I. Candy, Gerard J. Crawford, David Cromie, Stewart Fullerton, John Grimson, Robin Hall, Mary E. Irwin, Amy C. McCallum, Hugh H. McClelland, John McGarvey, Daniel McLister, Edward A. Maguire, John A. Martin, William Michael, Thomas Montgomery, Hugh Paul, Charlotte Pedlow, John E. Rea, David A. E. Scott, Thomas Wallace, Percival S. Walker, and Andrew Watson.

Diploma in Public Health.—Robert Marshall, David R. Taylor, Denis K. Watterson, and Samuel Wright.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The seventy-seventh annual meeting of this association was held at Edinburgh on July 23rd and 24th, under the presidency of Lieutenant-Colonel John Keay, R.A.M.C. After the transaction of the usual business the President delivered his inaugural address. This was followed by papers on "The Prevention and Treatment of Neurasthenia and Other Functional Nervous Breakdowns," by Dr. Claud F. Fothergill, and "The Infective Factors in Some Types of Neurasthenia," by Dr. W. Ford Robertson. On the second day the members and their friends were hospitably entertained by Lieutenant-Colonel Keay and Mrs. Keay to luncheon and an At Home at the Edinburgh War Hospital, Bangour. The wards of this excellently equipped hospital were visited and demonstrations were given by Lieutenant-Colonel C. W. Cathcart, R.A.M.C. (T.) and Major Rankine on the Construction and Fitting of Provisional Artificial Limbs; by Lieutenant-Colonel Sir Harold J. Stiles, R.A.M.C., on interesting cases from the Orthopædic Department; and by Captain Edwin Bramwell, R.A.M.C., on cases illustrating Functional Neuroses. Major D. G. Marshall, I.M.S., and Dr. L. K. Davies showed Microscopic Preparations illustrating Malaria and Dysentery. By the kindness of the chairman and managers and Dr. G. M. Robertson, an At Home was held at the Royal Edinburgh Mental Hospital, Morningside. Owing to the war the annual dinner was not held, but the well-known hospitality of the Edinburgh members contributed in no small measure to the success of a very enjoyable and instructive meeting.

MIDWIVES (IRELAND) ACT, 1918.—At the recent election held pursuant to the provisions of the Midwives (Ireland) Act, 1918, the following four registered medical practitioners were elected by the registered medical practitioners resident in Ireland to act on the Central Midwives Board for Ireland (Section 3 (1) (b)): Sir Andrew J. Horne (Dublin); Sir William J. Smyly (Dublin); Sir John William Byers (Belfast); and Professor Henry Corby (Cork). The other seven members will be appointed by the Local Government Board for Ireland in due course.

URBAN VITAL STATISTICS.

(Week ended July 27th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 13·1, against 21·1 and 18·0 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 11·8, or 3·4 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 4·2 in Ilford, 5·6 in Wallasey, and 5·9 in Gillingham, to 22·1 in Blackburn, 24·3 in Warrington, and 26·1 in Walsall. The principal epidemic diseases caused 241 deaths, which corresponded to an annual rate of 0·8 per 1000, and included 71 from whooping-cough, 62 from infantile diarrhœa, 61 from measles, 29 from diphtheria, 14 from scarlet fever, and 4 from enteric fever. The deaths from whooping-cough, measles, and diphtheria were the lowest numbers recorded in any week of the current year. The 787 cases of scarlet fever and 961 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 49 and 55 below the respective numbers remaining at the end of the previous week. The 915 deaths from all causes in London included 86 from influenza, against 218, 287, and 192 in the three preceding weeks. The causes of 31 deaths in the 96 towns were uncertified, and included 4 in Birmingham, and 3 each in London and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 14·2, against rates increasing from 11·5 to 17·4 per 1000 in the four preceding weeks. The 318 deaths in Glasgow corresponded to an annual rate of 14·9 per 1000, and included 7 from measles, 4 from infantile diarrhœa, 3 from whooping-cough, 2 from diphtheria, and 1 from enteric fever. The 71 deaths in Edinburgh were equal to a rate of 11·1 per 1000, and included 2 from measles and 1 from scarlet fever.

Irish Towns.—The 153 deaths in Dublin corresponded to an annual rate of 20·0, or 7·2 per 1000 below that recorded in the previous week, and included 5 from infantile diarrhœa, 2 from whooping-cough, and 1 each from measles and scarlet fever. The 131 deaths in Belfast were equal to a rate of 17·4 per 1000, and included 8 from infantile diarrhœa, 2 from whooping-cough, and 1 each from measles and diphtheria.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Criminal Law Amendment Bill.

THE House of Commons has appointed a Select Committee of six Members to join with a Committee of the House of Lords to consider the Criminal Law Amendment Bill and the Sexual Offences Bill. The six Members are Sir WILLIAM COLLINS, Sir WILLOUGHBY DICKINSON, Mr. G. LOCKER-LAMPSON, Mr. NEVILLE, Mr. JOHN O'CONNOR, and Mr. TYSON WILSON.

Workmen's Compensation (Silicosis) Act.

The Royal Assent has been given to the Workmen's Compensation (Silicosis) Act.

HOUSE OF COMMONS.

WEDNESDAY, JULY 24TH.

A Ministry of Health.

Mr. H. SAMUEL asked the Chancellor of the Exchequer whether the Government proposed to introduce before the adjournment a Bill for the establishment of a Ministry of Health.—Mr. BONAR LAW replied: The Committee of Home Affairs has made good progress with the consideration of the Bill, and hopes shortly to get its proposals into shape, but it is not yet possible to say whether the Bill can be introduced before the adjournment.

Mr. WATT: Is the right honourable gentleman aware that such a Bill will not be a non-contentious measure in this House?—Mr. BONAR LAW: If it is introduced I hope that it will be a non-contentious measure.

Captain SHEEHAN asked whether it was intended that Ireland should be brought within the scope of the measure setting up a Ministry of Health.—Mr. BONAR LAW answered: This is not at present proposed, but any suggestion which may be made by Irish Members on the subject will of course receive consideration.

Mr. NUGENT: Has any effort been made to ascertain what is the opinion in Ireland in reference to this question?—Mr. BONAR LAW: As far as I know no effort has been made. As a rule, Irish Members do not require any effort to be made for us to find out what they want.

Mr. NUGENT: Is the right honourable gentleman aware that the Insurance Commissioners have already had communications on this matter, and has any effort been made to elicit the opinion of the people at all?—Mr. BONAR LAW: I am not aware of that.

Influenza in Central Telegraph Office.

Mr. PIKE PEASE (Assistant Postmaster-General), in the course of an answer to Mr. GILBERT, said: The influenza epidemic has been a serious matter in the Central Telegraph Office, where we have had as many as 700 people off in one day.

THURSDAY, JULY 25TH.

Hospitals in France.

Colonel FABER asked the Under Secretary for War whether he would consider the advisability of having the hospitals at the fronts some distance away from fighting units, so that no mistake could possibly arise in enemy bombing operations; whether to assist this object light railways could be laid down by which to remove patients on to the main lines; and whether he would insist on the red cross being plainly painted on our marquees.—Mr. MACPHERSON answered: The measures suggested by my honourable and gallant friend have already been put in hand so far as labour is available. Hospital establishments are clearly marked.

Panel Practice in War-time.

Mr. MORRELL asked the representative of the National Insurance Commissioners whether his attention had been called to the hardship that was caused to panel doctors by the continuous and progressive depletion of their practice during their absence on war service; and whether he was prepared to take any steps in the matter.—Sir E. CORNWALL replied: I am not aware of any general prevalence of the difficulty suggested in the question. Certain steps have already been taken by the Commissioners in regard to it—by means of regulations of which I am sending the honourable Member a copy—in accordance with the suggestions made to them for the purpose by the medical profession.

MONDAY, JULY 29TH.

Dentists in the Army.

Mr. WHYTE asked the Under Secretary for War whether he had now taken the steps promised a month ago to increase the number of dentists serving professionally with the British Expeditionary Force in France.—Mr. MACPHERSON answered: We have increased the number of dentists in this country and are now awaiting the demands of France which we can meet.

Medical Men in Turkey.

Lord H. CAVENDISH-BENTINCK asked the Under Secretary for War what steps had been taken to ensure that the British doctors who were prisoners in Turkey were suitably distributed among the different prisoners' camps; and whether he would arrange that our rights for exchange of doctors under the Berne agreement should be waived, in so far as to allow of at least one British doctor remaining at each camp and at least 1 per 1000 prisoners at camps with more than 1000 prisoners.—Mr. MACPHERSON replied: This matter is under consideration, and I hope that it will be possible to make arrangements on the lines suggested by my noble friend.

TUESDAY, JULY 30TH.

Artificial Limbs and Surgical Appliances.

Mr. HOUSTON asked the Parliamentary Secretary to the Ministry of Pensions whether there was delay in supplying artificial limbs and surgical appliances to wounded and mutilated soldiers and sailors who had been discharged from service, thereby causing pain, suffering, and pecuniary loss which might be avoided; and, if there was no delay, could he explain the many complaints which were made by these gallant and suffering men.—Sir A. GRIFFITH BOSCAWEN replied: There has undoubtedly been delay in the past in supplying artificial limbs owing mainly to the lack of accommodation. During the last two months additional limb-fitting hospitals have been opened at various centres in the United Kingdom, and the services of additional limb makers have been secured. The result will be an immediate reduction in the number of men waiting to be fitted.

WEDNESDAY, JULY 31ST.

Training of Army Nurses.

Major CHAPPLE asked the Under Secretary for War whether the certificate of training presented in evidence of qualification by London hospital nurses applying for posts in the Army service stated that the nurse had had three years' training in the hospital or only two years' training.—Mr. MACPHERSON replied: As I have already informed my honourable friend, steps are always taken to ascertain that a nurse has completed the necessary period of training and service in the wards.

Sir C. HENRY: Is there any differentiation made in this rule as between the nurses who come from the London Hospital and those coming from elsewhere?—Mr. MACPHERSON: No, Sir.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, J. B., ET FILS, Paris.
Principes de l'Evolution des Maladies Infectieuses. Par J. Danysz. 5 fr.
Nouvelle Méthode de Vaccination Autityphoidique: le Lipo Vaccin, T.A.B. Par E. le Moignic et A. Sézary. 2 fr.

BALE, JOHN, SONS, AND DANIELSSON, London.
Modern Methods in the Diagnosis and Treatment of Phthisis, with Special Reference to Tuberculin. By James T. Macmanus, M.B. 2*s.* 6*d.*
Rural Water-supplies and their Purification. By A. C. Houston, M.B. 7*s.* 6*d.* net.

HILTON AND CO., Calcutta.
Treatise on Materia Medica and Therapeutics. By R. Ghosh. Edited by Lieutenant-Colonel B. H. Deare, I.M.S. 7th ed. 7*s.* 6*d.* net.

LEA AND FEBIGER, Philadelphia.
Diabetic Manual. By Elliott P. Joslin, M.D. $1.75
Syphilis and Public Health. By Lieutenant-Colonel E. B. Vedder, Medical Corps, U.S. Army. $2.25.

LEWIS, H. K., AND CO., London.
The Action of Muscles, including Muscle Rest and Re-education. By W. C. Mackenzie, M.D. 12*s.* 6*d.*

LIPPINCOTT (J. B.) COMPANY, London and Philadelphia.
The Dispensatory of the U.S.A. 20th ed. By J. P. Remington, Ph.M., and Others. £2 10*s.*

MACMILLAN AND CO., London.
Life of Sophia Jex-Blake. By Margaret Todd, M.D. ("Graham Travers"). 18*s.*

MASSON ET CIE., Paris.
La Gangrène Gazeuse. Par M. Weinberg et P. Séguin. 20 fr.

ROUTLEDGE, GEORGE, AND SONS, London.
Studies in Electro-Physiology (Animal and Vegetable). By A. E. Baines. 12*s.* 6*d.*

SAUNDERS (W. B.) COMPANY, London and Philadelphia.
Differential Diagnosis. By R. C. Cabot, M.D. Vol. II. 2nd ed. 25*s.*
Laboratory Manual and Text-book of Embryology. By C. W. Prentis, A.M.
Elements of the Science of Nutrition. By G. Lusk, Ph.D. 3rd ed.

SIMPKIN, MARSHALL, London. BOOKSELLERS' CO., Liverpool.
Hypnotism and Treatment by Suggestion. By A. E. Davis, F.R.C.S. 2*s.* 6*d.*

TIMES BOOK CO., London.
The Lau Islands (Fiji) and Their Fairy Tales and Folk Lore. By T. R. St. Johnston, F.R.G.S. 5*s.* net.

WRIGHT, JOHN, AND SONS, Bristol.
Medical Annual, 1918. 10*s.*
British Journal of Surgery Vol. V. 1917-1918. 36*s.* 6*d.*

Appointments.

KAUL, S. N., M.B., Ch.B. Edin., has been appointed Resident Surgical Officer, and KHARAS, H., M.B., B.S. Bombay, and LAUD, K. S., L.M. & S. Bombay, House Surgeons, at the Birmingham and Midland Eye Hospital.

Vacancies.

For further information refer to the advertisement columns.

Birmingham University.—Sen. Demonstrator of Anatomy. £250.
Blackpool, Victoria Hospital.—Female H.S. £250.
Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200.
Brighton County Borough Asylum, Hayward's Heath.—L.T. Asst. Res. M.O. £7 7*s.* per week.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Buxton, Derbyshire, Devonshire Hospital.—Asst. H.S. £100.
Carlisle City, Maternity and Child Welfare.—Female Asst. M.O. £400.
Charing Cross Hospital.—H.P. and S. £100.
Cheltenham Eye, Ear, and Throat Free Hospital.—Asst. S. £400.
Coventry Education Committee.—School Dentist. £300.
Evelina Hospital for Children, S.E.—H.P. and H.S. £160.
Great Yarmouth Hospital.—H.S. £200. Fifth-year Students. £150.
Greenwich Union Infirmary and Workhouse.—Asst. M.O. £300.
Guy's Hospital, S.E.—Clinical Asst. 1 guinea per session.
Hospital for Consumption and Diseases of the Chest, Brompton.—Asst. Res. M.O. £100.
London Homœopathic Hospital, W.C.—M.O. of Physical Exercises Dept.
London Temperance Hospital, N.W.—Surgical Registrar. 40 guineas.
Manchester City.—Female M.O. £450.
Manchester County Asylum, Prestwich.—L.T. £7 7*s.* per week.
Middlesex Hospital, W.—Temp. Res. M.O. £250.
Nottingham General Hospital.—Two Female H.S. £250.
Nottingham, Ransom Sanatorium, Mansfield.—Res. M.O. £250.
Notts Education Committee.—Asst. Sch. M.O. £400.
Queen's Hospital for Children, Hackney-road, E.—Temp. Asst. P.
Royal National Orthopædic Hospital, W.—Hon. P. Also Hon. M.O. of Electro-Therapeutic Dept.
St. Albans, Herts County Asylum.—Temp. Asst. M.O. 7 guineas a week.
St. Pancras (Parish of).—Two L.T. to Infirmary. 7–8 guineas per week.
Salford County Borough.—Female Asst. M.O. for Child Welfare. £350.
Sheffield Royal Infirmary.—H.S. and H.P. £150.
Sunderland County Borough.—Asst. Female M.O.H. and Maternity and Child Welfare M.O. £400.
Sunderland, Durham County and Sunderland Eye Infirmary.—Locum.
Tottenham Education Committee.—Asst. Sch. M.O. £500.
Walsall General Hospital.—Female H.S. and Anæs. £175.
Warrington Infirmary and Dispensary.—Sen. H.S. £250.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £150 to £180.

Births, Marriages, and Deaths.

BIRTHS.

LIDDERDALE.—On July 26th, at Belmont Lodge, Cheltenham, the wife of Captain W. Guy Lidderdale, R.A.M.C., of a daughter, who survived her birth only a few hours.

MARRIAGES.

BURNHAM—PATERSON.—On July 23rd, at the Parish Church, Langholm, Cecil Burnham, M.B., Ch.B., F.R.C.S. Edin., Temporary Major, R.A.M.C., Italian Expeditionary Force, to Marion Paterson, third daughter of the late J. W. J. Paterson, Terrona, and Mrs. Paterson, Eskbank, Langholm.

COLLIE—ALDERTON.—On July 25th, at the Chapel Royal, Savoy, Lieutenant Arnold E. Collie, R.A.M.C., son of Sir John Collie, M.D., C.M.G., to Ethel Mary, elder daughter of the late F. F. Alderton and of Mrs. Alderton, of Harrow-on-the-Hill.

SHANNON—KERR.—On July 17th, at St. Andrew's Church, Wells-street, London, Captain F. Shannon, R.A.M.C., to Anne Muriel Shannon Kerr, youngest daughter of the late Rev. R. S. Kerr, Rector of Howth, Dublin.

SHATTOCK—MACKENZIE.—On July 27th, at St. Anselm's, Kingsway, Clement Edward Shattock, M.D., M.S., F.R.C.S., of Wimbledon, to Fede Margaret Mackenzie, M.B., B.S., of Genoa, Italy.

VERNON—ABEL.—On July 25th, at Westminster Chapel, Buckingham Gate, Lieutenant C. H. Vernon, R.A.F. Medical Service, to Edith, elder daughter of Rev. and Mrs. A. E. Abel, of The Manse, Godalming.

WHITE—LAMB.—On July 24th, at Holy Innocents' Church, Fallowfield, Manchester, Charles Powell White, M.A., M.D., F.R.C.S., to Lettice Mary, second daughter of Professor Horace Lamb, D.Sc., F.R.S., of the University of Manchester.

DEATHS.

BATTEN.—On July 27th, Frederick Eustace Batten, M.D., F.R.C.P., of Harley-street, of collapse following operation, aged 52 years.

BEATTIE.—On July 22nd, at Southampton (suddenly), Captain J. W. Beattie, M.D., R.A.M.C.

LESLIE-JONES.—On July 18th, at Fowey, Cornwall, Hudson Leslie-Jones, B.E., M.D., F.R.C.S.I., in his 78th year.

MOORHEAD.—On July 23rd, at Brightlands, Crabton Close, Boscombe, Bournemouth, Lieutenant-Colonel James Moorhead, I.M.S., aged 66 years.

ROBERTS.—On July 28th, at North-gate, Regent's Park, Frederick T. Roberts, M.D., F.R.C.P., B.Sc. Lond., Hon. D.Sc. Univ. of Wales, Fellow of University College, London, Emeritus Professor, Medicine and Clinical Medicine, University College, London, in his 79th year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE METROPOLITAN WATER-SUPPLY DURING JANUARY, FEBRUARY, AND MARCH, 1918.

IN the report of the Water Examiner on the condition of the Metropolitan water-supply for the month of January it is shown that the mean rainfall during the month was 3·26 in., being 1·05 in. above the average mean rainfall for that month during the previous 35 years. Compared with the averages for the year 1917, all the raw river waters yielded results on a chemical examination worse than their respective averages, and bacteriological examination showed all three raw waters contained more bacteria than their respective averages for the year 1917. The filtered waters, though comparing unfavourably chemically with those obtained in the corresponding period in the previous year, gave not unsatisfactory results on bacteriological examination, no typical *B. coli* being contained in 100 c.cm. of the samples in the case of 64·8, 18·2, and 58·2 per cent. examined. In February the rainfall was 1·39 in., being 0·65 in. below the average mean rainfall for that month during the previous 35 years. All three raw waters yielded results compared with the previous year better than their respective averages as judged by the usual tests, New River water being an exception which showed no change. On the other hand, the filtered waters showed in some respects worse results than their respective averages. The colour test showed also worse results. Bacteriologically the three raw waters were found to contain fewer bacteria than their respective averages for the year 1917, and the filtered waters were satisfactory. In March the mean rainfall was again below the average mean. It was 1·08 in., being 1·10 in. below the figure for March during the previous 35 years. All three raw waters on chemical examination yielded results better than their respective averages in 1917, and they also contained fewer bacteria. The filtered waters yielded satisfactory results, no typical *B. coli* being found in 100 c.cm. of the water in 97·2, 84·2, and 92·6 per cent. of the samples examined. The general returns show that while with increased rainfall the raw waters give less satisfactory results both chemically and bacteriologically the efficiency of filtration is maintained.

DEATHS FROM INFLUENZA.

FOR the week ending July 20th the Registrar-General's returns show 192 deaths ascribed to influenza in the County of London, as against 67, 218, and 287 in the preceding three weeks, and an average of 5. In Scotland during the same week 19 deaths were credited to influenza, and in 79 deaths classified as due to other diseases influenza was a contributory cause. The figures for the previous week were 26 and 74, and for the week preceding 9 and 27 respectively.

COST OF WAR-TIME PRESCRIPTIONS.

ACCORDING to figures prepared for the London Insurance Committee the average cost of the 3¾ million prescriptions issued during the year 1917 was :—

	d.	
Ingredient cost	2·91	per prescription.
Dispensing fee cost	2·83	,, ,,
Total cost	5·74	,, ,,
Cost per insured person	14·51	
Number of prescriptions per person	2·53	

The average cost per prescription in 1915 was 7·87*d.*, and in 1916, 5·34*d.*

THE RED CROSS AT SEA.

THE concluding lecture of the series on First Aid at the College of Ambulance (3, Vere-street, London, W.) was given on July 18th by Mr. George F. Shee, M.A., secretary of the Royal National Lifeboat Institution, who described the work of the institution in saving life at sea. Miss Helen MacKenzie, one of the organisers of the lectures, presided. Founded in 1824, and now approaching its centenary, the Lifeboat Institution claims to have saved 56,700 lives during its existence, and nearly 5000 since the outbreak of the war. 1500 rescues have been made from war casualties on the sea; from the *Rohilla* alone 85 people, including doctors and nurses, were brought away in the lifeboats of the Institution. Supported entirely by voluntary contributions, the Royal National Lifeboat Institution carries on its work at a cost of £115,000 a year, as compared with the State service of the U.S.A. subsidised to the extent of £450,000 a year, the number of boats being practically the same in each case, about 260. The work of lifeboat men requires courage in no ordinary degree, and Mr. Shee contended that a committee composed of Victoria Cross holders would unhesitatingly admit that the standard of heroism had been raised by the men who brave the perils of the sea in order to save human life.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY, August 5th.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Out-patients each day at 2.30 P.M.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY, August 5th.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

Colonel J. G. Adami, C.A.M.C., will deliver a lecture on the Canadian Army Medical Corps and Medical Progress at the meeting of the Medical Society of the C.A.M.C., Shorncliffe, on August 12th. Medical men not members of the society who would like to be present should communicate with the secretary, Major A. H. Pirie, No. XI. Canadian General Hospital, Shorncliffe. At the following meeting in September Sir William Osler will lecture on "The Future of the Medical Profession in Canada."

EDITORIAL NOTICES.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

Communications, Letters, &c., to the Editor have been received from—

A.—Capt. J. E. Adams, R.A.M.C.; Mr. P. W. Atkin, Manchester.

B.—Queen's Univ., Belfast; Dr. J. A. Browne, Newport, Essex; Dr. F. M. Blumer, Stafford; Miss Constance Beerbohm, Lond.; Major Piero Boveri, R.A.M.C.; Messrs. A. and C. Black, Lond.; Dr. T. H. C. Benians; Mr. W. Branton, Leighton Buzzard.

C.—Mr. J. Cabburn, Lond.; Dr. S. D. Clippingdale, Lond.; Capt. John Campbell, R.A.M.C.

D.—Staff-Surg. S. F. Dudley, R.N.

E.—Mr. Arthur Evans, Lond.; Ex-officers' Employment Bureau.

G.—Dr. A. Withers Green, Lond.; Dr. W. Gordon, Exeter; Sir Jas. Galloway, Lond.; Prof. R. A. Gregory, Lond.

H.—Dr. M. H. Hanna, Geneva; Maj. H. Hemsted, R.A.M.C.; Dr. J. Hudson, Newcastle-on-Tyne; Major A. F. Hurst, R.A.M.C.

I.—Mr. R. B. Ince, Jarvis Brook; Insurance Committee for the County of London.

L.—Dr. A. S. Leyton, Oxford; Dr. C. E. Lea, Manchester; Local Government Board, Dublin, Asst. Sec. of; Local Government Board, Lond., Medical Officer of.

M.—Dr. H. A. Macewen, Lond.; Mr. F. S. Miles, Hove; Mr. A. Mercer, Wimbledon; Mr. John Murray, Lond.; Lieut. R. H. Malone, I.M.S.; Col. C. S. Myers, R.A.M.C.

N.—Nat. Baby Week Council.

O.—Capt. E. O'Connor, R.A.M.C.; Dr. T. T. O'Farrell, Dublin.

P.—Dr. L. J. Picton, Holmes Chapel; Miss K. Pilkington, Lond.; Dr. F. W. Price, Lond.; Dr. F. W. Pilkington, Kencott; Staff-Surg. R. J. G. Parnell, R.N.

R.—Mr. H. S. Reynolds, Wisbech; Reg.-Gen., Edinburgh.

S.—Mr. H. B. Symons, Harrold; Dr. Charles Slater, Lond.; Mr. W. F. Sherrin, Richmond; Dr. R. H. Steen, Dartford; *Société de Biologie*; Mr. Edgar W. Sharman, Lond.

T.—Mr. A. Thornton, Marlborough; Triplex Safety Glass Co., Lond.

W.—Dr. T. Wakefield, Haslemere; Col. G. Sims Woodhead, A.M.S.; Dr. F. Wyatt-Smith, Lond.; Capt. C. W. Wirgman, R.A.M.C., T.; Dr. F. J. Waldo, Lond.; Major F. M. R. Walshe, R.A.M.C.; Surg. C. P. G. Wakeley, R.N.

The Lumleian Lectures
ON
CŒLIAC DISEASE.

Delivered before the Royal College of Physicians of London on March 14th, 19th, and 21st, 1918,

BY G. F. STILL, M.A., M.D. CANTAB., F.R.C.P. LOND.,
PROFESSOR OF DISEASES OF CHILDREN, KING'S COLLEGE, LONDON; PHYSICIAN FOR DISEASES OF CHILDREN, KING'S COLLEGE HOSPITAL; PHYSICIAN TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET.

LECTURE I.

MR. PRESIDENT AND FELLOWS,—One cannot but regard it as an honour to deliver before this our College the Lumleian lectures; but one undertakes the duty with some trepidation, being only too conscious that the privilege carries with it the responsibility of upholding the high tradition which has come down to us from the Lumleian lecturers of more than three centuries.

INTRODUCTORY.

The disorder which I have taken as my subject I shall consider under the title of "Cœliac Disease," the name under which it was originally described by a late distinguished Fellow of this College, Dr. Samuel Gee.

In this first lecture I shall deal chiefly with symptomatology, and I shall assume, only as a working hypothesis, and without any intention of prejudging the question, that in the combination of symptoms which has been called by this name we are dealing with a specific disease. In my second lecture, in which I shall consider the pathological aspect, I shall discuss this important question of specificity, and, finally, in my third lecture, I shall consider treatment.

There is little to be said of historical nature owing to the fact that until Dr. Gee's observations[1] were published in 1888 the condition had apparently not been recognised, or, at any rate, had not been described, as a clinical entity. Since that date remarkably little has been written about it, and that little seems to have attracted no general attention, largely, perhaps, because different observers have described the condition under different names.

The late Dr. Cheadle[2] in 1903 included it under the heading of "acholia"; in 1908 Dr. Herter,[3] in America, called it "intestinal infantilism"; and in 1913 Drs. Poynton, Armstrong, and Nabarro[4] published a valuable study of this affection as "A Group of Cases of Chronic Recurrent Diarrhœa in Childhood."

Its rarity also has no doubt had something to do with the scantiness of its literature.

During the past five years at the Children's Hospital, Great Ormond-street, amongst 14,800 admissions of children under 12 years of age there were only 17 cases of "cœliac disease." Figures, however, taken from a hospital do not perhaps altogether give a reliable idea of the frequency of its occurrence, for this is one of those affections which for some reason, difficult to ascertain, seems to be more rare amongst hospital patients than amongst those seen in private practice. I find that of cases under my own observation 17 were seen at hospital, whereas 24 came to me in the ordinary course of consulting practice.

This point may not be without its significance as to etiology, for I think we may safely infer from it that the condition is not one of those specially incidental to poverty or to lack of hygienic surroundings.

Further, inasmuch as the diarrhœa of infancy and early childhood is undoubtedly closely related to both these factors, the cœliac affection presumably is not a mere variation or outcome of the ordinary diarrhœa of infancy.

Dr. Gibbons,[5] in his article on cœliac disease, expresses this view, which I think most clinicians must have held who are familiar with the diarrhœal affections of infancy and early childhood.

He says: "It is distinctly not the disease known as chronic diarrhœa of children." It is, however, easier to make such an assertion than to prove it or even to define exactly what is meant by it. Diarrhœa is a symptom not a disease, and in so far as cœliac disease is both diarrhœal and chronic it clearly is a chronic diarrhœa of childhood; nevertheless, the character of the diarrhœa and the associated symptoms make up a clinical picture which many observers have regarded as something *sui generis*, and have therefore suspected of a specific cause; only when this can be demonstrated will it be possible to say positively that cœliac disease is entirely separable from other diarrhœal affections of infancy and early childhood. In the meantime, if in addition to the characteristic grouping of symptoms this disorder can be shown to have etiological factors which are not common to other diarrhœal diseases, we shall have gone some way towards defining its position.

INCIDENCE.

A remarkable fact which comes out of my own series of cases is the much greater frequency in girls than in boys; out of 41 cases 30 were girls, 11 were boys.

I have no explanation to offer for this, but if it be confirmed by larger figures it raises once again a problem which has always seemed to me exceedingly interesting—namely, the sex incidence of disease. Why congenital hypertrophy of the pylorus or idiopathic dilatation of the colon should occur far more often in boys than in girls, or even why hysteria should be more common in women than in men is mysterious enough, but it seems, if possible, more surprising that an infective condition—if, indeed, cœliac disease is to be regarded as such—or a functional digestive disorder, if that view be more correct, should affect the female so much more often than the male.

The age at onset is, in the majority of cases, the later part of infancy, between the age of 9 months and 2 years. The earliest in my series was 8 months, the latest 4½ years. Only 2 other cases began as late as 3–4 years of age.

Several, however, were first seen by me when they had already reached the age of 3–7 years and the disease had already been present for some years. Indeed, it is by no means easy to be sure of the date of onset in some cases as the disorder may begin quite insidiously. As far as I have been able to ascertain, in no case did the disease begin while the child was still on breast-feeding. In some cases the onset has been with an attack of diarrhœa, which does not seem to have been particularly severe in character, but diarrhœa is not a necessary antecedent, for, as Gee pointed out, costiveness is sometimes a forerunner of the disorder; in three cases there was only vomiting at first. In some the first symptom which seems to have caused anxiety was wasting.

CLINICAL PICTURE.

The clinical picture of "cœliac disease" when it has already lasted for two or three years is sufficiently striking.

The child is pale and emaciated, although, as Gee observed, the face sometimes remains full and apparently plump even at a late stage of the disease. The large abdomen contrasts with the wasted limbs, and the general appearance is that of tuberculous peritonitis, for which cœliac disease is apt to be mistaken. The most striking feature is the surprising inconsistency of the child's size with its age. What appears to be an infant little more than 12 months old startles one by unexpectedly talking, and so reveals the fact that it is at least a year or two older, perhaps 3 or 4 years older, than its appearance would suggest.

On inquiry it is found that the child's stools, though not more than one or two a day, have almost never been formed since the illness began, and that they are generally pale or the colour of oatmeal. At intervals of a few weeks the stools become more loose and frequent, perhaps three or four a day instead of one or two. These recurrent bouts of increased looseness are very characteristic of the disease.

The weight, moreover, though it fluctuates, has made no permanent advance for many months, or even for a year or two; and the net outcome of its variations may even have been a loss of 2 or 3 ounces in as many years.

So the disease drags on for months and years.

Wasted and feeble, the child passes an invalid existence with intervals of improvement followed by a relapse, until, as a result of rigorous dieting, the stools gradually became more normal, and the child eventually struggles back to health, able to take food more or less like other people, but handicapped in growth by the lost time during which the development has been arrested. Even such a favourable result, however, is not to be expected in all cases, for the relapses with increased looseness of the bowels are exhausting, and may end fatally.

SYMPTOMS.

From this preliminary sketch of a case of "cœliac disease," I pass to more detailed consideration of the symptoms.

Diarrhœa.—The early history of these cases is obviously of importance in determining the pathology of the disease.

In a considerable proportion, 8 out of 20 of those in which the onset was more or less defined, there was a history of an attack of diarrhœa with or without sickness at the onset, and since then the stools had never been normal except occasionally, perhaps, for a day or two.

Prima facie this sequence would suggest that the initial diarrhœa and the subsequent looseness of the bowels and recurrent exacerbations of looseness, were due to an infection which had never been entirely thrown off by the bowel, and it might even be conjectured that any diarrhœa of infective origin might lead to such a disorder.

On this account I want to lay stress particularly upon the fact already noted, and particularly observed by Dr. Gee, that diarrhœa is not a necessary antecedent. In 3 out of those 20 cases the mother declared that the bowels had "always been loose"; there was no particular attack of diarrhœa. In 4 out of the 20 the onset had been entirely insidious, with wasting, and in one at least of these there had been constipation at first, with wasting, until after weeks or months the bulky and pale character of the stools and their looseness became pronounced.

Infantile scurvy.—A curious fact which appears in my series of cases is the occurrence of "infantile scurvy" as the antecedent of "cœliac disease" in a proportion of the cases, too large, I think, to be entirely accidental; 4 out of my total series of 41 cases had "infantile scurvy" just before or during the onset of "cœliac disease."

Inasmuch as infantile scurvy is also a comparatively rare disorder, its association as an antecedent with cœliac disease in a proportion so high as nearly 1 in 10 is at least noteworthy. I would mention here, as a possibly correlated fact, the ease with which these children fall victims to scurvy as a result of the diet used for the treatment of the disease. It may be that infantile scurvy conduces in some way to diarrhœal affections; certainly experience teaches caution in its treatment on account of this particular tendency. Quite apart from the fact that the passing of blood from the bowel in scurvy shows that the mucosa is in some way affected, there are clinical phenomena which suggest very strongly that the deficiency of vitamines which produces scurvy produces also a lowered resistance to infection. It may be that in this way the food factors which lead to scurvy predispose also to cœliac disease.

Stools.—Quite early in cœliac disease the stools show characteristic qualities:—

They are bulky, pale, creamy, unformed, pultaceous, resembling more or less closely well-boiled porridge, except that they look more glistening and greasy than porridge does; the smell, too, is very offensive, fatty and sour, perhaps rancid best describes it; the reaction is markedly acid and the stool floats in water.

But while such is the typical stool I would point out that there is much variation from time to time; sometimes for a few days the stools are pale yellow, or even brown; sometimes they are white and shreddy; occasionally the child will pass a formed stool, differing little from the normal except in its pale drab or fawn colour.

A point, however, which I think has not been sufficiently recognised is the change in the character of the stool which tends to occur as the disease becomes of longer standing.

The white porridgy stools which were usual during the first year or two of the illness become less and less a constant feature until the evacuations quite as often consist of shreddy or soft fæcal material pale grey or greenish or even dark brown, mixed with mucus, which in rare instances may even show a trace of bright red blood. In one advanced case pus was found in the stool, during one of the bouts of looseness. Occult blood has been found occasionally even in the earlier stage of pale porridge-like stools.

In some cases the parents themselves have particularly noticed the change in the character of the stools after the disease has lasted some years. I lay some stress upon this point not only because the absence of the typical porridgy character of the stool might mislead diagnosis in an advanced case, but also on account of its probable bearing upon the significance to be attached to changes found in the bowel at post mortem. It suggests that lesions found at that stage may be of secondary origin; I mean that inflammatory and perhaps ulcerative changes in the lower part of the bowel may be secondary to unhealthy conditions in the upper part.

With the unhealthy condition of the stools there is associated distension of the abdomen, which forms one of the characteristic features of the disease. In cases that do badly this sometimes becomes so extreme as to cause considerable distress to the child before the fatal termination; in cases that do well it is one of the last symptoms to disappear.

The *absence of vomiting* in most cases, except as an uncommon incident, seems to indicate that the condition is rather an intestinal than a gastric disorder.

Pain there is usually none, and when it has been present has been only a slight transient discomfort such as might be produced by flatulence. To this statement exception must be made of the severe pain which has occurred a day or two before death; this was noted by Drs. Poynton, Armstrong, and Nabarro in their fully recorded fatal case, and autopsy showed no explanation of the pain. It occurred also in a girl under my observation, but no autopsy was made, so its cause was uncertain.

Cœliac disease is not accompanied by fever.

Urine.—The urine I have examined in many cases without finding anything abnormal.

Having regard to the extremely offensive smell of the stools, one might have expected to find indican present in considerable quantity, and sometimes this has been observed; it is not, however, a constant feature.

In one case a trace of albumin was present in the urine at repeated examinations; in another, a girl in whom the disease had been present for nearly six years, there was a considerable cloud of albumin and some hyaline and granular casts, evidently indicating a certain degree of actual renal irritation, though there were no other symptoms to point to it. There is nothing surprising in this when one remembers that slight albuminuria is no great rarity with intestinal disorders, particularly diarrhœal affections, in infancy and early childhood. It is perhaps only remarkable that with such persistent disorder, associated for years, as I shall show, with evidence of toxæmia, there should not more often be evidence of renal irritation.

Liver.—There is no enlargement of the liver. I have thought, indeed, that the reverse is rather a feature of the disease.

The edge of the liver is usually not to be felt below the costal margin. Considering the frequency with which the liver is easily palpable in children, especially in those under 5 years of age, one is the more struck by the failure to feel it at all in a large proportion of cases of cœliac disease. Whether the organ is actually diminished in size is difficult to ascertain by clinical examination. I have tried in some cases to settle this question by percussion, and I show here some figures which prove that at any rate the hepatic dullness is diminished.

Vertical Measurements of Liver Dullness in Right Nipple Line.

Cœliac.		Normal.		Cœliac.		Normal.	
Age.	Liver.	Age.	Liver.	Age.	Liver.	Age.	Liver.
—	—	9 wks.	4·25 cm	3½ yrs.	4·5 cm.	3½ yrs.	11·5 cm.
—	—	8 mths.	7·5 ,,	—	—	5 ,,	8·5 ,,
—	—	16 ,,	5·75 ,,	—	—	6 ,,	8·5 ,,
—	—	21 ,,	9·0 ,,	6½ yrs.	6·5 cm.	6½ ,,	9·25 ,,
3⅓ yrs.	4·5 cm.	3½ yrs.	10·0 ,,	7 ,,	4·75 ,,	7 ,,	9·5 ,,
3¼ ,,	4·25 ,,	3½ ,,	9·5 ,,	8 ,,	5·5 ,,	7 ,,	7·0 ,,

I shall refer to this again in discussing the pathology of the disease: here I should like to mention that it is one small point in the diagnosis from abdominal tuberculosis and syphilis, in which the liver is more often easily palpable.

The *spleen* also is usually not to be felt, a fact which may be of importance if the possibility of congenital syphilis is in question, and I shall later mention observations which would seem to render this question pertinent.

Blood changes.—The pallor, which is always a more or less marked feature of the disease, is found to be associated chiefly with a deficiency of hæmoglobin in the blood, but not of any profound degree.

In a severe case, a girl aged 3½ years, the count was as follows: Red blood corpuscles, 3,450,000; white cells, 12,500; hæmoglobin, 50 per cent.; colour index, 0·7. Differential count per cent: Polymorphs, 59·5; lymphocytes, 35; large mononuclear, 2; basophiles, 0·5; transitionals, 3·0; no abnormal cells.

Another, a girl aged 6½, showed red corpuscles 4,500,000, white corpuscles 15,625, hæmoglobin 58 per cent., colour index 0·6. Differential count per cent.: Polymorphs 70·5, lymphocytes 26, large mononuclear 0·5, eosinophiles 0·5, basophiles 0·5, transitionals 1·0, one normoblast in 200 cells.

In another, a girl aged 5¼, the red corpuscles were 5,300,000, white cells 8750, hæmoglobin 40 per cent., colour index 0·3. Differential count per cent.: Polymorphs 45, lymphocytes 49, large mononuclear 5, eosinophiles 1.

In all these cases there was marked pallor, so that one was surprised at the slightness of the blood changes. This absence of any profound disturbance in the blood is particularly noteworthy in relation to the occurrence of œdema, to which I shall refer later; presumably we must look elsewhere than to hydræmia for an explanation of this symptom.

The only constant blood change shown by these few observations is deficiency of hæmoglobin, a change which may be related to the failure of fat absorption, which, as I shall show, is one of the features of this disease; for it has been shown that a similar picture results from the experimental use of a diet very deficient in fats. A pig fed thus showed after many weeks only 65 per cent. of hæmoglobin, whereas the blood cells were only very slightly reduced in number. (Herter.[6])

The *arrest of development* is one of the most striking features of the disease, and this is not merely a cessation of gain in weight but also a cessation of growth, a point which distinguishes it from the atrophic conditions which result from various disorders of digestion in early life.

It is common enough for an infant to become thin or even emaciated with evident symptoms of indigestion and unhealthy stools and to suffer in this way for months, and yet at the same time to grow even rapidly in length, whereas, in the child with cœliac disease growth in length seems to be arrested from a very early stage, if not from the onset, of the illness. Moreover, it is clearly not dependent entirely, if at all, upon the general failure of nutrition, for months after increase in weight has been established there is still little or no gain in length; this seems to come later.

The following figures will give some idea of the deficiency in weight shown by these children.

A girl aged 23 months, when the weight should have been 27 lb., weighed 7 lb. 2 oz.

Another at the age of 3 years 5 months weighed 14 lb., the weight of a child of 5 months.

A girl aged 5½ years weighed 21 lb., the average weight of an infant of 12 months.

The arrest of growth in height can be appreciated from the following measurements.

The girl mentioned above, aged 3 years and 5 months, measured 33 inches in length, instead of the normal 36 inches.

Another at 5 years was 33 inches; the normal at this age is 41 inches.

Another at 6 years was 37½ inches (6 inches below the normal), the height of a child of 3½ years. Her sister, a healthy but unusually tall child of 2½ years, was said to be exactly the same height.

A girl, aged 17½, was 55⅜ inches, the height of a child of 12 years.

As the arrest of growth in stature has been attributed to deficient assimilation of calcium consequent upon the failure of fat absorption, it seemed worth while to investigate the condition of the bones by X ray examination to see whether any failure of calcification could be detected.

I had skiagrams taken of the limbs in three cases. In all these cases the bones were unduly small, corresponding to the small stature of the child, but none showed any abnormality in the formed bone, the trabecular structure was well marked and the outer layer appeared to be normal in thickness and density. They all showed, however, a marked departure from the normal for the age in respect of the centres of ossification in the epiphyses. These corresponded not to the real age of the child but to that of one much younger, roughly one might say to the apparent age of the patient.

There is in these skiagrams a notable absence of the usual appearance of rickets, a fact which seems to show that if deficient calcium absorption is the cause of the arrested growth in cœliac disease, then something further is necessary to the causation of rickets.

A noticeable feature, which no doubt is to be explained as part of the arrest of growth, is the smallness of the voice in most of these cases.

It tends to high pitch and very limited compass, characters due probably to the smallness of the larynx. This feature, however, is in curious contrast with the rather gruff voice which obtains in some other conditions where growth is delayed—for instance, mongolism and cretinism.

One might have expected that there would have been delay in dentition as one result of the general interference with nutrition.

This is so to some extent, but not to any such marked degree as one might have expected from the delay of development in other respects.

In one case, where the disease began at 9 months, there were only six incisors and three molars at 22 months, and in other cases, where

the disease had begun at about a year old, I have noted that only 12 or 13 teeth were present at the age of 2 years.

The delay is not due to any accompanying rickets. It is, indeed, a remarkable fact that rickets is rarely found in spite of the long-enduring disturbance of nutrition produced by cœliac disease.

Muscular feebleness.—Gee and most other writers have drawn attention to the muscular feebleness of these children.

One of my cases, mentally normal, perhaps indeed rather precocious, was not able to walk until she was 6½ years old. Another, in whom the disease began at 1 year, first stood alone at 3 years and 8 months.

Dr. Gee says that even when recovery tends to be complete, a peculiar weakness of the legs is left long after all other tokens of disease have passed away, a weakness which shows itself in that the child is unable to jump.

The *mental capacity* of these children does not seem to be affected.

They remain capable of as much development ultimately as other children, but in the meantime they show rather the mental development which is normal for a child of their size than that which is normal for a child of their age.

Apart from this the intelligence is, at least, not impaired by the disorder, nor are dull or imbecile children particularly liable to it; indeed, there is not one such among my series of cases.

Whilst, however, the intelligence is quite good in these children they often show a curious slowness in response, as if they weighed one's question carefully before replying. I have thought that this was most noticeable when, with much wasting there was marked pallor, and it seems reasonable to suppose that such a condition must exercise some effect upon the brain as upon other tissues.

As a result of the general weakness the child is usually very quiet and apathetic, taking but a languid interest in toys and picture books.

With improvement in the stools, however, the child soon begins to take more interest, though for a long time, even for some years in cases, it is quieter and less vigorous in its movements than a healthy child.

There is one subject in which almost all children with cœliac disease show a pathetic interest—namely, their food; often, indeed, it is their one subject of conversation, and this is hardly to be wondered at in view of the meagre dietary which forms a necessary part of the treatment, not for weeks but for years.

Complications.—In the course of the illness various complications are apt to arise. One of the most frequent—so frequent, indeed, as almost to be a symptom of the disease—is *œdema* more or less general, though seldom of more than moderate degree.

It is most notable usually in the hands and legs and feet, but the face also has a puffy appearance, especially about the lower eyelids. As part of this dropsy there is sometimes a definite ascites, and this may be more obvious than the slight general œdema. In one case under my observation it had led to a diagnosis of tubercular peritonitis of the ascitic form, for which laparotomy was to have been performed on the day following that on which I saw the child.

Tetany occurred in 3 of my series.

In one case it occurred after the disease had been present about six months, in another after it had been present two years, in another after it had been present about eight years.

In this last case, the girl of 17½ whom I have mentioned before, the tetany recurred for several years and at times it came on almost daily in the afternoons, and at one time the pain was so severe that it was necessary to give chloroform.

Purpura occurred in several cases.

In some it occurred as part of the terminal condition when emaciation had become extreme and such a development might be expected, but in others patches of purpura appeared when the child was rather improving than otherwise, and was well enough to be up and about.

In one girl, for instance, purpura appeared many times from the age of 2½ until the child died of the cœliac disease at the age of 9½ years.

In another patches of purpura were still occurring when the boy had improved so much that he was gaining weight rapidly and had already become fat; a clear proof that the purpura is quite independent of emaciation.

A complication due rather to the treatment than to the disease was *scurvy*, which occurred in 5 cases between the ages of 3 and 7 years. In 2 of these there had been scurvy also preceding the onset of the disease.

The first evidence of scurvy is usually pain in the limbs, and with the knowledge that the diet used for the treatment of cœliac disease is very deficient in antiscorbutic elements the cause of the pains can be recognised early and obviated by relaxing the strictness of the diet either by allowing potato or by increasing the allowance of fruit juice if any has already been given.

But I have seen other cases in which there was complaint of pains in the limbs which did not respond to antiscorbutic treatment and which remained obscure in their origin. One wonders how far these pains may be related to the low proportion of fat allowed in the diet. Certain fats, including milk fat, contain, as recent observations have shown, a vitamine which, though differing in its effects from the antiscorbutic vitamine, has important effects on growth and nutrition. The pains seem to be referred to the bones of the limbs. Is it possible that they are an early symptom—usually not carried further—of those changes which have been miscalled late rickets? I mention this because in one of my cases this complication actually developed.

The patient, a girl, had been kept for four years on a diet containing a minimal proportion of fat and was apparently recovering from the cœliac disease when, at the age of 8 years, her legs began to bend rapidly, so that much distortion occurred, crippling the child.

In one case only, the case in which the disease was still present at 17½ years, there was a *chronic glossitis*.

The tongue was completely bald, almost glazed, with deep fissured ulcers at its margin; it was so sore that at times the girl was unable to eat solids, and the soreness and ulceration had been present in greater or less degree for some years. The only affections of the tongue which I have noted in other cases were in two a tendency to ordinary aphthous ulcers, and in one annulus migrans.

SIMILARITY TO SPRUE.

I would lay some stress upon this occurrence of severe chronic glossitis, for it bears upon a point which I want to consider now, the resemblance of cœliac disease to sprue.

It seems to have been taken for granted by Dr. Gee that there was not merely resemblance but identity. In his original paper he says: "Sometimes from India Englishmen return sick with the cœliac affection," evidently referring to the condition known as "white diarrhœa" or sprue.

Dr. Cheadle, without committing himself to their identity, was evidently inclined to group them both in his category of "acholia." "The condition," he says, "of the stools in the two forms is absolutely identical, some of the symptoms, notably the appetite for food, are different."

There are obvious points of similarity:—

Both are characterised by looseness of the bowels, which persists usually for years; in both there are recurring exacerbations of the looseness; in both the stools are bulky, pale, whitish, usually acid, peculiarly offensive, and on analysis show excess of fat.

In sprue the small size of the liver has been specially noted by Dr. Charles Begg.[7] "The liver dullness," he says, "is always diminished in a pure case of sprue, often greatly so, and this is one of the diagnostic signs of the disease." I have already pointed out that this is noticed in cœliac disease also. In both there is marked abdominal distension with much general wasting and feebleness; both disorders are free from fever. The one symptom which seemed lacking to complete the resemblance is the sore tongue which is so characteristic of sprue. It was not until I came across the case just mentioned that I found that this feature also occurs in cœliac disease as well as in sprue.

The remarkable sex incidence of cœliac disease may be another point of resemblance.

Some observers state that sprue has no special sex incidence, but Mense,[8] in his handbook of tropical diseases, quotes two Dutch writers who independently state that females are much more prone to sprue than males, and Jefferys and Maxwell, in their "Diseases of China" (1910), say "the female sex is far more predisposed to this disease than the male sex."

Amongst my cases is one which is at least noteworthy in this connexion. The child was born in India, where at the age of 9 months she began to suffer with cœliac disease, which she still had when she first came under my care at the age of 5½ years. The child was a most typical case of cœliac disease; the mother was at the same time ill with sprue, also acquired in India, and was under treatment by some of the authorities for tropical disease.

Clearly the identity of these disorders cannot be affirmed until a specific cause common to both has been established, but in the meantime the clinical resemblance is, I would submit, sufficiently striking to justify raising the question.

PROGNOSIS.

The course of cœliac disease is always slow and tedious. I have never seen a case in which complete recovery could be said to have occurred until at least a year or two had elapsed since the onset. It is, however, impossible to assign any exact date of recovery, for it is only very gradually that the ability to digest ordinary food is restored and therewith the stools resume a normal character, and even then there remains for a long while the stunted growth.

As happens with most diseases which last for years, these cases tend to pass out of the care of one medical man to that of another, so that it is difficult to keep track of them, but such records as I have been able to obtain are sufficient to show how protracted this disease may be.

One girl, in whom the symptoms dated from about 9 months, weighed 21 lb. at 5¾ years, and was only improving at the age of 6¼, and died at about 9 years of age.

Another, in whom cœliac disease began at about 20 months old, was seen by me at intervals with relapses following temporary improvement until she died with an exacerbation of looseness and with distension of the abdomen at the age of 9½ years.

Another, a boy, who had been under treatment for cœliac disease from about 12 months of age, died when 8 years old.

Sometimes a fatal result comes earlier, a girl in whom the symptoms appeared at 21 months died of cœliac disease at 4 years.

Another girl in whom the disease began just under a year old died at the age of 21 months, but in this instance the termination was due apparently less to the disease than to an accidental complication, bronchopneumonia; and in another, a girl who had been under treatment for cœliac disease since the age of 14 months, a fatal ending at 2¼ years was due to a streptococcal pharyngitis which could only be regarded as an accidental occurrence.

These 6 cases out of the 41 under my own personal observation are the only ones that I know to have ended fatally, and if it is allowed that in 2 of these death was due to accidental complications rather than to the cœliac disease, it will be seen that it is at any rate a disorder that does not lead rapidly to a fatal ending. On the other hand, the proportion of cases in which complete recovery can be affirmed is not large.

In this same series only five could be said to have recovered in the sense that the stools were as regularly normal as those of a healthy child, and no special restrictions as to diet were any longer necessary, but all these five cases, though they had regained a good state of nutrition, had not nearly attained a normal height and looked years younger than their age.

The active phase of the disease had lasted, respectively, 2 years, 3½ years, 4 years, 4 years, and 6 years before this degree of recovery had been reached.

Each case was under my observation for a year at least and most of them for several years after the recovery, so that it would appear to be permanent.

There are other cases in which after long-continued treatment a sort of *modus vivendi* is reached, which, though it cannot be called recovery, might perhaps be described as permanent improvement.

I had almost described it in the late Sir James Goodhart's words as "Safe, but not sound," but I doubt if it can be regarded as altogether free from risk. The child's nutrition has steadily improved, it is able to take an ordinary diet with little or no special restriction. The stools, though normal in colour, are seldom formed and easily become loose; moreover, growth, though taking place, is unduly slow, and the child, though taking her part in ordinary child life, does so with more effort and is more easily fatigued than other children. Three of my series had recovered to this extent; one of them already referred to when last seen was 17½ years old.

Is there ever complete recovery in the sense of attaining eventually average height and acquiring normal puberty development?

With the exception of the one case which I was able to see at the age of 17½ years, in which neither of these conditions was fulfilled, I have not been able to watch any case sufficiently long to answer this question. I can only mention from hearsay two instances, one a boy and the other a girl, under treatment, I believe, by Dr. Gee and Dr. Cheadle for cœliac disease in early childhood, who in adult life were of at least average stature and seemed normal in every way. I have no knowledge, however, of the girl's menstrual history.

Two cases which I was able to feed on human milk have made so much better progress in growth than is usual in cœliac disease that they bid fair to reach at least an average height.

STUDY OF AN OUTBREAK OF BACILLARY DYSENTERY.

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AN outbreak of bacillary dysentery in an institution in the eastern counties in December and January last, described below, presented the following features which seem worthy of record: (*a*) sudden onset and brief duration; (*b*) evidence that the infection was water-borne; (*c*) the infecting agent was in all cases *B. Shiga*; (*d*) evidence of the persistence of Shiga bacillus when experimentally introduced into water and food; (*e*) noteworthy results of agglutination tests when applied both to dysentery convalescents and to those who had presumably been exposed to infection but had escaped illness.

Account of the Outbreak.

The institution in question was occupied by men engaged mainly in agricultural work in the neighbourhood.

At Christmas, 1917, there were about 360 men in this institution, all but three of whom had been there for two months, most of them since the building was taken into military use in August, 1917. The men had been selected as fitted for farm work; they were well nourished and in thoroughly good physical condition, and the sickness among them before Christmas, 1917, was negligible. The three later arrivals were healthy men, and no suspicion of previous dysentery arose in their case.

This institution stands in open country a mile or more from the nearest village. First built as a local workhouse, it was afterwards used as a home for inebriate women, and later for imbecile children. Its accommodation and arrangements were ample for the number of men for which it was used; it had fairly recently been supplied with a water-carriage system of drainage, and had its own water-supply from a deep well situated close to the main building, drawing water from the chalk at a level of about 100 feet from the surface. The institution was kept in a very cleanly condition, and sanitary discipline was well maintained.

As soon as the outbreak in question was reported, expert inquiry was arranged for, and was carried out by Captain B. Sweeten, R.A.M.C. (S.S.O. of the area), Captain J. D. Benjafield, R.A.M.C. (bacteriologist of the area), Captain S. Shepheard, R.A.M.C. (T.) (appointed to act as resident medical officer in view of his special experience of dysentery), and Captain A. C. Inman, R.A.M.C., who undertook a series of special investigations on agglutination tests by arrangement with the Medical Research Committee at the No. 1 Research Laboratory, St. Bartholomew's Hospital. Measures for prevention, treatment, and research were most thoroughly carried out by these expert officers, while the unsparing activity shown by Captain L. Cranmer-Byng in taking all the measures which were advised or were practicable to deal with the outbreak and trace its cause was of the greatest value.

Occurrence of cases.—Setting aside a few merely suspicious or slight cases, definite dysentery symptoms occurred in 38 cases at dates which may be grouped as follows:—

4 days,	Dec. 27th to Dec. 30th	... ...	12
4 ,,	,, 31st ,, Jan. 3rd	... ...	12
4 ,,	Jan. 4th ,, ,, 7th	... ...	7
Between ,,	8th and ,, 16th	... ...	7

Clinical characters and treatment.—The cases, particularly those which occurred in the first eight days, were of considerable severity, two dying among those first attacked.

Clinically they were typical of bacillary dysentery. At the outset the civil medical practitioner in charge thought that the men were suffering from some form of food-poisoning, and it was not until some days later, when the outbreak had been reported to the A.D.M.S. of the district, that the diagnosis of dysentery was made on clinical grounds and specimens were forwarded for bacteriological examination to Captain Benjafield at the district laboratory. On Jan. 10th Captain Benjafield telegraphed that Shiga bacillus had been isolated from the fæces of two cases, and later this bacillus was recovered from seven other cases. In all instances the bacillus was typical *B. Shiga*, no other dysentery or dysentery-like organism or entamœba cysts being present.

The cases were treated in a special section of the institution, with separate latrines and washing arrangements. Nursing orderlies were provided. Milk, stimulants, and other special medical requirements were requisitioned and supplied. As stated above, a medical officer with special experience of dysentery was put in charge of the cases; for a brief period before his arrival another medical officer had been sent to assist the local practitioner who is in medical charge of the institution. Antidysentery serum was used where required.

All the 36 non-fatal cases had completely recovered by March and no relapses occurred. The cases were kept in the separate section of the institution until satisfactory bacteriological reports had been received. These related to three specimens of fæces taken during January, February, and March. By April the examinations made in Captain Benjafield's laboratory showed that all the 36 cases had given three consecutive negative results, including those in which *B. Shiga* was originally found.

Causation of the Outbreak by Water-infection.

Two circumstances attracted special attention—the sudden onset and short duration of the outbreak (24 cases within 8 days and 31 out of the total of 38 within a fortnight), and its widespread distribution among the men.

The institution is a two-storey brick building enclosing two main courtyards. It comprised 18 dormitories, 16 of which were occupied. Cases occurred in no fewer than 12 dormitories. There are several different mess-rooms and cases occurred in each mess. The 12 cases which occurred in the first four days were as scattered as the subsequent ones. There were three sets of latrines in different parts of the building, but the cases were not restricted to the users of any one of these latrines.

These facts made it certain that there was some one cause operating in regard to the whole institution about the end of December, the infecting agent persisting at most some two or three weeks. No source of infection was to be traced in the district. Shiga dysentery is unknown in this part of the country, and inquiry at farms where the men had been employed gave no indication of any local prevalence of suspicious diarrhœa or illness. It had to be assumed that infection had either been accidentally introduced from outside and had caused one or more unrecognised cases which had subsequently infected their fellows, or that a similar general infection had been started through some one or more of the men having suffered from dysentery before their arrival in England and remaining Shiga bacillus carriers.

These alternative hypotheses of the initial introduction of infection will be discussed later on, but in either case it was necessary to find a common distributing agent, such as food or drink, by which, given the initial infective agent or person, the outbreak itself was produced. Mere case-to-case infection contracted from latrines, or infection locally operating in particular dormitories or messes, were ruled out. There were no flies about at this time of year.

The various articles of food and their preparation and temporary storage were gone into in detail. The cooks, who cooked for the whole institution, were five men who had been there from the beginning, were perfectly healthy throughout, denied ever having had dysentery, and in all cases gave negative agglutination reaction. There were no

other men who handled all the food supplied to the different messes. Moreover, there was a control population, 80 in number, living separately from the institution, but receiving food from the same bulk supplies, all of whom escaped attack.

The facts, on the other hand, were consistent with a general infection of short duration through a temporary specific contamination of the water-supply.

Investigation of water-supply.—The liability of the well to contamination of excretal origin, and the special risk to which this water was exposed just before the outbreak began, is shown by the following considerations:—

1. Leaks were found in drains laid close to mouth of well, some leaks between 6 feet and 13 feet from the well being in a drain which served one of the principal latrines. The soil about these leaks was much blackened, and the possibility of this sewage reaching the water could not be excluded, although it is right to state that the drains themselves traversed a cap of clay which overlies the chalk and that the inside of the well did not show a point of leakage in any part of its wall near the surface.

2. On Dec. 14th the main pump of the well broke down, and it was necessary to use a small auxiliary pump at the bottom of the well just about the water level. As a result the man in charge of the water-supply had frequently to go down the well to see to the engine. This man has also the duties of supervising the sewage disposal plant, and so there was some opportunity of his contaminating the water with sewage-contaminated soil on his boots. This possibility, to which Lieutenant-Colonel D. Harvey first drew attention, was confirmed on detailed inquiry. It was also possible that dry refuse brought to the fire of the pumping-engine might have been swept into the well.

3. The water from the well is probably in underground communication with a disused well in the neighbouring courtyard (a capstan well which could be worked by hand). This capstan well was taken into use as a supplementary supply on one day only (Dec. 16th), following the breakdown referred to. It was clear from subsequent examination, however, that its water was subject to gross pollution from the drain of the laundry adjoining it and also from other badly-laid drains in the same courtyard. Thus, on the days immediately preceding Dec. 27th, when the outbreak began, there had been much disturbances of the water in this ordinarily disused well, sufficient, in all probability, to influence the quality of the underground water being drawn upon by the main well.

4. Analytically the water gave evidence of sewage contamination. On Jan. 8th coliform bacilli were found present in 0·1 c.cm. and absent in 0·01 c.cm. in the water of the main well; a previous examination on August 6th, 1917, had given the same result. After the uncovering and reconstruction of all the leaky drains referred to, another sample was taken on April 26th, 1918, with result of finding coliform bacilli greatly reduced, being present in 10 c.cm. but absent from 5 c.cm. Similar contamination and similar improvement as a result of the drainage work were established in the case of the capstan well.

Thus, looking at the matter generally, it is clear that, given a person at the institution who was excreting *B. Shiga*, there were several ways in which the general water-supply could have become specifically contaminated at the time in question, although the exact manner cannot be conclusively proved.

Duration of the infectious ability of the water.—It should be added that the water-supply was chlorinated towards the end of January, when the epidemic was shown to be probably due to water. The introduction of chlorination did not coincide with the cessation of the epidemic, which had ceased before this. It was, however, to be expected that if the specific infection of the water had been acquired only on a few days at the end of December and had not been renewed, its infecting property would naturally disappear in a comparatively short time. In this connexion some experiments were made by Captain Benjafield by purposely contaminating some of the well water in question from Shiga bacillus cultures and observing the time during which they could be recovered. The bacilli were present, though in greatly reduced numbers, on the tenth day after the contamination, when the observation ceased.

Source of the Initial Infection.

Details of the very thorough and careful search made for an original carrier case, or for evidence of an original introduction of infection from outside, need not here be given, as the results were negative. Only four of the men gave any history of past illnesses pointing to dysentery. In each case the attack had occurred more than a year previously. In none of them was there any history of relapses or any indication from the agglutination test that they had suffered from dysentery.

Incidentally to these inquiries it became necessary to test whether *B. Shiga* could survive for a few weeks on food which had been handled by a dysentery case or carrier.

Some experiments were made on this point by Captain Inman. The freshly cut surfaces of two pieces of bacon and four pieces of various kinds of sausage were lightly streaked with a camel-hair brush wetted with a saline suspension of *B. Shiga*, so diluted as to appear just turbid to the naked eye when held against a dark background. After this artificial infection the foodstuffs were left at ordinary temperature for three weeks. At the end of that time the Shiga bacillus was readily recovered from one portion of bacon and two of the sausages.

Agglutination Results.

Towards the end of January it was arranged that specimens of blood from all the convalescent cases of dysentery then being isolated at the institution should be sent to No. 1 Research Laboratory for examination.

Throughout these investigations the bloods were tested with standard agglutinable cultures of *B. dysenteriæ* Shiga prepared at the Department of Pathology, University of Oxford, on behalf of the Medical Research Committee. The technique employed was that outlined in the directions issued with the standard cultures. In each test the end-point of agglutination (standard agglutination) was arrived at by the use of the reduction table published by Dreyer and Inman.[1] The reaction was regarded as positive if the serum contained 10 or more agglutinin units per c.cm. of serum.

The results of these tests, which are shown in Table 1, are striking. A positive agglutination reaction was obtained in every one of the 35 cases in which blood could be examined, and the high dilution in which the reaction was obtained in nearly all cases is noteworthy.

Serum Agglutination Reactions (Capt. A. C. INMAN, R.A.M.C., *Medical Research Committee*).

TABLE 1.—*Actual Dysentery Cases.*

35 cases examined. Reaction in no cases negative.

No. of case.	Onset on—	Positive 1 in—	S.A. units.	No. of case.	Onset on—	Positive 1 in—	S.A. units.	No. of case.	Onset on—	Positive 1 in—	S.A. units.
1	Dec. 28	727	303	13	Jan. 1	727	303	25	Jan. 5	376	157
2	Dec. 29	500	208	14	,,	55	22	26	,,	187	78
3	,,	67	27	15	,,	220	91	27	Jan. 6	250	104
4	,,	440	183	16	Jan. 2	182	76	28	,,	220	91
5	Dec. 30	29	12	17	,,	182	76	29	Jan. 12	74	31
6	,,	250	104	18	,,	147	61	30	Jan. 14	440	183
7	,,	282	117	19	,,	194	80	31	Jan. 15	220	91
8	,,	250	104	20	Jan. 3	155	65	32	,,	155	65
9	,,	657	273	21	,,	250	104	33	Jan. 16	322	134
10	,,	302	125	22	Jan. 5	171	71	34	,,	125	52
11	Dec. 31	67	27	23	,,	128	53	35	,,	155	65
12	,,	388	161	24	,,	707	295				

S.A. units = Standard agglutinin units per c.cm. of serum.

In addition, blood specimens were taken from a considerable series of men who had not suffered from dysentery (all the dormitories and messes being represented), with the somewhat striking result that as many as 21 out of 114 of such men (18 per cent.) showed an agglutinating power of more than 10 standard units per c.cm. of serum (Table 2). In this 18 per cent. the titre was lower than that of the actual patients, but nevertheless was of an order which is obviously of significance and requires explanation.

TABLE 2.—*Men who Escaped Dysentery.*

114 men examined. I. Reaction negative: 93 men, including cooks (5). II. Reaction positive: 21 men (18 per cent).

No. of man.	Positive 1 in—	S.A. units.	No. of man.	Positive 1 in—	S.A. units.	No. of man.	Positive 1 in—	S.A. units.
C.1	69	28	C.8	38	16	C.15	35	14
C.2	58	24	C.9	125	52	C.16	70	29
C.3	31	13	C.10	38	16	C.17	36	15
C.4	50	20	C.11	38	16	C.18	125	52
C.5	36	15	C.12	25	10	C.19	35	14
C.6	69	28	C.13	84	35	C.20	50	20
C.7	60	25	C.14	80	33	C.21	84	35

TABLE 3.—*Men from Similar Institutions where No Dysentery Occurred.*

104 men examined. I. Reaction negative: 103 men. II. Reaction positive: 1 man (0·9 per cent.) in dilution 1 in 37. Standard agglutinin units per c.cm. of serum, 15.

In view of the possibility that the reaction of these 21 men might in some way have been determined by a previous inoculation, inquiries were made on the point both in their case and in the case of a similar number of controls showing no reaction.

[1] THE LANCET, March 10th, 1917.

The facts in each group, however, were practically identical. No special history could be obtained pointing to any of them having been inoculated with an antidysentery vaccine. All had received what appeared to have been an antityphoid inoculation early in 1917, the 21 cases in no way differing from the controls in this respect.

By way of further test, arrangements were made to supply Captain Inman with corresponding blood specimens from healthy men under comparable conditions in other institutions where no dysentery had occurred. 104 such blood specimens were taken, with result that in one case only was there any evidence of a high agglutination—namely, a single case showing 15 standard agglutination units per c.cm. of serum.

These results suggest the explanation that the 18 per cent. of the healthy men at the institution had acquired the ability to agglutinate *B. Shiga* as a result of exposure to the same infection which had produced dysentery in the 38 men who suffered from the outbreak—presumably the infected water-supply. But in the case of this 18 per cent., either because the local multiplication of the bacilli after infection was insufficient, or because of the existence of some factor of insusceptibility of the men, no symptoms of illness were produced.

Similar observations might usefully be made in other outbreaks of dysentery, or of enteric fever, where a generally operating cause like water or milk infection is suspected.

THE "INSTINCT-DISTORTION," OR "WAR NEUROSIS."

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IN a paper published some little time ago[1] it was pointed out that functional nervous disorders could be divided into two groups, according as to whether they were or were not determined by environment. Hysteria, and the neurosis about to be considered, belong to the former of these two groups, both being influenced by environment, while neurasthenia or the functional nerve disorder brought about by exposure of the nerve cells to prolonged poisoning by micro-organismal products, and certain of the reflex neuroses, belong to the latter.

The group of cases now to be considered resembles the hysterias in that environment plays a dominant part in their formation, but they differ from them in two respects: (1) in hysteria the rôle of environment is indirect, whereas in these cases it is direct; (2) hysterical phenomena are based on a physiological reaction, while the group under consideration is not so based; the phenomena are pathological and subserve no useful function in the shielding of the conscious mind from unpleasantness. For all practical purposes it is a product of modern warfare; it occurs in people correctly adapted for the requirements of civilised life when such people have been, for a length of time that varies with the individual, made to live in the utterly abnormal environment produced by the war. A functional breakdown of the kind to be described is liable to happen to everyone under these conditions, the variable element being the length of time that elapses before the symptoms become manifest.

The Primary Instincts.

Our normal behaviour under conditions of civilised life is to a great extent the result of the development, inhibition, and combinations of the primary instincts among each other. McDougall describes seven such instincts:

The instinct to run away	under the emotion of	fear,	
,, ,, fight	,,	,,	anger,
,, ,, of repulsion	,,	,,	disgust,
,, ,, curiosity	,,	,,	wonder,
,, ,, self-abasement	,,	,,	subjection,
,, ,, self-assertion	,,	,,	elation,
and the parental instinct	,,	,,	tenderness.

These instincts should not be looked upon as hard-and-fast and rigidly defined from each other. Nor can we imagine that in an ideally primitive organism such instincts exist in a state of elemental purity; it is almost certain that they have evolved from a functionally undifferentiated nervous system, and that their development has been determined by environment. Generally speaking, the environment in which animal and vegetable life has developed through the ages has been the same for all forms—an environment of ceaseless stress and strain, of unending activity and competition; therefore all animal life met with on this planet manifests the presence of some or all of these instincts, their combinations and associations. But they are essentially labile, and their relative strengths depend on the minor differences in the conditions of life brought to bear upon any genus or species. But in that these instincts have developed from some undifferentiated form of nerve activity, the reactions manifested when for any cause the normal play of emotion and conation is disturbed need not be distinct and specific for each instinct involved. As a matter of fact, there is, I think, a tendency for certain of these instincts to show their "resentment" under such circumstances in a characteristic manner; but this is no more than a tendency, and need not necessarily obtain.

Now, if we consider the above seven primary instincts, we see that in that their relative strengths are the result of our customary environment, and are, in such strengths, useful for our customary environment, then, given a sudden and sufficiently radical alteration in our surroundings, the developed instincts in their relative powers may be utterly inefficient for the fresh environment. Modern civilisation tends to the safety of the individual without any very great trouble on his part, and the emotions of fear, anger, and repulsion are not, in such a state, called very frequently into action—at any rate, with any great intensity of tone. Much of the nerve force associated with these emotions is transferred to other conative activities, with results that are useful to the individual as long as he is living under the conditions of civilised life to which he is accustomed.

The Emotions in Warfare.

But under the conditions of modern warfare the emotions of fear and disgust particularly are called into frequent and violent activity. And not only is there a sudden and intense evocation of unaccustomed emotions, but the end-results and conative aspects of such emotions, so far from being given free play, are expressly forbidden, both by the idealistic conceptions acquired during childhood and early life and by vigorous punishment from fellow-men. Thus in modern warfare men are daily put into positions of imminent danger; the danger to life under certain conditions of military duty may be so great as to render death a practical certainty. In such situations men, if they are normally constituted, experience fear, and, under ideal conditions of such a position, would run away. As it is, self-respect and military discipline prevent this normal end-result, and such men proceed to fight in direct disobedience to their instinct. The helpful influence of the emotion of savage anger against their adversaries is not felt with any intensity. The disgust at the unaccustomed sights and sounds of conflict is not allowed to manifest itself in the normal way by repulsion, so that under these conditions three of the most powerful instinctive activities are distorted.

How utterly abnormal from the biological standpoint such a situation is may be inferred if we take analogous cases in the lower animal world and imagine a rabbit confronted by a hungry fox. If we further imagine the rabbit to be an idealist he might be tempted, for abstract reasons, to fight the fox, and the result would be obvious, and from the point of view of natural selection wise. Such a situation between two such animals is inconceivable, but if in place of abstract reasons the rabbit was fighting in defence of its young, then, whatever the result, the incident would be natural and the animal would probably fight more efficiently.

If we consider the above seven primary instincts we see that they are divisible into two groups, members of each reinforcing each other and antagonising those of the other group. Into one of these groups fall the emotions of fear, disgust, and self-abasement, with their associated impulses; into the other anger, self-assertion, wonder, and tenderness felt for offspring. A sense of inferiority combined with disgust reinforces the feeling of fear and renders the impulse to fly more powerful, whereas fear may be diminished by anger, a sense of superiority, and especially by the activity of the tender emotion. Unfortunately the tendency of modern warfare is to give play to the emotions of the first group without developing those of the second, and also to produce emotional tone without allowing the associated impulses to come into action. The elaborate inculcation of a hatred for the enemy and of a conviction that he is fighting in defence of his hearth and home are undoubtedly useful in lessening the destructive emotions of the first group in the case of the fighting man.

[1] THE LANCET, 1918, i., 365.

In that the occurrence of any emotion should normally be followed by the actual occurrence of its associated impulse, suppression of the appropriate conative aspect is directly harmful to the proper functioning of the nervous system, and is liable to be followed by functional disorders of this system.

In the case of the production of hysterical symptoms as opposed to those of the functional disorder we are now considering it was stated that the etiological value of the exploding shell and of the collapsing trench lay in the fact that they reinduced an emotional tone which had been at one time in the life of the patient associated with some particular incident that he had seen, or heard, or experienced. In the type of functional disorder that we are dealing with now the exploding shell and the falling trench also are important etiological factors, but they bring about their effects in a different way; they act as the "last straw on the camel's back," and simply complete the degree of fear that is necessary to make the symptoms obtrusive. In the former case these factors act as the triggers of a specially adjusted mechanism; in the latter as the final blows in the disrupting of the normal mental mechanism.

Symptomatology.

The symptomatology of the "war neurosis" differs from that of the hysterias in that it conforms to one type. In hysterical conditions of the pure or protective form there is found a cutting away from the consciousness of the patient all impulses coming from a region of the body which has been concerned in the transmission of unpleasant impressions; in the suggestion hysterias the diversity of symptoms and symptom groups is only limited by the limitations of the particular patient's powers of association, but in the war neurosis the diversity of symptoms is reduced; they conform to the various motor manifestations of fright, and are divisible into two groups.

In the first of these the fright manifestations are those associated with flight: pallor of the face with a rapidly beating heart and staring eyes, sometimes to the extent of exophthalmos; dilatation of the pupils and muscular excitability, spasm or tremor. Such symptoms in their essence are physiologically useful in that they put the animal into a state of preparedness for the obtaining of a desired objective—immediate removal from a given neighbourhood—and this is the group that is most often met with in this form of functional nerve disorder, some or all of them. When all are present the impression on an observer of utter fright is irresistible, but in actual practice all of them are not present in the majority of cases, and then the rôle of the suppressed emotion may escape attention.

In the second group the fright manifestations are those associated with the "crouching" instinct met with in certain of the lower animals, a process which keeps such animals perfectly stationary in situations of intense and imminent danger so as to avoid attracting the attention of an enemy. Here, in addition to the tachycardia, sweating, and dilatation of the pupils, there are inability to walk, or even to move the legs at all for this purpose; occasional attacks in which the patient for a short time cannot voluntarily move any part of his body; and inability to make a noise, aphonia, whispering speech, or its modification stammering.

The Element of Fear.

These somatic signs are indicative of a "choked up" conative aspect at, and leading up to, the time of their occurrence. Now, although it is true that normally the conative aspect of an instinct follows after the emotional, nevertheless it is a fact that the performance of appropriate actions tends to the production of the associated emotion. Thus, bracing the trunk muscles, clenching the hands, and setting the teeth will induce a feeling of anger; and it is to be expected that the presence of the symptoms mentioned above would reproduce the emotion of fear. This is always the case, and it is the presence of this emotion that is the deciding factor in the diagnosis of the war neurosis. These patients always at one time or another experience fear.

In the early, untreated, and acute cases the fear may be obvious and openly expressed; in addition to looking terrified, the patient is terrified, and he is terrified waking and asleep. As he improves the fear leaves him in his waking hours and is confined to his dreams, and the importance of a history of terror-dreams can hardly be overrated.

Much has been written lately on the subject of dreams and dream interpretation, and much of what has been written seems to me to be of the nature of a very elaborate structure built on very slight foundations. We do not know enough of the psychology of thought to justify detailed interpretation of dream incidents, but the emotion that is evoked by these incidents not only illuminates the general trend of the dream, but also gives important information as to what particular emotion has been excited and, if not actually suppressed, not been allowed free play during the waking hours.

The progress of a patient suffering from the war neurosis is best estimated by the intensity of the terror-dreams. In the earliest phase, when fear is felt during the waking hours, there may be a difficulty in getting to sleep at all on this account. Later, when he does sleep his rest is fragmentary, and is broken by the distress caused by his dreams. The fear-content of the dreams is so intense that it wakes him with a jerk, often with a cry; he lies for a time unable to move and sweating freely. He then drops off to sleep again, and the same behaviour is repeated throughout the night.

This phase gives way to one in which the patient on waking in the morning remembers with considerable distress the dreams that he has had, terrifying in themselves, but not sufficiently intense to wake him up. Or if he does wake up in this stage there is no free sweating.

In the third stage towards recovery the dreams do not come every night; several nights of refreshing sleep are obtained, and only now and again does he experience the dreams; in this stage he is not awakened at all by them. It is instructive, however, to notice that in this stage, if he is touched while asleep, he wakes with a start and in distress. If in the course of treatment the patient relapses the dreams revert to the early types, but not, in the majority of cases, with sufficient intensity to wake him.

As these patients improve the element of fear disappears from their waking life and in the course of time from their dreams. But in the vast majority of cases the somatic symptoms—tremor, stammering, and so forth—remain, and in such cases the final phase of the disorder has been entered, the stage of habit. The habit stage is of importance, for not only is it the stage of greatest duration, but it tends to perpetuate the condition by bringing about relapses. If while under treatment anything occurs to upset a patient's confidence in the methods of treatment he is receiving, if the conviction that he is going to recover is weakened from any cause, then his mind becomes, so to speak, sensitive to his symptoms, and in that these are the result of fear they work backwards and reproduce the emotion, as mentioned above; only the emotional intensity is rarely as intense as in the earliest phases of the condition.

These two stages of war neurosis, the emotional and the habitual, are characteristic, and their differentiation is important from the point of view of complete recovery. A patient in the first stage is ill and requires hospital treatment, whereas one in the second stage is merely inconvenienced, and very often hospital treatment is the direct opponent to complete recovery.

Another Type of Case.

In Mesopotamia and in India during the first half of 1916 quite another type, from the point of view of symptoms, of functional nervous derangement was met with. This form was characterised by evident mental dullness as far as events happening round the patient were concerned. Such patients would answer questions correctly but briefly; they took no interest in any subject under discussion and never volunteered any remarks; they were perfectly content to lie quietly and passively; they neither read nor wrote. When given any information bearing upon their interests they either took no notice at all or dismissed the subject with some indifferent remark. Their mental state was one of inertia; there were no positive signs, and to anyone who did not know anything of the antecedents of a particular patient he would seem just rather a surly and uninterested person. Yet in the course of their convalescence they proved themselves rather the reverse.

Such patients were those who had been in Mesopotamia some time, and who had experienced the distressing monotony that a prolonged residence in that country impresses upon most people. In the early days of the campaign everything there was characterised by this deadness—country, climate, occupation, and food. I cannot help thinking that the condition of intellectual inertia produced is the result of this utter absence of interest—is, in fact, the result of an

abeyance of the emotion of wonder in the instinct of curiosity. Patients in this condition recovered quickly when sent away from the country, recovery in many cases being associated with a period of irritability.

The Sex Instinct.

In view of the mass of literature, constructive and destructive, that has been published during recent years on the part played by the sex instinct in the production of functional nervous derangements, it may be advisable to discuss briefly its potency or otherwise as such a factor in the light of the evidence gained from the multitude of functional disorders that have been recently observed.

In that sexual activity is an instinct with emotional, receptive, and conative aspects, it may reasonably be supposed to be a possible source of an instinct-distortion neurosis, and in my opinion it is such a source in a limited number of cases. Its *modus operandi* is strictly analogous to that of the flight and repulsion instinct; that is, it produces a neurosis when there is an intense emotional activity with obstructed conative activity. In other words, it is not excessive sexuality nor perverted sexuality that produces the neurosis; it is compulsory abstinence from sexual activity. Given that a man with strong sexual tendencies be forced to live in an environment where he is unable to gratify them, however healthy they may be, then such a man may in the course of time manifest an instinct-distortion neurosis. I do not think that there is any need to postulate the existence of "repressed complexes" or other subtleties; a man in this position may masturbate or fall into homosexual practices, or, what is still more important, he may fear the possibility of such a happening. The end result is the same: he worries himself ceaselessly over his condition and ultimately develops mental depression. Such men frequently tend to struggle against this depression and to overcompensate in the direction of high spirits, and their neurosis takes this form—cheerfulness and high spirits with periods of intense depression—and such patients require careful watching, for they not infrequently resort to suicide.

Of course, in the case of men and women of an hysterical type the primary incident may be of a sexual nature, but this is not in any way essential, nor is it, in my opinion, at all frequent, at any rate in this country. The sex neurosis works through the medium of worry, and it is difficult, I think, for some of us to realise how intense this worry may be. Such cases may be suitably called "isolation" neuroses, for it seems probable that in addition to enforced sexual abstinence the factor of loneliness plays a part.

The sex instinct is most emphatically not of primary importance in the production of the war neurosis.

Causation.

It will thus be seen that the war neurosis as described above differs entirely in its mode of origin from hysteria. The latter condition clinically is the result of an improper suppression of a tendency that is inherent in every one of us and which is determined by our position in the scale of evolution; it is manifested as a result of an emotional activity which is normal as far as the emotion is concerned. The former is the result of an improper strain on the emotions themselves, leading to a wrongful emotional tone and to distortion of the bodily mechanism which is associated with the conative aspect proper to the emotion concerned. To use an analogy, there is all the difference between the two conditions that there is between the emptying of a reservoir by raising the sluices in the dam and by smashing the sluices or the dam itself.

The actual method by means of which emotional activity becomes manifest as somatic phenomena is an interesting problem that does not concern us here; the work of Cannon and others indicates the sympathetic nervous system and certain of the ductless glands as important connecting links. It is important, I think, to exclude from the pathology of "shell shock" (which is a term generically applied to certain hysterical and instinct-distortion phenomena, and which is about as applicable to either as "cold" or "chill" would be to all varieties of inflammation of the lungs) any lesion which gives rise to organic clinical signs. Cases in which after death hæmorrhages and compression lesions are found are better called "shell disease," after the principle that distinguishes caisson disease. The different functional disorders included at present under the name of shell shock should be sharply separated from those in which organic lesions can be diagnosed during life.

In this way, then, a shell exploding so close to a man that the violent alterations in the air-pressure bring about cerebro-spinal hæmorrhages and other disruptive effects would produce "shell disease," whereas the explosion that completes the measure of emotional stress in the manner described above, and which brings into eminence a condition that has long been incubating, produces "shell shock," so-called. In the presence of signs of organic disease shell shock should not be diagnosed, but shell disease. Of course, there are bound to be cases in which the diagnosis between the two conditions is of extreme difficulty, but from the point of view of both prognosis and treatment it is well to go on the principle of diagnosing shell shock only when a thorough examination reveals no signs of organic disease, and shell disease when such signs are present.

Diagnosis.

The diagnosis of the instinct-distortion, or war neurosis, is, as a rule, easy. In the absence of signs of organic disease it may be made in the case of any patient who shows symptoms of nerve irritability and in whom, at one time or another, the element of fear is present. In the event of such symptoms existing in a patient who shows no signs of fear, either in his waking hours or in his dreams, one of two conditions may be present—the war neurosis in the late or habit stage, in which there will be a history of terror-dreams at the beginning of the illness; or a suggestion-hysteria, in which case no such history is obtainable. Naturally, leading questions should not be asked; the patient should merely be asked if he sleeps well, or if he slept well at the time of onset of the breakdown.

It sometimes happens, though not in my experience very commonly, that an instinct-distortion neurosis and a pure hysteria exist in the same patient.[2]

I recently saw a young soldier, a private, who was under treatment for herpes zoster. The condition affected the left side of the chest, in the area of the fourth dorsal segment. While under treatment he quite casually mentioned that he had been recently suffering from what he called "attacks," after he had been in bed for a little time and when he was going off to sleep. In these attacks, which only lasted for a minute or so, he lost his sight, and all power of making a noise; he was absolutely unable to move a limb; he came to himself sweating, and, as he described it, "sick with fright."

The emotional tone of the incident, the inability to move or to make a sound were quite characteristic of the instinct-distortion neurosis, the symptoms conforming to those of the second group mentioned above, but the temporary blindness was difficult to account for on the grounds of an instinct-distortion neurosis.

Looking through some past notes of the case, however, the following entry was found: "The patient states that what worried him most when in Flanders were the horrible sights, to which, unlike most of his companions, he could never get accustomed." The amaurosis, in fact, was the result of a pure or protective hysteria, and the condition of the patient was due to the existence of the two types of functional nerve disorder.

The actual determining cause of the attacks was the sensation of his heart beating as he became drowsy; the trouble did not arise until he began trying to lie on the left, or herpetic side. The condition of the nervous system was quite slight and readily passed away; he had not been invalided for it; but in the event of his not having had herpes zoster when he did, it would be a matter of interest as to which functional derangement, the hysterical or the instinct neurosis, would have become obtrusive first. Probably the hysterical, in which case he would have been invalided for blindness.

The above case is of interest in that it indicates the lines along which an approach to the diagnosis should be made. Any particular symptom should be investigated from the standpoint of its being or not being, as the case may be, useful to the individual as a means of escape from his enemies, or of its being a derivative of such a useful manifestation. Thus, inability to move or to make a noise is obviously useful to the hare when trying to avoid attracting attention, but blindness is not, for it would militate against the final rush when the animal realised that attention had been attracted; it would prevent this realisation to a great extent. Therefore the blindness could not form part of the instinct-distortion neurosis, and further examination into the attitude of mind of the individual to his surroundings in the fighting line will ultimately bring into prominence some association with sight—either, as in the case just mentioned, distressing sights, or, if these are not complained about, some childish association in which the eyes played a part.

[2] As a general rule, in an hysterical individual the hysteria symptoms manifest themselves before the emotion neuroses have had time to develop; this is, of course, intelligible on the theory that the hysterical person develops his condition to protect his consciousness from emotional distress. The instinct-distortion neurosis may be coloured by a suggestion hysteria, but in such a case the greater includes the less, and the case should be looked upon as an instinct-distortion neurosis.

Treatment.

The treatment of the instinct-distortion neurosis is, in its essence, simpler that that of the hysterias, and more satisfactory. This, of course, follows from the fact that in the latter conditions symptoms are treated, while the underlying condition remains; the patient is hysterical to the end of his life. In the former, however, the harmony of the nervous system can be, and as a rule is, fairly easily restored, the difficulty experienced in practice being the persistence of certain symptoms as habits, and even these are more readily removed than would at first sight appear probable. In the course of time, when all ideas of the war as an imminent factor have disappeared, the more troublesome of these symptoms will be done away with owing to their very obtrusiveness, while the less troublesome will only persist as long as they do not interfere with the patient as a useful individual in the surroundings in which he works.

Treatment falls necessarily into two groups according as to whether the patient is or is not ill. These two groups correspond fairly accurately to the phases mentioned above, the active or terror phase of the illness and the habit phase.

There are two fundamentally important principles in treatment that should always be kept in mind. The first is that the patient must be removed as quickly as possible from the environment which was responsible for the condition—he ought to be taken right away from any focus of fighting; and the second is that from the very beginning he ought to have it impressed upon him that he is going to get completely cured. The removal from the combatant atmosphere is so obvious and so usual that its importance as a method of treatment as well as the light it throws on the origin of the condition is in danger of being overlooked.

When such a patient has arrived at the "ultimate base" wherein the remainder of his treatment is to be effected, if he is still in the active stage he should be kept for the most part in bed and in a ward that is quiet. It is inadvisable that he should be alone; I think that a ward with two other patients in it forms the best environment. Here he should stay until he is able to sleep without being waked up frequently by his dreams. In the early stages, when he is unable to sleep at all, I have found the best results with trional, 10 gr., with or without aspirin, and diminished gradually as the tendency to sleep improves. During this period it is well to make him realise that he has power over his legs by making him take a few steps every day in the ward, but as long as he is definitely "ill" with his condition he ought to spend most of his time in bed. He should be seen frequently by the medical officer in charge and should be constantly reassured as to his complete curability and encouraged to look upon himself as improving from day to day.

As the sleep improves and the dreams lessen in intensity he should be made to leave the ward for a short time each day and mix with the other patients, and then the more detailed treatment may be instituted. It will be found that patients manifest one, some, or all of the following disabilities: speech defects, tremors, disorders of gait, mental depression, irritability of the sympathetic nervous system

As regards *speech defects*, the principle of treatment may be summed up in the words, "careful and painstaking re-education." At the Seymour Park Military Hospital in Manchester we have been fortunate enough to obtain the assistance of the officials of the Institute for the Deaf and Dumb in the treatment of cases of disordered speech, and the results have convinced me that these patients are the most readily curable of all. Definite classes are formed, and the men are shown the position of the lips in the articulation of the vowels and their compounds. They are taught breathing exercises, are made to read aloud, and are discouraged from speaking to fellow-patients while they stammer. The result in the majority of cases is little short of marvellous, but, as in all cases of the instinct-distortion neurosis, treatment must be painstaking and to a large extent individual, and a very considerable degree of patience is required.

Similarly, in the treatment of *disorders of gait*. In the event of there being complete inability to move the legs at all, the patient should be made to sit on the edge of the bed and "feel the floor with his feet." Often enough this produces clonic spasms of the legs and the patient at first can only practise for short periods at a time, but if he is made to practise regularly and is systematically encouraged these spasms lessen, and he then begins to apply pressure to the floor with the feet. He should then be supported and made to stand, and to take a step or two; in the course of a very short time with support he will be able to get over the ground easily. The support should then be lessened, and it is well to remember that it is very much more easy to err by keeping the support, orderly, crutches, or stick, too long than not long enough. As soon as the patient can move fairly well when supported by an orderly he should be given crutches, and when he realises that he can manage these he should be made to give them up and take to a stick. The same principle is repeated with the stick; he should discard it as soon as he is able to use it with comfort. During the orderly, crutch, and stick stages he should be made to take exercises of precision over a track marked out on the floor. Two lines are painted on the floor about three feet apart, and foot-marks are indicated between them; the patient is told to walk between the lines, putting his feet on the marks. The proper use of the thigh and leg muscles should be insisted upon. These exercises may be associated with the use of a treadle machine.

Tremors also should be treated with exercises of precision. The coarse, clonic spasms of the early stages of the condition readily subside as improvement in walking is attained—and the less the patient's attention is drawn to the hands and arms in this stage the better. In the stage of the fine tremors he should be made to use his hands and arms in the way that best appeals to his interest; he should be made to construct models with a set of child's bricks or, in the later stages, with some of the "Meccano" outfits. Or he may be encouraged to manipulate chessmen or to do crochet work. The extent of useful exercises for tremors in the later stages is very nearly endless, and it requires only a little imagination on the part of the medical officer, sister, or nurse to suit a patient's requirements and, in addition, to make the exercises interesting. At the same time, these exercises should be carefully watched; any tendency on the patient's part to look upon them as a means of getting through the day apart from any therapeutic value must be checked; also, as soon as he has become proficient at one set of such exercises he should be given another and more delicate set. And when all signs of mental disturbance have disappeared and he realises that he can do useful work with his hands, then the sooner he is discharged from the hospital atmosphere into some form of civil employment the better.

An interesting symptom-group that occurs in certain of the patients suffering from this form of neurosis is *mental depression*, and often enough this only becomes obvious in the later stages of the disorder. Such depression may be due to the troublesome nature of the symptoms for which, primarily, a patient is undergoing treatment; in such a case it subsides as the symptoms improve and requires no special treatment. In other cases it is present in the absence of any obtrusive somatic symptoms, and then treatment should proceed along two lines—"therapeutic conversations" and employment. Therapeutic conversations should always be added to whatever form of treatment any patient with the instinct-distortion neurosis is receiving, but when there is well-marked mental depression they become of paramount importance. In such conversations, as far as possible, the "doctor and patient" atmosphere should be avoided, and in most cases in my experience psycho-analytic methods are not needed. The patient should be treated in a friendly manner, and in the course of time definitely asked what is troubling him. If sufficient tact has been used I find that there is usually very little difficulty in getting him to say what is on his mind; often enough, unfortunately, the cause of the depression is perfectly reasonable, and as far as medical treatment is concerned is not removable. And of all the causes domestic worries are the most potent. In other cases the depression is the result of disabling symptoms that are irremovable. In one case I saw profound depression was caused by gross nystagmus, apparently the result of hæmorrhages round the fourth ventricle and aqueduct; the case was one of shell disease. Depression caused by obtrusive symptoms is best treated by giving the patient occupation in experimental workshops; work which is not specially interfered with by his condition is chosen for him, and he is encouraged to make himself proficient in it. The more he is made to realise that he is not utterly disabled the more the depression lessens, but in some cases we have to admit that the depression is justified.

The *tachycardia* and other signs of irritability of the sympathetic nervous system are best treated by graduated exercises. It is an unfortunate fact that patients suffering in this way are extremely difficult subjects to convince that there is no organic disease of the heart; in the mind of the average patient palpitation, præcordial pain, and giddiness are incontrovertible signs of "heart disease." Such patients are best treated in hospitals specialised for heart conditions, in which the whole atmosphere of the patient is directed towards his realisation that his symptoms are in no way dangerous, and that by training they will cease to hinder his activities in after life.

Nomenclature.

In conclusion, it may be permissible perhaps to discuss the nomenclature of this condition, the instinct-distortion neurosis. The usual name, shell shock, is unfortunate, because it covers cases that are hysterical as well as those that are not, but which are the results of a strained emotional activity. But shell shock covers neither of these conditions completely; the most characteristic cases of the instinct-distortion neurosis may give no history of shell shock. On the other hand, what soldier patient that has been in the front line for any time has not been in the sphere of bursting shells? The name "shell disease" is applicable, for it is the direct disruptive effect of the explosion that produces the lesions of that condition, but shell shock, as a name applied to functional nervous breakdown in soldiers, cannot be justified.

Exposure to the sights and sounds of the modern battle-field may bring on hysteria manifestations or symptoms of the instinct-distortion neurosis. This latter name is clumsy, and "war neurosis" is too general a name to be applied to this disorder.[3] The more specific name "terror-neurosis" is perhaps a little invidious at the present time, and I would suggest calling the condition described in the foregoing pages "dysthymia" (δυς, impeded; θυμός, emotion).

We could then sum up the state of affairs as regards the factor of the exploding shell thus: The neuroses usually met with as results of the present war are hysteria and dysthymia. Neither is exclusively the result of the war, but of the two, dysthymia is the nearer approach to a specific war neurosis. In neither *need* there be a history of a bursting shell or a collapsing trench; such a history *may* be present in both. The bursting shell and the collapsing trench have no specific value in the determination of these neuroses; they possess an adjuvant value only, and this value may be obvious or masked. Only in "shell disease," where there are demonstrable organic lesions, have these factors any specific value, and the resulting condition is not functional.

[3] I have recently seen a most characteristic example of this neurosis in a woman, resulting from physical fear of being confined. The neurosis became evident shortly after marriage and became acute during pregnancy.

ON DISAPPOINTMENTS OF VACCINE THERAPY.

BY H. G. ADAMSON, M.D., F.R.C.P. LOND.,
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THE value of prophylactic vaccination has long been firmly established, but in regard to the efficacy of vaccination as a curative agent there is to-day considerable difference of opinion, and for many who have given this treatment a prolonged trial the results do not satisfy their earlier hopes and expectations.

Experience of Dermatologists.

As has often been the case with new remedies, dermatology was one of the earliest fields for the trial of curative vaccines; and there are two affections of the skin, of microbic origin and difficult to cure, in the successful treatment of which vaccine therapy at one time seemed likely to be of great assistance. These two affections are *chronic staphylococcic infections* and *lupus vulgaris*.

Experience extending over a dozen years has shown that this early promise has not been fulfilled. It is probably true to say that most dermatologists will hesitate at the present time before embarking a patient afflicted with sycosis or other chronic staphylococcal infection of the skin upon a course of vaccine treatment; he will, perhaps, as a last resort employ vaccines, but he will hesitate, since it is not possible to predict with any certainty that the patient will eventually be benefited, and his anticipation of a cure will generally be in inverse proportion to his experience of the treatment. Personally, always with an intense desire to see good results from vaccine treatment in these obstinate cases of chronic staphylococcal infection, I have been so unfortunate as to have but rarely met with them either in very numerous cases treated by myself or in my own cases treated by expert bacteriologists.

Striking cures are, indeed, reported, and it must be admitted that good results are occasionally observed with vaccine treatment in the less chronic forms of staphylococcal infection of the skin, in recent furunculosis, and in pustular acne which is not of long standing; but such results are by no means constant, and in the majority of cases there will be but temporary improvement, if really any improvement that cannot be attributed to other treatment carried out at the same time or to accidental coincidence with the natural course of events. In some cases the eruption will become worse.

And, again, it is certainly correct to say that most dermatologists will not now recommend tuberculin treatment as a likely cure for lupus vulgaris, and that many will avoid it as being fraught with danger. In my own experiences, in every case of lupus treated by tuberculin the disease has subsequently become less controllable than before the treatment was used.

Experience in Other Fields of Medicine.

If we compare the experience of dermatologists with that of others in other fields, we find much the same opinions to prevail. From a perusal of the reports of the discussions on vaccine therapy which took place at meetings of the Royal Society of Medicine in 1910 and in 1914 we gather that although this treatment may now and then appear to give dramatically successful results, it more often fails, and sometimes does harm.

Sir Thomas Horder summed up the opinion of many when he said that "the failures of vaccine treatment are more frequent than its successes."

In respect of the value of vaccine treatment in enteric fever, in gonorrhœa, and in ulcerative endocarditis, there are differences of opinion, and many observers have expressed themselves as dissatisfied with the results in these affections.

In connexion with the treatment of septic wounds of war curative vaccine therapy has proved of comparatively little value, and Colonel Sir Almroth Wright seems to admit that it takes but a secondary place compared with preventive vaccination, for he remarks to-day in regard to the treatment of wounds that—

> "Prophylactic employment of vaccines is not only from the theoretical point of view the best of all methods of employing vaccines, but it is also the method which gives in practice the maximum advantage."

And again he writes—

> "Treatment by physiological methods ..... procedures such as the opening and draining of the wound ..... is beyond all comparison the most important, and I would admit that—all loud talk notwithstanding—antiseptic treatment is at the best an ancillary method of treatment. And of course," he adds, "the same applies also to treatment by vaccines."

These statements appear to indicate a distinct recession from the opinion, which he expressed in 1909, that—

> "The principle of building up the resisting power of the system against any microbe which may have entered the body will ultimately hold its own even against the principle of warding off infection from the susceptible patient."

To-day prophylactic vaccination "is the best of all methods of employing vaccines," and "treatment by vaccines" "at the best an ancillary method," "all loud talk notwithstanding."

Consideration of Comparative Failure of Curative Vaccination.

How are we to account for this comparative failure of curative vaccination as contrasted with the striking success of prophylactic vaccination? Is it not that in prophylactic vaccination we are dealing with a less intricate problem and a proceeding which is better supported by known facts than that which confronts us when we attempt to cure an already existing infection by means of vaccines?

It is easy to see that *preventive* vaccination has a sound foundation. The study of immunity reactions has established the general principle that when an animal becomes infected by a micro-organism it is rendered, after a period of incubation, specifically supersensitised to the toxins of that micro-organism—to use the expression of Von Pirquet, a condition

of allergy or altered reactivity is produced. As a result of this allergic condition the animal is protected against a second infection. An attempt to produce a second infection gives rise to a reaction more violent than the reaction to the first infection, which has a shorter incubation period and which ends in spontaneous cure. The efficacy of prophylactic vaccination is demonstrated in the results of preventive vaccination against small-pox and against enteric fever.

But when we come to the cure of an already present infection we have altogether different conditions. The protection which has been acquired against a second infection varies in degree and in the length of time it endures in different diseases. In certain infections the reaction is such that the infected organism completely overcomes the invasion and remains henceforth protected against the disease. This occurs in small-pox and in scarlet fever, among other complaints.

In a second class the patient, although protected against a second invasion from without, yet remains infected and is liable to new infections from within—that is, to auto-inoculations. This occurs in tuberculosis and in syphilis.

In a third class the protection is apparently of but short duration and seems often to be followed by a period of increased susceptibility, so that new infections may easily take place. This is seen in streptococcal and in staphylococcal infections and in influenza, for example.

What we require to know in regard to the second and third of these classes is whether in a subject whose immunity development has been insufficient completely to overcome the infection we can by appropriate doses of vaccines so enhance the production of immune bodies—i.e., so "build up" the resisting power of the system against a microbe which has entered the body—that the defeat of the invasion is assisted or completed; and whether we can do this without danger of discrganising the mechanism of immunity and possibly lowering instead of raising the powers of resistance.

Production of Protective Bodies.

The early promise of Wright's method of curative vaccination was that we could avoid the danger of over-stimulation and its risks of fresh infection, such as we became familiar with in the early days of treatment by Koch's old tuberculin, by regulation of the dosage, and that we were able to enhance the production of protective bodies without so disturbing the mechanism of immunity as to do harm.

This method was based upon the hypothesis—

"That the blood of those who become the subject of a bacterial invasion is deficient in protective substances," and "that by an injection of corresponding bacterial vaccines the content of the blood in protective substances can in practically all cases be increased."

These protective substances were "hypothetical substances in the serum which incite phagocytosis by action on bacteria"—i.e., opsonins. It was further maintained that the measure of the production of protective substances could be gauged by the observation of the opsonic index and the appropriate doses of vaccine measured accordingly.

This hypothesis is exceedingly simple, and if it expressed the whole problem of immunity vaccine treatment would be a straightforward proceeding. But in reality it is simple because it ignores a good many facts and current ideas in regard to immunity production.

It ignores the teaching that an infected organism develops specific immune bodies as a consequence of becoming infected, for according to Wright a patient suffering from an infection, such as lupus vulgaris, has a lower "opsonic index" than a normal uninfected person—that is to say, he has less protective substances in his blood. But according to the more generally accepted view a patient with lupus vulgaris is protected against fresh infection because he has acquired protective bodies which are absent in the normal person. Although the average "opsonic index" of lupus cases has been found to be 25 per cent. below normal, yet every case of lupus gives a "cuti-reaction" to tuberculin, and thus indicates a body content of protective substances above the normal.

Again, in cases of enteric fever agglutinins are present in the blood which are absent or deficient in the normal. Yet the hypothesis of Wright supposes the blood of the enteric patient to be deficient in protective substances.

But although the hypothesis of Wright seems totally to ignore the teaching that an infected person develops protective bodies as a result of infection, it yet supposes that these bodies can be developed as a result of vaccination, an attitude which seems contradictory.

It is doubtless perfectly true that the immunity reactions may be stimulated by vaccination, but we must not lose sight of the fact that a person who has been infected is in a state of allergy or altered reactivity or hypersensitiveness towards the toxins of micro-organisms by which he is infected, so that the reaction which may result from even a minute dose of vaccine may be enormous in proportion to that which would occur from the same dose in an uninfected person, and that such an excessive reaction may be followed by a period of exhaustion of immunity or "anergy." And this seems to be the danger of the proceeding of so-called curative vaccination, that we cannot estimate the result of a vaccine in an already infected subject. The minutest dose of vaccine may set up in an infected subject an explosive reaction whose force we are quite unable to predict or control.

The Opsonic Index.

According to Sir Almroth Wright's hypothesis the proper dose of a vaccine may be estimated by the opsonic index. But this hypothesis ignores the fact that in many infections the polynuclear leucocytes or phagocytes take little, if any, part in the defence against the invading micro-organism. In tuberculosis, for example, the cellular defence is a connective-tissue-cell defence and one in which the polynuclear leucocytes appear to take no part. And when we examine the results of depending upon the opsonic index as a measure of the production of protective bodies by vaccination we find that this has proved altogether unreliable. For in 1904 1/500–1/20 mg. of new tuberculin was regarded as an "extraordinarily small dose." In 1906 Sir Almroth Wright said:—

"I now begin with a quantum of tuberculin corresponding to not more than 1/1000 milligram of T.B. powder and never advance to doses larger than 1/600 mg."

In 1910 the doses recommended were 1/20,000 mg. to 1/4000 mg. These doses were from the beginning controlled by observation of the opsonic index, and the earlier cases were reported as doing well with doses which were a very great deal larger than the doses which were afterwards advised to be used.

If we turn now to staphylococcal infections in the defence against which the polynuclear leucocytes do take an important part, and in which the opsonic index might more reasonably have been supposed to be of assistance, we find the same difference between the earlier and the later dosage. In 1903 the opsonic index told us the proper dose was from 2500–5000 million staphylococci and that the index could be controlled and cases cured by these doses; but in 1908 the dose was reduced to 100–250 millions. So that we must begin to doubt the value of this control even in cases of staphylococcal infection, and to ask, "Have we any reliable means of knowing the proper dose of a vaccine?"

Further Criticism.

Viewed again from another aspect, the rationale of vaccine treatment for chronic staphylococcal infection seems to be at fault. In staphylococcal infections of the skin the protection against a new infection varies with the severity of the primary infection. In the case of a carbuncle the patient is protected against a new infection and the lesion generally remains single. In the case of a boil the protection is frequently of short duration, for it often happens that a second or more boils appear before the first has disappeared; and cases are common in which there are repeated crops of boils over months or years, or a continuous infection of fresh hair follicles, as in *sycosis menti*. In these cases, in spite of the repeated stimulation of fresh infections, although there are intervals of improvement, yet the immunity reactions do not produce a cure; and it is difficult to say why we should expect a vaccine to accomplish that which the repeated reinfections fail to do. In practice we find this to be the case, and, at any rate in my own experience, we but rarely, if ever, succeed in curing a case of chronic staphylococcal infection by vaccines, and we are in danger of ultimately making the case worse by over-stimulation.

It has already been said that in practice the treatment of lupus by vaccines is proved to be highly dangerous. In the treatment of staphylococcal infections the danger of doing harm is perhaps less serious, but vaccine treatment of chronic staphylococcal infections of the skin is so uncertain in its results that it seems to have fallen into disuse in dermatological practice almost equally with tuberculin treatment.

As Sir Almroth Wright has put it—

"The body has the machinery for immunisation, and you can play tunes upon it if you know the laws. If you do not happen to know the laws when playing upon it, it may be quite injurious."

The uncertainty of the results, for most part the disappointing results, of vaccine treatment should perhaps make us pause and ask: Are we at present in a position to play tunes upon the machinery of immunisation by means of vaccines after the machinery has already been set in motion as the result of microbic infection?

It may be that vaccine treatment sometimes gives dramatically successful results, and we are perhaps justified in giving this treatment a trial in certain cases of infection where other treatments have failed. But the still prevalent tendency to employ vaccines indiscriminately in all sorts of complaints should be deprecated, because we are not really in a position to know when we may do good and when we may do harm by this treatment, since we have no means of estimating its effects in a person whose reactivity has been altered, perhaps profoundly altered, as the result of previous microbic infection.

The almost equally prevalent use of vaccines in diseases of non-microbic origin is perhaps of less consequence, but it is apt to delay the employment of a treatment more suited to the case and more efficient.

Reviews and Notices of Books.

The Life of Sophia Jex-Blake. By MARGARET TODD, M.D. (Graham Travers). London: Macmillan and Co., Ltd. 1918. Pp. 574. Price 18*s*.

Sophia Jex-Blake was born to be a pioneer. Whether she was born to be a doctor is, of course, another question. Her adoption of medicine as the profession in which she could carry on her struggle for the rights of women and for her own freedom seems to have been something of an accident; but she was born to struggle and to struggle through. From childhood to old age she overflowed with energy, an energy that sometimes spent itself in storms, or what she called "cataracts," and which undoubtedly caused unhappiness as well as happiness. Perhaps the unhappiness was chiefly for herself; if her intense and vehement affections did not always make her understand the people she loved, still less did they make her intelligible to them. She suffered accordingly, as those who give everything except calm, and accomplish everything except self-control, are bound to do. The tragedy began in childhood, when she was sent from one school to another, and a series of excellent, religious, affectionate, but (one fears) stupid, schoolmistresses found her unmanageable, while her effect on her delicate mother's nerves was such that for long periods it was not considered possible for her to be kept at home. The tragedy went on in youth, when she put her whole heart into a friendship with Octavia Hill, a person of such opposite temperament that the misery which followed was perhaps inevitable. It probably went on to some extent all her life, though the wider field in which she moved, the greater choice of companions, and the freedom she had won made its effects less visible. But the energy did not end in storms. The mother who had so often been laid on a bed of sickness by Sophia's childish naughtiness, became her dearest life-long friend. The loss of Octavia's friendship, though, we are told, it "cut Sophia's life in two," did not break her down. For many years she suffered intensely, but "till the close of her life the friendship on her side remained unbroken," and from it she drew fresh energy and idealism. She was always, we learn, "one of the most affectionate people that ever lived," and though it seems likely that she was also always difficult to get on with, she did a great deal to make the effort worth while.

Her career was as stormy and as fruitful as her personal relations. It began when at 18 she forced her somewhat disconcerted father to let her go to the newly-opened Queen's College, London, and to accept a post as mathematical tutor, for which he was horrified to find that she was to receive a salary. Teaching was, indeed, her chosen profession, but in America (which she visited seven years later) she fell in with Dr. Lucy Sewall, then resident physician to the New England Hospital for Women and Children, and was inspired with the wish to study medicine. She watched Dr. Sewall at work and learned a good deal from her, and when the death of her father forced her to return to England, she determined to seek for a medical education in a British university.

The story of the great struggle which resulted in the opening of the Edinburgh School of Medicine to women is told in detail in Dr. Margaret Todd's fascinating pages. Sophia Jex-Blake was the protagonist. Indeed, she began the struggle alone, but when the Medical Faculty and the Senate had sanctioned her admission to lectures the University Court rejected her claim on the grounds that special arrangements could not be made for "one lady." As soon as this was made public other women announced their intention of standing by her side, and the famous battle of the *Septem contra Edinam* began. It lasted from 1869 to 1873 and aroused such storms of passion as is difficult to imagine now. THE LANCET did not at first support the women, but in 1871 it "took fire," says Dr. Todd, quoting the following editorial passage: "Common candour must compel any unprejudiced person to admit that the fight has been pursued by the orthodox party *per fas et nefas* and that the ill-advised conduct of grave and learned seniors in the profession has offered only too plausible excuses to the heated blood of younger partisans to indulge in coarse excess." From this time on THE LANCET continued to urge the claims of honour and fairness on the party which claimed orthodoxy for its part, but which preferred every other method, from libel actions to organised riots and assaults. This brutality was met by the indomitable spirit of the girl students, and by the unstinted devotion of the male supporters of enlightenment, ranging from the majority of the Medical Faculty itself, and from such distinguished names as those of Professor Masson, Professor Lorimer, and Professor Calderwood, to the Irish students, who formed a defensive brigade to escort the girls to lectures, and no doubt greatly enjoyed the consequent opportunities for a free fight. In the midst of it all, Miss Jex-Blake disconcerted everybody by failing in her first professional examination. It was, of course, because she had been giving her whole energies to struggle instead of to study, and had thought a great deal more about her cause and those she was leading than about her personal success; it was very characteristic. She did ultimately become a successful doctor, but it is doubtful whether science was ever the first thing to her. The woman's movement and the help she could give to individuals seem to have come first in her thoughts till the end of her life. She was first and foremost a fine human being.

All her humanity and all her struggles are well set forth in Dr. Margaret Todd's admirable biography, which gives us a vivid picture of a varied and strongly-coloured life. It is to be recommended to all who are interested in the history of medical women, and to all who care for psychological drama and the struggle of character with environment. It is not only full of information, but is as absorbing as a good novel.

I. B. O'M.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions and donations to the Fund have been received during the week ending August 6th:—

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† Per Capt. G. W. Curtis.

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THE LANCET.

LONDON: SATURDAY, AUGUST 10, 1918.

The Medical Conditions of Industrial Manufacture.

A REPORT which has just been issued by Mr. H. M. ROBINSON, the Chief Inspector of Factories, on the work of his Department during 1917, bears evidence of the present paper scarcity. But while it lacks in bulk, and while no effort can be made to present the masses of valuable data and information to which we have been accustomed in these annual reports, nevertheless it still retains all its human interest. The documents are of the highest value in reminding us of the extent to which British industries are being carried on to-day as apart from that branch of industry which is devoted to the production of munitions of war; and this is specially valuable when there is a tendency to forget that any other industry is at present being pursued. This country is at war, and is devoting its first energies to carrying that war to a successful conclusion, but it is the very essence of our strength that simultaneously we should be able to preserve a continuity in our social and commercial life. We have endeavoured in another article this week to inculcate the same lesson, as it is brought to our notice by the impending exhibition of modern British scientific products. Mr. ROBINSON'S report marks the close of Sir ARTHUR WHITELEGGE'S long term of office as Chief Inspector of Factories. It is now more than 21 years since he was appointed, and not as a medical man but as an administrator of known capacity, in order to reorganise the Factory Department. During his period of office that Department has been entirely transformed; not merely has it increased out of all recognition in size, but its work has become more and more skilled and technical. The standard of inspection has been raised, technical experts have been added to the staff; medical inspectors, electrical inspectors, technical engineers and chemists have been appointed; and, what was regarded at the time as a startling innovation, lady inspectors of factories have been created. All these things have been done during Sir ARTHUR WHITELEGGE'S term of office, and those who have been privileged to work under him must always recall him as a great Chief Inspector.

The present report varies from peace time reports in that it presents only four subjects dealt with in detail, each written by a specialist. The record given by Mr. G. BELLHOUSE of the present position in relation to hours of work and emergency orders is one of great interest, establishing as it does the way in which hours of labour have varied during the stress of war production. He shows how the efforts made in the early days of the war have been ascertained by industry itself to be not merely injurious to the workers, but inimical to output, so that recognition, without undue legal pressure, is being given to the necessity for not merely shortening hours, but for working hours which are humanly convenient. The tendency to give up working before breakfast is marked, and it is accompanied by better time-keeping and less sickness. There can be little doubt that industry will settle down to shorter and more reasonable hours without being driven thereto by legal enactments. Miss A. M. ANDERSON'S article on the extent and effect of the substitution of women and girls in industry is of immediate importance, not merely as indicating what has been done in diluting male labour and so showing what work women can do, but as indicating what, when necessity drives, can be done to make industrial processes lighter and easier. Those who know Miss ANDERSON'S fight for the working woman in the past will find her now almost advocating the employment of women on branches of work which a few years ago she would have looked upon as entirely outside their capacity and, indeed, as work which they ought not to be allowed to attempt. To-day women in shipyards are sweeping, cleaning and doing general labour, painting, french polishing, sand-papering in joiners' shops, core-making, assisting riveters, plumbers, and electricians. They are wiring on the boats, scraping tanks and sides of ships, welding, repairing, and doing actual crane-work, and, Miss ANDERSON adds, "if one looks at the women one usually finds brighter, healthier faces in those engaged in the more exposed processes than in the parts of the works which approach more nearly to ordinary factory conditions." Mr. W. SIDNEY SMITH'S article on Doping in Aircraft Works is the story of a wonderful victory for ventilation. A few years ago it would have been thought an impossibility to change the air of an ordinary workplace 30 times an hour without causing discomfort to the workers from draughts, but Mr. SMITH and his colleagues have shown how this can be done, not merely without causing draughts, but while maintaining the necessary warmth (about 70° F.) required for the process. He points out the difficulties which he had to overcome from so-called ventilating engineers, who were so wedded to the principles of plenum ventilation that they attempted to introduce pressure fans into dope-rooms. What has been done for the ventilation in aircraft works must mark a great step forward for the more adequate ventilation of workshops as a whole.

The article upon Trinitrotoluene Poisoning, by Dr. T. M. LEGGE, which concludes the series, is an entrancing medical chapter dealing with a serious outbreak of poisoning associated with a high rate of mortality. Under the stress of war work the problem was tackled by a combination of research work and medical supervision in the factories directed from headquarters, combined with strenuous support from engineers in improving the processes and diminishing the contact with the poison. As a result, even though the numbers employed continue to increase, the poisoning has diminished until it has practically reached vanishing point. The introduction of whole-time medical

officers in the factories concerned has demonstrated the value of such medical advice on factory premises, and a great extension of this service is in contemplation in the future. In fact, Mr. ROBINSON, in his sketch of the activities of his Department, points out that in the recent large developments of industry sight is apt to be lost of the fact that the whole is a natural outcome of the activities of the Factory Department. The movement known under the term "welfare" was largely set on foot by those members of the Department who formed part of the Health of Munition Workers' Committee; and the Home Office was able to obtain legal powers for enforcing welfare accommodation which are being fruitfully used not merely for the munitions industry, but in other trades as well.

The Weapons of Science.

THE record of British scientific discovery along many lines is admitted to be without parallel—along so many, indeed, that our total contribution to developing civilisation is as yet larger than that of any nation, though the pace, which we set originally, has often been too fast for us. Equally admitted is it that the significance of the results of patient research in this country has not, in various important directions, been foreseen. In scientific initiative we have usually held the first place, but in the practical applications of our findings to the common affairs of life we have shown little aptitude, being content to allow these findings to remain as mere academic exploits whose issues could be faithfully worked out by others. What a policy! And the policy cannot be justified by any noble altruism. We have refrained from the meal which we prepared not through generosity, but because we have been too lazy, as a people, or too ill-educated in scientific affairs. It has been left for a cataclysmic war to bring this reproach home to us, and none too soon we are benefiting by our terrible lessons. It is gratifying to know that an earnest movement is now on foot to ensure that the fruits of national genius may be employed in favour of our national interests. This movement takes shape in the exhibition to be held at King's College, London, from August 12th to Sept. 7th under the ægis of the British Science Guild, when the products and appliances of scientific and industrial importance, which before the war were almost exclusively obtained from enemy countries, though the pioneer work had been accomplished by ourselves, will be displayed for public appreciation.

That our scientific workers possess something more than academic initiative, and can materialise their academic labours for the direct benefit of the community, will find remarkable illustration in the exhibits collected, but our gratification on learning this will be chastened by the remembrance of the vast opportunities which we have let slip owing to our national inability to regard scientific discovery as a weapon in practical life and not as an occurrence in a laboratory, interesting only to those immediately employed in research. The results so far achieved prove that adroit adaptation of the results of scientific research to industrial enterprise can be as boldly characteristic of the British scientist, as is his instinctive ability to wrest from nature her secrets. But until now he has awaited a stimulus, and never before was there a more striking illustration of the traditional maxim that necessity is the mother of invention. Necessity has now constrained soaring genius to answer questions of utility, with the result that our people at large can comprehend their vast debt to research, while the seekers after truth are put in good heart by a public appreciation which hitherto has never been theirs. We believe that we shall write in future not of the public neglect of science, as, regretfully, we have written in the past. On the contrary, we look forward to telling more often the story of vigorous progress by scientific means to practical ends, and to describing the opening up of vast fields of active industry, destined to secure a prominent place for this country in commercial prosperity, while contributing at the same time to world progress. Recent developments have shown that, given political and financial support, the future of scientifically directed industries is certain. How else can we interpret the successful manufactures which will be on demonstration at the forthcoming exhibition? There will be seen dyes, special glass, optical appliances, surgical, bacteriological, and pathological apparatus, certain metals—not necessarily rare but all very important—and drugs which have hitherto been entirely supplied to this country from Germany or from those associated with the German cause. To take a striking example, we have been content hitherto to rely upon Germany for our supplies of potash, when all the time we had abundant native material at our door, rich in the valuable element and only waiting for an economic process of extraction. It is now announced that from felspar, among other minerals, there can be extracted potash more than enough for our needs. In times of peace no tenets of economy or self-reliance sufficed to bring that fact home to us; but the shortage of war has braced our scientific men, and promptly there has been evolved a process for its economic extraction.

Many of the pressing economic and military problems in front of us mean, in short, the carrying into practice of principles which have been established in our laboratories. It is no exaggeration to say that next to our commanders on land and sea, the men of the moment are the chemist, the physiologist, and the engineer, in their various separate and blended capacities. Men of such qualifications should be sought out untiringly and recruited under generous conditions. The same demand comes from our great colonies—as, for example, Canada—which, as is pointed out by our Canada correspondent in another column in this issue, is enormously rich in undeveloped resources. The chemical engineer is badly wanted who can estimate whether the indications given by the test-tube can be materialised in the capacious tank or still of the works. The man familiar with the operations of the laboratory bench, as well as with general chemical principles, will recognise what an opera-

tion on massive scale demands; such a man is of prime value to this country to-day, and it is well that our politicians should have begun to perceive this truth. For much work lies ahead that ought to be done now, while the raw native materials at the disposal of the enemy give him many advantages, presenting to him a simpler problem in regard to the extraction and preparation of ultimate products. Commercial men familiar with questions of this kind, it is to be devoutly hoped, will give science that hearing which the present position claims and which hitherto has been refused. Such are the reasons why the forthcoming exhibition is of the greatest national importance, and we are glad to learn that a gratifying demonstration of what British science is able to do in regard to industrial developments is promised. Our statesmen have consistently disregarded the warnings of science in the past; they must do so no longer.

Annotations.

"Ne quid nimis."

BACTERIOLOGY OF THE "SPANISH INFLUENZA."[1]

THE pandemic of influenza has not spared any single part of Germany. The clinical course does not seem to differ from that run by the disease in this country. Relapses and fatal pneumonias are particularly noted. The clinical picture is declared to be identical with that of the last pandemic of 1889. A very striking observation has been brought forward and generally confirmed at a special meeting of the Munich Medical Union on July 9th—namely, that persons under 30 years of age mainly fall victims to the disease; this was explained by a survival immunity in the elder generation. The meeting considered all the aspects of the epidemic on the basis of the hospital and University material of Munich. Pfeiffer's bacillus has been found but exceptionally; streptococci, and occasionally pneumococci, were recovered from the sputum, organs, and also blood of the patients. Similar findings were recorded in 1889, and thus the present results were in "keeping with precedent." Pfeiffer's bacillus had not been found until 1892, although it should have been impossible to overlook it in 1889, thus it may be that it will yet turn up in due course. The editors of the *Deutsche medizinische Wochenschrift* have addressed a circular inquiry to all the leading bacteriologists in Germany requesting enlightenment as to the results of their laboratory investigations. Pfeiffer himself had reserved his final opinion as to the relationship of the pandemic with those of 1889 and 1891–92. He had not examined a sufficient number of cases at Breslau, but found his bacillus in some while failing to recover it from others, and was still investigating the causes of this discrepancy. Gruber answered from Munich very simply: "Influenza bacilli not found hitherto—investigations proceeding." Ulrich Friedemann, who is in charge of the infections wards of the Virchow Hospital of Berlin, expressed his belief that the symptomatology and complications of the epidemic correspond exactly with those described in 1889–90. He had not found the Pfeiffer's bacillus, streptococci and pneumococci being the most common agents of the complicating pneumonias. The influenza bacillus may be evading capture on account of faulty method of inquiry, yet on the other hand the possibility must not be overlooked that there may be epidemic diseases clinically resembling influenza of which the Pfeiffer's bacillus is not the agent. Uhlenhuth has so far reported from Strassburg the same contradictory results as those of Pfeiffer. Kolle reported under the date of July 18th from Frankfort his failure to detect Pfeiffer's bacilli in any of the few cases which he had thoroughly examined. In practically all cases there were found, however, large numbers of a Gram-positive coccus—often in a pure culture or in symbiosis with pneumococci. The diplococcus tended to develop involution forms and to grow in very long chains in the condensation water. He regards them as agents of a secondary infection in the "Spanish disease" which to his mind may not be identical with the pandemic influenza of 1889–1893. The finding of this pleomorph Gram-positive diplococcus is very interesting in view of the observations of Rosenow and his pupils in the United States.

[1] Der bakteriologische Charakter der "Spanischen Krankheit," Deutsche med. Wchnschr., Berl. u. Leipz., 1918, xliv., 775 and 808. Editorial Notes, München. med. Wchnschr., 1918, lxv., 804.

A YEAR'S WORK AT A MENTAL SECTION.

Dr. R. Eager, Major, R.A.M.C., the officer in charge of the mental division of the Lord Derby War Hospital at Warrington and formerly senior assistant medical officer of the Devon County Asylum, has submitted to us a valuable analysis, appearing in full in the current number of the *Journal of Mental Science*, of the admissions and discharges in the division from June 17th, 1916, to June 16th, 1917, amounting to some 2429 of the former and 1466 of the latter. The main facts of the analysis may be summarised thus:—

The average number of admissions per month was 202 and discharges 122. It may be stated that these figures refer both to men who have served with one or other of the Expeditionary Forces and to cases occurring with the home troops, although the latter are now dealt with in other ways. The general method adopted was to admit the patient for the purpose of examination, observation, and diagnosis, and if his case was considered mental and he did not make definite improvement he was certified and sent to the county asylum to which he was chargeable. If, on the other hand, he showed signs of improvement he was retained in hospital till he was able to be discharged to the care of his friends. To take the admissions from among the home troops first. These amounted in the year selected to 258. Of these, 168 were eventually discharged to their civil occupation, 66 were certified and sent to asylums, 6 died, and 8 were sent back to home duty with the army. The main clinical groupings in the 258 were: mental deficiency, 53; delusional insanity, 43; melancholia, 37; neurasthenia, 26; dementia præcox, 24; G.P.I., 16; mania, 13; confusional insanity, 11; secondary dementia, 10; and alcoholic insanity, 9. The corresponding figures for the cases from the Expeditionary Force in France may also be quoted. These amounted in the same year to 1652, of which 536 were eventually discharged to some civil occupation, while 75 were sent to asylums, 11 died, and no less than 175 were sent to home duty with the army. Among the 1652 were 309 cases of melancholia, 242 of delusional insanity, 233 of mental deficiency, 179 of confusional insanity, 135 of mania, 127 of dementia præcox, 99 of neurasthenia, 78 of G.P.I., 63 of shell shock, 33 of mental stupor, and 19 of alcoholic insanity.

We wish to emphasise only one point out of much that is instructive—viz., that of 258 home mental cases 176 recovered and went back to work, while of 1652 expeditionary cases 711 recovered and also returned to work. These figures supply one more confirmation, if such were needed, of the contention that the opening of reception hospitals, as distinct from asylums, for the early treatment of the psychoses and psychoneuroses will materially advance matters in this field of medicine. THE LANCET has many times dealt with this subject, and has urged strenuously that the

unfortunate civilian patient should not be handicapped as compared with the military patient. The success of the military mental hospitals is proof conclusive of the immediate necessity of tackling the problem seriously for the civilian. As things stand at present, it is scarcely an exaggeration to say that if a medical officer connected with an asylum is consulted by some one who fears he has incipient mental trouble the only thing to be done is to tell him to "go away and get much worse," when a general practitioner will be able to certify that he is fit for admission to an asylum. Surely, one of the ironies of the situation is that certification is mainly in the hands of men who are not familiar with the subtleties of pathological mental states. The goal to be aimed at is that all cases should pass through a reception hospital prior to certification, and that the latter, if necessary, should be carried out in the special hospital by properly qualified men. The advantage of being able to treat mental cases in early non-certifiable stages is too obvious for the point to be laboured. It is satisfactory to record that a select committee of the Medico-Psychological Association is sitting to deal with such proposed reforms of the Lunacy Laws as will incorporate all the valuable experiences gained by the successful methods of treating military mental cases, the elaboration of which is one of the outcomes of the war that have brought good in their train.

HEMIPLEGIA DUE TO TUBERCULOUS MENINGITIS.

TUBERCULOUS meningitis in adults differs in many ways from the disease in children. Frequently it shows a tendency to be circumscribed to a point in the cortex and the symptoms suggest a focal lesion. At a meeting of the Académie de Médecine of Paris M. T. Legry reported a case in which the symptoms were so typically hemiplegic that a different disease was suggested.

A woman, aged 31 years, was admitted into the Charité Hospital on Sept. 6th, 1915. She had felt fatigued for two months and for a week had noticed at irregular intervals tingling beginning at the extremities of the left foot and hand and spreading over the whole of the left half of the body. She coughed a little, but examination of the chest was negative, and there had never been hæmoptysis. On the left side the knee-jerk was exaggerated, Babinski's sign was present, and sensibility and muscular power were diminished. In walking the left leg was dragged. Lying down the patient could not raise the left leg more than 20 cm. above the bed. Movements of the left arm were also limited. The temperature was 98·6° F. Because of the age of the patient, the clearly organic character of the hemiplegia, and the absence of other cause which might be invoked, specific hemiplegia, probably the result of arteritis, was diagnosed. Iodide injections were given and blood was taken for a Wassermann test. On the following days the symptoms persisted; there was no vomiting, stiffness of the neck, or sign of Kernig. On Sept. 16th the temperature rose to 102·2° and paresis appeared in the right lower limb. Lumbar puncture yielded fluid under very high pressure which presented abundant lymphocytosis and contained tubercle bacilli. Death occurred on Sept. 24th.

The necropsy showed a few isolated tubercles at the apices of the lungs. At the superior border of the right cerebral hemisphere was a thick granular tuberculous patch of the size of a 2-franc piece. In the longitudinal fissure it encroached on the paracentral lobule and on the external surface of the hemisphere on the ascending frontal and parietal convolutions. It was very adherent to the subjacent nervous tissue. In the rest of the pia mater were found some whitish-grey spots representing early tubercles. In this case all the symptoms, as well as the age and the absence of pulmonary signs, pointed to specific disease. Only the results of lumbar puncture enabled the diagnosis to be rectified.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Vocational Re-education of War Invalids.

INTERESTING experiments in the vocational re-education of war cripples have been carried out at Bordeaux and recently reported to the Academy of Medicine. Dr. Gourdon's observations extend over 5014 cases with loss of limb or grave and incurable injuries, of whom 73 per cent. have been able to resume their trade (with or without prosthesis) without special training; 27 per cent. required some new education or a modification of their old work. 30 per cent. only of the patients examined were disabled in the upper extremity. In each case a careful examination of physical and psychical aptitude was made, for the war cripple varies greatly in both these respects, and it is essential to place him under the surveillance of instructors and foremen who can adapt the technical methods of a craft to the degree of intelligence, energy, and skill, as well as to the age of the cripple. 62 per cent. of the patients at the Bordeaux centre were agricultural labourers, and of all cripples the worker on the land most readily resumes his former work. He is fond of it, he knows his work thoroughly, and it is work which does not demand precise movement. Thus 85 per cent. of the smallholders or farmers, and 48 per cent. of the gardeners, were able with suitable appliances to resume work at once. Cases with loss of hand or forearm have shown practically normal output of labour; with loss of arm 75–85 per cent. of the normal; with disarticulation of the shoulder 40–50 per cent. Among lower limb cripples only those with amputation through the thigh showed any considerable handicap; in this case an output of 50 per cent. of the normal. Nearly all the cripples are apt at manual work, whether sitting or standing, the diminution of output not exceeding 10 per cent. Professor Bergonié is, from his own experience, strongly in favour of re-education by agricultural work, considering it greatly superior to, and more rapid in results than, all the methods of artificial physiotherapy practised in urban hospitals, the field-work being continued all day and every day under the supervision and direction of doctors. In the Bordeaux area during one year cripples undergoing the agricultural cure have furnished 107,000 days' work on the fields.

A Preventive and Curative Serum for Gas Gangrene.

Médecin-inspecteur Vincent, professor at the Military School of Medicine of Val-de-Grâce, has announced to the Academy of Science the discovery of a serum, prepared in collaboration with M. Stödel, with which he has successfully treated gas gangrene. The action of the serum is both preventive and curative. Guinea-pigs injected with the serum after previous inoculation showed a mortality of only 4 per cent., against a rate of 80 per cent. in the non-injected. On the strength of these results M. Vincent determined to try the curative effect upon man. Thirteen patients suffering from gas gangrene, all in a serious, four in a desperate, condition, were thus treated by him, with the result that 11 recovered. These results augur well for the new method, details of which will be furnished later, as observations are being continued.

Shock and Muscular Autolysis.

In order to decide the question of the toxicity of muscular autolysis occurring at the seat of the wound, which has been regarded by some as the principal cause of the grave symptoms of traumatic shock, M. Pierre Delbet and M. Karajonopoulos have made a series of observations which seem to establish the part played by auto-intoxication. After operating upon dogs and guinea-pigs damaged tissue from the region of the wound was taken immediately after death, finely triturated with normal saline, and incubated at 37° C. The filtered extract was then injected into the peritoneum after careful sterilisation. In dogs it was found impossible to obtain a sterile extract for this purpose. With guinea-pigs and rats, especially with the latter, which live on a flesh diet resembling that of the soldiers, the authors obtained highly autolytic extracts producing in animals all the symptoms of shock a few moments after injection—acceleration of respiration, absolute inertia, and abolition of reflexes, then gradual cessation of respiration and death in coma. They conclude

that the toxic action of muscular autolysis in shock is a very definite factor to reckon with, and that in cases of clinical shock it is essential to proceed as soon as possible to resection of the damaged tissues, or even to amputation of the limb, and that to delay intervention until the patient has recovered from shock is fatal.

August 1st.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

The Scientific and Industrial Council of Canada.

Professor A. B. Macallum, now chairman of the Scientific and Industrial Research Council of Canada, to which he was appointed some months ago, has presented his first report. It is his view that research work along the lines indicated by the formation of the Council should be conducted at the Universities of McGill and Toronto. He points out that when the war closes Canada will be bearing an enormous burden—an annual budget of $300,000,000, or possibly $350,000,000, and in addition heavy taxation of all kinds. There will be keen competition in international trade; and those nations will best succeed whose industries are organised on a scientific basis. As every part of the Empire is devoting great attention to the modern aspects of industry, Canada cannot afford to lag behind. The Council proposes that there be a central institute established forthwith, with guilds in various parts of the Dominion. In the central institute it is suggested that there should be a considerable number of laboratory units, or series of rooms, provided with free light, heat, and where necessary motive power, to be available for use by the various guilds. Industries, universities, and governments concerned are urged to take active steps immediately; and as the Dominion of Canada is enormously rich in undeveloped resources, the first requirement is thoroughly trained scientific experts.

The Prescribing of Liquor in Ontario.

One physician in Toronto recently issued 1274 prescriptions for liquor in 11 days. He was summoned to the police-court on four specific charges and was fined on all four, making a total of $1200. The matter was gone into thoroughly by the Medical Council of Ontario, which was in annual session the week when the cases came to trial, and it was found that many members of the medical profession in Toronto were giving more prescriptions than the practice of medicine warranted and than the law considered necessary. The Ontario Medical Council will petition the Legislature to reduce prescriptions from one quart to eight ounces; and the Ontario License Commission, under whom the law—the Ontario Temperance Act—is administered, will hereafter require vendors under licence to report all prescriptions issued by each physician for liquor on the tenth of each month, so that a record may be kept of the total of each physician for the month.

McGill University and the Admission of Women to the Faculty of Medicine.

Under the following resolution the Corporation of McGill University, Montreal, will admit women to the study of medicine:—

"That the Faculty recommend to Corporation that women be admitted to the study of medicine provided they had taken a degree in Arts from a recognised university; or that they take the double course of B.A. and M.D., or B.Sc. and M.D., at McGill University; or that they have completed the first and second year in the Faculty of Arts at McGill University, and thus give evidence that they are sufficiently mature and otherwise qualified to take up the study of professional branches. The Faculty further recommends that, inasmuch as in certain subjects separate laboratory accommodation and equipment are highly desirable, a strong appeal be made for some addition to the available funds of the Medical Faculty."

Toronto, July 2nd.

PROFESSOR JOHNSON SYMINGTON'S RETIREMENT.—At a recent meeting of the Senate of the Queen's University, Belfast, reference was made to the services of Professor Johnson Symington, F.R.S., who had been compelled by ill-health to retire from the Chair of Anatomy, which he had occupied for 25 years. Dr. R. W. Leslie attributed the high reputation of the Belfast School of Medicine in no small degree to the thorough training in anatomy received there.

TUBERCULOSIS.

French Provision for Military Cases.

THE gift on France's Day of £75,000 by the Joint War Committee of the British Red Cross towards a hospital and a farm colony for the use of French soldiers suffering from tuberculosis, reminds us that it was the American Red Cross which made it possible to complete in March of this year the large military sanatorium at Bligny, where, under the care of Dr. L. Guinard, cases of all stages are accommodated in separate rooms. For this isolated method of treatment, hitherto only available in France for a few well-to-do patients, Dr. Guinard has coined the word "alveolisation." Each patient has his own south balcony with chaise-longue.

A Factory Sanatorium.

A special investigation committee of the Medical Research Committee issued in 1915 a report on the incidence of phthisis in relation to the boot and shoe trade, and this report contained a recommendation for the establishment of a factory sanatorium wherein employment could be found for tuberculous boot and shoe operatives under modified sanatorium conditions.

This report was communicated by the Local Government Board to the Leicestershire and Northamptonshire county councils and the Leicester and Northampton borough councils, asking them to furnish the Board with their observations in regard to the practicability of the scheme and the possibility of combined action by the authorities concerned. A joint conference has just been held at Northampton at which Dr. F. J. H. Coutts (for the L.G.B.) and Dr. T. M. Legge and Dr. E. L. Collis (for the Home Office) met representatives of the four councils.

After full discussion a committee was appointed representing the four authorities, and also the Boot and Shoe Manufacturers' Associations and the National Union of Boot and Shoe Operatives, to consider practical details. This committee has now reported—

(i.) That the scheme for a factory sanatorium is impracticable owing to the complex operations of modern boot and shoe making; (ii.) that it is undesirable for a man who has contracted phthisis in the trade to go back to the same occupation: and (iii.) that it might be possible for certain processes connected with the boot and shoe industry to be carried on in workshops attached to sanatoriums under strict medical supervision.

These views have now been endorsed by the Conference, which passed a unanimous resolution to the effect that, whilst a factory sanatorium is not practicable, nevertheless the Government should give financial support to workshops connected with existing sanatoriums.

Provision of Institutional Treatment in London and Lancashire.

In reply to a recent question in the House of Commons, Sir A. Griffith-Boscawen admitted, on behalf of the Ministry of Pensions, that there is still delay in obtaining institutional treatment for discharged men in London suffering from tuberculosis. In order to reduce this delay the period of sanatorium treatment had been shortened and discharged men were being given priority of entry over civilians. He added that he was now conferring with the London Insurance Commission and with the Local Government Board with the object of securing more adequate treatment for discharged men. In Lancashire, as revealed by the answer to a question addressed to the Local Government Board, although accommodation is deficient for civilian patients, there is at present no waiting list of military tuberculous patients.

Segregation of Advanced Cases.

The Metropolitan Standing Joint Committee decided last week to make representations to the Local Government Board and to the Metropolitan Asylums Board, urging measures for placing an institution at the disposal of local authorities for the accommodation and isolation of advanced cases of tuberculosis.

Arrangement for X Ray Examination.

Lancashire county council reports that correspondence has passed between the County Tuberculosis Committee and the Local Government Board with reference to the X ray examination of patients suffering from tuberculosis at the private rooms of the honorary radiologists attached to the Manchester Royal Infirmary and the Salford Royal

Infirmary. This course has now been approved by the Local Government Board in consequence of the difficulty of carrying out the examinations in these infirmaries at the present time, provided the fee paid does not exceed £1 11*s.* 6*d.* for a single examination, or £1 1*s.* for each patient if more than one attends for examination at any given time. The committee recommends that a sum not exceeding £100 be granted to cover the cost of such examinations during the financial year ending March 31st, 1919.

A West Sussex Sanatorium Scheme.

At the meeting of the West Sussex county council on July 26th an expenditure not exceeding £2500 was sanctioned for the provision of temporary accommodation for the treatment of tuberculosis. A definite scheme to make provision for sanatoria and hospitals for treating tuberculosis was before the council at the outbreak of the war, when it was decided not to proceed during the duration. West Sussex cases have been sent to Ockley Sanatorium, where out of 33 patients no fewer than 15 were from West Sussex. But that sanatorium being no longer available, temporary provision has to be made, and premises are being sought with grounds where huts can be erected and which may hereafter become a permanent place of treatment. It was stated at the meeting of the council that the demands for treatment were constantly increasing, and in addition to the civil patients the demand on behalf of discharged fighting men was greatly increasing.

Report on Miners' Phthisis in South Africa.

In his first annual report for the 12 months ending July 31st, 1917, to the Secretary for Mines and Industries, Pretoria (U.G. 6—'18. Cape Times Limited. Price 4*s.* 9*d.*), Dr. W. Watkins-Pitchford, chairman of the Miners' Phthisis Medical Bureau, gives the results of the first periodical examination of the working miners who presented themselves at the bureau. The figures furnish for the first time a comprehensive survey of the men affected with tuberculosis, silicosis, or both diseases simultaneously. Of the 14,625 miners examined 38 were found to be suffering from pulmonary tuberculosis uncomplicated by the presence of silicosis, a rate of 259 per 100,000. 738 men were the subjects of silicosis uncomplicated by the presence of tuberculosis, a rate of 5046 per 100,000. Of these silicotic men 58, or 7·8 per cent., had reached the secondary stage of their disease. Owing to the slight degree to which early silicosis interferes with health and working capacity the subjects of the disease in its primary stage tend to accumulate in the mines. A condition of tuberculosis-with-silicosis was discovered in 95 men, giving a prevalence-rate of 649 per 100,000. On the basis of these results it appears that, of all those who were silicotic, 11·4 per cent. were also affected with tuberculosis. Dr. Watkins-Pitchford adds that this observation should not be taken as implying that approximately this high percentage of all silicotics develop tuberculosis for the following reasons: (1) That a miner may first become tuberculous and then silicotic; and (2) tuberculosis may appear in an active form long after the man has abandoned his work on account of silicosis. Had the Bureau been empowered to obtain the compulsory removal of purely silicotic miners, the prevalence of silicosis would have exhibited a decline similar to that shown for tuberculosis. Dr. Watkins-Pitchford's remarks on factitious silicosis may be quoted:—

> Despite time-honoured rumours to the contrary, it is probable that the radiographic and other physical signs of silicosis cannot be counterfeited; an unsuccessful attempt was brought to light last year. An applicant for compensation had obtained a supply of a fine black powder, by the inhaling of which, as he had been assured, the signs of "Miners' Phthisis" would be temporarily produced. The man had inhaled this material on three nights preceding his examination, but no indications of silicosis or of any other disease could be detected. The powder consisted on analysis of carbonised vegetable matter finely ground with ferruginous clay and sand. A few experiments with this material showed that, in order to produce any abnormal X ray signs, it would need to be inhaled in so large a quantity that asphyxia would result.

The Swiss Campaign.

The handbook of 600 pages issued by the Swiss Central Commission for Combating Tuberculosis (Berne: A. Francke. Price 6 frs.) has a melancholy interest, as it was originally planned as a gift-book for the Twelfth International Tuberculosis Conference which should have been held in Berne in September, 1914. The book is useful in giving a concise picture of the measures taken in a relatively small and compact country, and is to some extent a memorial to Dr. H. Schmid, the head of the Swiss Health Bureau, who died in 1916, and who was largely responsible for the organisation of these measures. A good account of the work done by women is given by Dr. Martha Sommer, of Berne, and Mlle. E. Serment. Prophylaxis is dealt with by Dr. A. Cramer, of Geneva. A bibliography is appended of work on tuberculosis carried out or published in Switzerland.

REPORT FOR 1917 OF THE COUNTY M.O.H. AND SCHOOL M.O. OF LONDON.[1]

Dr. W. H. Hamer's report to the London County Council has been published. To everyone interested in the welfare of the metropolis we commend this masterly production as deserving of attentive study.

PART I.—PUBLIC HEALTH.

Meteorology.—The relation of rainfall to disease has for long been a subject of scientific interest, and the unexampled wetness in South-East England since the outbreak of war is doubtless partly accountable for the relatively low death-rate of London during the past three years. Is it, Dr. Hamer asks, a mere coincidence that the most violent explosions ever known to mankind have been accompanied by an excess of rain more pronounced in districts contiguous to the seat of war than in any other part of the United Kingdom? This question still awaits solution. The climatic conditions of 1917 were, on the whole, propitious, and the health of the metropolis compares favourably with that of 1916, itself a year of low mortality. The long period of cold weather in the early part of the year took its toll of the aged; but, on the other hand, the wet weather in July and August, with the consequent absence of high temperatures, was favourable to infant life, the mortality from diarrhœa being low. In the autumn also, except during the closing weeks of the year, atmospheric conditions were again favourable, the loss of life from respiratory affections and influenza being below the quarterly average. The death-rate among civilians in 1917 was 15·7 per 1000, or 1·1 above that of the preceding year. The higher death-toll of last year is accounted for mainly by the excessive prevalence of measles among children in the winter months. *Infantile mortality* was equal to 104 per 1000 births, against 89 in 1916. The rate was considerably above the average in the first quarter and again at the close of the year, the suggested cause in both cases being adverse climatic conditions.

Infectious Diseases.

Notwithstanding the exceptional circumstances of war, it is noteworthy that the prevalence of the notifiable infectious diseases was for the most part low, the chief exceptions being *diphtheria* and *cerebro-spinal fever*, both of which nevertheless showed a slight decline upon the incidence of the preceding year. The number of *scarlatinal attacks* notified in each of the last two years has been far below any previous record since 1890, the first year of compulsory notification. *Typhoid fever* among the general population remained at the low level of the preceding year, itself low in comparison with 1915. At the end of the year a group of cases among consumers of oysters was recorded. Small outbreaks of typhoid fever occurred in asylum populations drawing patients from London, and certain more extensive asylum outbreaks were reported in other parts of the country. The prevalence of intestinal affections and the raised aggregate death-rate among the insane generally seem to indicate that in this section of the population the effect of war conditions was pronounced.

Influenza: its varieties and complications.—Dr. Franklin Parsons in his report on the influenza epidemic of 1889–90 recognised three forms of influenza: (*a*) nervous, (*b*) catarrhal, (*c*) gastric. "These three forms," he wrote, "have all been observed in cases occurring together under the same roof, and are evidently mere varieties of the same disease." Ever since the establishment of civil registration the three conditions known as influenza, bronchitis, and pneumonia have shown increase from time to time, as though in response to the stimulus of an epidemic influence. In other words, the great influenza epidemic of 1847–48 and the following

[1] P. S. King and Sons, Westminster, S.W. 1. Price 1*s.*

pandemic of 1890, with the subsequent epidemic waves of recent years, have each and all been accompanied by noteworthy increases in the deaths returned as from bronchitis and pneumonia. It is remarkable that for some years past there has been apparent in London an approximation, or merging into one another, of the prevalence of illness attributed in the early months to *cerebro-spinal fever*, and later, in the summer months, to *poliomyelitis*. From an epidemiological standpoint the question hence arises as to the need of associating the prevalence of influenza not only with respiratory and gastro-intestinal illness, but also with illness in which disturbances affecting the central nervous system predominate. It has, in fact, become obvious that the present narrowed connotation of the term influenza requires enlargement. Towards the close of 1917 there was a new development which has special interest in connexion with recent observations respecting the relation of influenza to these conditions respectively. In 1916 there had been considerable outbreaks of poliomyelitis in London and in New York. Moreover, in that year, as well as in 1917, cerebro-spinal fever has prevailed here synchronously with influenza. But towards the close of 1917 a distinct change of type was manifested. Cases of illness with cerebral, as well as others with pulmonary or with gastro-intestinal, symptoms were prevalent, and it soon became manifest that a special epidemic influence was at work. At first suspicion fell upon food, "botulism" and "solanism" being invoked as the source of the trouble. But as no evidence of this was forthcoming it was agreed that most of the cerebral cases were to be regarded as polioencephalitis dependent on epidemic influence, a view which is not held universally. In Paris M. Netter has described similar cases, pointing out that like prevalences followed the influenza pandemic of 1889–90. In London the condition was described as "epidemic stupor," lethargy being a prominent symptom. During the spring of the current year polioencephalitis was present in epidemic form in South Africa and in Germany, influenza raging in Spain, and a "new disease" in Sweden.

Epidemic constitution of 1917–18.—Eminently instructive are Dr. Hamer's remarks[2] on the epidemiological relations of the various illnesses described, and it remains to be seen how the views of the epidemiologist and bacteriologist are to be reconciled. We give this paragraph of the report in his own words:—

"Just as encephalitis, febrile cerebritis, influenza, and sweats prevailed in Europe 400 years ago, and have periodically occurred since that time, so, history repeating itself, they have again recently spread widely in the old and new worlds. Thus it would appear that the events of the last few months once more strikingly illustrate the 'posting character,' the unexpected manifestations and the protean behaviour of 'influenza'; and incidentally the close connexion between polio-encephalitis, poliomyelitis, cerebro-spinal meningitis and influenza now seems to be established. ..... It may be that recent events will place a limit upon the too exacting claims of the causal organisms, and lead to some exercise of the recognised principle known as the Law of Parsimony in considering additions to the list of new diseases. The want of such recognition during the last four years has made the work of administration difficult, and during the last few months there has been quite an outbreak of ephemeral new diseases which, on inquiry, have turned out to be old foes with faces new only to those not versed in the history of epidemics."

Dysenteric disease.—A localised epidemic of severe illness associated with dysenteric symptoms was reported in Chelsea last autumn, occurring for the most part in a poor neighbourhood by the river. The disease ran a course of five or six days, and in fatal cases post-mortem examination revealed extensive ulceration and swelling of the mesenteric glands. Children and young adults were chiefly affected. Of the 28 cases reported 10 occurred in one family. No light was thrown on the origin of infection by inquiry as to food and water-supply or sanitary arrangements. But a soldier who had recently suffered from dysentery was found staying in the house of one of the families attacked, and in him the whole outbreak is believed to have originated. About the same time a similar outbreak occurred in Islington, where seven persons were attacked in two adjoining houses. A discharged soldier was found living with the family first infected. Within a fortnight of this soldier's arrival two adults contracted an acute diarrhœa of dysenteric character, and about a week later two children of the same household developed a similar condition, which proved fatal to them both. All the appearances of dysentery were revealed post mortem in each case. In the adjoining house three more cases of a like nature occurred about the same time.

[2] See also THE LANCET, 1906, i., 568; ii., 1374.

In view of the extensive epidemics of dysentery recently reported in the Central Empires and in Eastern Europe, it is important that vigilance should be exercised to guard against similar occurrences in this country through the medium of military cases. The account of a limited outbreak of bacillary dysentery occurring at an institution in the eastern counties early this year, and described by Dr. Buchanan in our columns, may be studied with advantage.

Tuberculosis.

For nearly 50 years past London phthisis mortality has, with slight exceptions, fallen from year to year; the first indication of pause in the decline was in 1914. Among the *civil population* alone there were 6908 deaths from pulmonary tuberculosis in 1917, against 6491 and 6875 in the two preceding years respectively. As the annual deaths among the *entire population* in the years 1911–14 had averaged only 6286, there has apparently been an increase in phthisis mortality in the course of the war. The hardships of wartime immediately increased the mortality of males of military age, but there has been also an increase in the female mortality during the war period. The arrest of emigration on the outbreak of hostilities may be credited with a certain influence on the death-rate as well as the retention in this country of patients who would otherwise have gone abroad and whose deaths are included in the London registers. Lack of food and disturbance of the normal dietary are factors powerfully increasing susceptibility to tuberculous infection, and in the year under notice many essential articles of dietary were either scarce or expensive. To this circumstance some share of the increased mortality was due.

The tuberculosis scheme adopted in 1914 was continued and extended in 1917. The number of cases receiving treatment in that year included 670 adults and 933 children. Treatment in 37 dispensaries is provided under the borough councils' schemes.

(To be continued.)

FOURTH ANNUAL REPORT OF THE GENERAL BOARD OF CONTROL FOR SCOTLAND.[1]

THE report has for economic reasons been compressed as far as is consistent with the requirements of the Statutes, but, in fact, nothing of importance has been omitted, and it might almost seem desirable to confine it within its present adequate proportions for all future time. The Board reports that the work of the Mental Deficiency Act has had to be drastically curtailed. No expenditure upon new buildings has been undertaken, while in view of the fact that there is not likely to be any increase in the amount of the Parliamentary grant the local authorities have refrained from placing defectives under care, as they are entitled to do by the provisions of Section 26 of the Act. It has been found possible to place a restricted number of defectives under guardianship, but unfortunately many are not fitted for this form of provision for their care. Three institutions have been transferred with their staffs to the War Office for military hospitals, and as a large number of male attendants have been called to the colours it has become necessary to obtain from the military authorities a supply of Army orderlies to take their place. The total number of orderlies thus supplied amounted to 75. The Board expresses its appreciation of the action of the War Office in this matter, but we are disappointed that the report does not furnish any explanation of this rather curious exchange.

On Jan. 1st of this year there were, exclusive of those maintained at home by their natural guardians, 18,326 insane persons. This is a decrease of 559 upon the numbers of last year, three-quarters of the decrease being of men. The Board is of opinion that "the circumstances under which this decrease has occurred are of so unusual and complicated a nature that comment could not usefully be made at the present time." Among significant factors are mentioned the withdrawing of more and more men from civil life; the favourable conditions produced by the disappearance of unemployment and by higher wages; and the increase of the old age pension, which has retarded the

[1] Edinburgh: H.M. Stationery Office. 1918. Price 3*d*. net.

admission into asylums of persons suffering from senile insanity of mild types. The total number of persons admitted to establishments during 1917 was 3137, which is 414 less than the average for the quinquenniad 1910–1914. It is satisfactory to note that whereas the average admission of voluntary patients for the 10 years 1908–1917 was 136, during 1917 it was 186. The increase is not great, but, we trust, indicates a gradually increasing confidence among the general public in the excellence of the care provided in modern institutions for the treatment of mental disorders. Of private patients 199 were discharged recovered during 1917, and of pauper patients 964. The number of private patients who died in establishments during the year was 285, which is 101 more than the average of the five years 1910–1914. The number of pauper patients who died was 1612, which is 348 above the average of the five years 1910–1914. It would be interesting to learn how far this increase of death-rate may be ascribed to the removal of old patients from long-accustomed surroundings necessitated by the transfer of some of the asylums to the military authorities.

It is reported that 400 acres have been added to the arable lands attached to the asylums. The production of edible vegetables has been further increased by utilising flower-gardens and recreation grounds. At the Glasgow Royal Asylum, ground formerly devoted to flowers has produced twelve tons of potatoes and other vegetables. The cultivation of chrysanthemums in the greenhouses has been discontinued and the space devoted to tomatoes, of which 1000 lb. were grown. Nevertheless, the procuring of adequate supplies has recently been attended with such difficulty that the Board has been compelled on various occasions to make representations to the Ministry of Food. The Board points out that from a quarter to a half of the inmates of modern asylums must be regarded as hospital cases, and that for the proper treatment of such cases a liberal and nourishing dietary is essential. The Board records its gratitude to the Ministry of Food that parts of asylums have been included within the definition of medical institutions or hospitals.

THE FUND TO REIMBURSE DR. J. H. BELL FOR HIS LEGAL EXPENSES.

THE following is the first list of subscriptions received :—

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Subscriptions should be sent to Dr. Kinnier Wilson at 14, Harley-street, London, W. 1, and will be acknowledged in the *British Medical Journal* and THE LANCET.

THE LANCET, VOL. I., 1918: THE INDEX.

OWING to the continued shortage in the paper-supply, the Index and Title-page to the volume of THE LANCET which was completed with the issue of June 29th have been printed separately, and copies have been supplied gratis to those subscribers who have, up to August 7th, intimated to us their wish to receive them. Other subscribers will be similarly supplied, so long as the stock remains unexhausted, on application to the Manager, THE LANCET Office, 423, Strand, London, W.C. Such applications should be sent in at once.

Correspondence.

"Audi alteram partem."

THE FUTURE OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—In a recent issue of your valuable paper Dr. Lauriston Shaw a little overstates the views held by "the extreme left party." It would not compel every medical man upon registration to enter the service of the State, but would give them a free choice between State service and private practice. It would, however, insist that everyone who did enter the service should devote the whole of his time to it. Again, it would not countenance the State forcing upon each member of the community such medical ministrations as it (the State) deemed necessary for the maintenance of his physical health. On the contrary, it would insist on all matters even remotely connected with the diagnosis and treatment of disease and with its prevention being left entirely in the hands of the medical profession. It is satisfactory to note that the "central party" has advanced a long way towards the "left" in its desire for some form of organised State medical service. The "extreme left," too, has, I think, come near to the central party in its recognition that in any future scheme bureaucratic control of, and interference with, medical matters must be carefully guarded against.

As pointed out by Professor Benjamin Moore and myself in your columns, the outstanding differences of opinion resolve themselves into whether the service should be whole-time or part-time, whether remuneration should be by salary or some form of capitation grant, and whether the benefits of the service should be free and open to all or confined to the poorer classes of the community. Put in another way, the "central party" would exclude a large section of the community from the benefits of the public service and would have part-time medical officers so as to enable them to compete for those excluded as private patients, and in order still further to safeguard the supposed advantages of competition it would continue and expand the present panel system amongst those eligible for the benefits of the service. The "extreme left party," on the other hand, would like to abolish competition for private gain, feeling that it has many disadvantages, and that the science of medicine at all events does not need such an artificial stimulus to progress. It would, therefore, like to see a whole-time salaried service; and, further, as the sole object of any organised medical service is to ensure a healthy nation, it would like to see its benefits extended to the whole population as the best means of securing it. It would like to see the coming service made so complete and efficient in its organisation that everyone would be only too willing to take advantage of it, and the whole profession proud to belong to it. Private practice and competition would then die a natural death.

Sir Bertrand Dawson, curiously enough, whilst seeing at any rate some of the evils of competition for patients, considers that the abolition of private practice would be gravely detrimental to both doctors and patients. Under competition, he points out, reward goes to the physically strong men with plausible tongues: too little to men with brains and a conscience. The abolition of competition for private patients evidently would not be an unmitigated evil.

Dr. Lauriston Shaw, in speaking of general practitioners and specialists, says, "competition and coöperation cannot go hand in hand." Surely this truism is of universal application, and consequently competition between specialist and specialist, and between general practitioner and general practitioner, is as fatal to effective coöperation as is competition between specialist and general practitioner. In short, competition for personal gain must kill the utility of any organised medical service. Sir Bertrand Dawson compares the provision for health with the provision for education, and yet, though for the latter purpose there is a service of whole-time salaried teachers, he will not hear of whole-time salaried medical officers for the former. In schools salaried teachers undertake the subject in which they are most proficient, and they all work together for the pupils' good. It would be just as reasonable to allow each teacher in a school to compete for pupils and fees as it would be to allow doctors

to compete for patients and fees under the roofs of the magnificent buildings which Sir Bertrand Dawson pictures as health centres in every locality. Just as teachers coöperate to secure well-educated children, so must doctors coöperate in the future to secure healthy individuals, remembering that "competition and coöperation cannot go hand-in-hand," and that any effort to promote a partnership between the State and medicine based on a compromise between competition and coöperation is bound to fail.

In conclusion, may I heartily welcome Dr. Lauriston Shaw's suggestion of a national medical council acting as a professional parliament on the lines of the Whitley Report. Such a council would, I believe, be an efficient means of safeguarding the interests both of the public and the medical profession, and would remove many of the objections to a public medical service. Its success, however, would greatly depend on the profession having a clean-cut idea of its functions and duties towards the community as a whole as represented by the State on the one hand, and on the other hand towards individuals as patients.

I am, Sir, yours faithfully,

London, W., July 22nd, 1918. CHARLES A. PARKER.

MUCOID FORMS OF PARATYPHOID BACILLI.

To the Editor of THE LANCET.

SIR,—Captain W. Fletcher's paper in your issue for July 27th calls to my mind some observations I have made when working with Congo-red as a background stain which might be of use to him or to others working on similar lines. He describes a fine stippling of the background in making films of the mucoid colonies. A definite stippling results from mixing an emulsion of mucilage of tragacanth with Congo-red and spreading a film in the usual way. The size of the granules seems to vary in proportion to the strength of the mucilage emulsion; the granules are very coarse where a thick emulsion is used.

As regards the demonstration of mucoid bacterial capsules with Congo-red, working with an organism which had the characteristics of *B. mucosus capsulatus* I used the following method with a fair degree of success. A small amount of the gelatinous growth is placed at one end of a glass slide; this is then spread along with the end of another slide, using considerable pressure and a side-to-side movement. The slide is dried in the air and lightly, and not too thickly, overspread with Congo-red solution, dried, and treated with acid alcohol in the usual way. In certain parts of the film, usually at the margins and extreme end, the microscope will show the bacilli lying each in an oval dark blue area. At the margins of the film these are often seen lying like large shadows thrown in the direction in which the film was dragged and conforming exactly in contour to the bacillus from which they were clearly derived. Apparently the capsule is a definite envelope, and this being ruptured or in some way injured the dye is able to enter, and the intact bacillus is clearly outlined inside the capsule, which latter is much more deeply stained than the surrounding background.

Such appearances were not obtained with non-mucoid growths of bacilli, but I have found them in films made from mucoid colonies of *B. coli*, such as one frequently sees on MacConkey plates.

I am, Sir, yours faithfully,

T. H. C. BENIANS.

Addington Park War Hospital, Croydon, July 30th, 1918.

MUCOID FORMS OF BACTERIA: LOUIS JENNER'S WORK.

To the Editor of THE LANCET.

SIR,—In relation to the paper by Dr. W. Fletcher on Capsulate Mucoid Forms of Paratyphoid and Dysentery Bacilli I should like to call attention to some old observations of the late Dr. Louis Jenner, the originator of Jenner's stain. When director of the clinical laboratory at St. Thomas's Hospital he was in possession of capsulated and non-capsulated strains of *B. coli* which he had isolated. The characters of these strains were constant under constant conditions but could be modified, and a capsulated strain converted into a non-capsulated and vice versa. So far as my memory serves, this change was effected by passage through animals. Jenner made the important observation that the capsulated strain was much more virulent than the non-capsulated. Whether these observations were ever published or not I am ignorant. Owing to Jenner's dislike to the publication of incomplete work and his untimely death much that was of value has been lost.

I am, Sir, yours faithfully,

St. George's Hospital, July 30th, 1918. CHAS. SLATER.

ACUTE LYMPHOCYTHÆMIA.

To the Editor of THE LANCET.

SIR,—I was interested to read of Captain J. C. Tull's case of Acute Lymphoid Leukæmia in THE LANCET of June 8th, also your annotation of June 29th on a similar case of a French soldier. Perhaps, therefore, this note of the same condition in a sailor may be of interest:—

An A.B., aged 20, was admitted to R.N. Hospital, Chatham, on Sept. 20th, 1916, as a case of tubercle. Up to six weeks previously he had been in perfect health, when the symptoms he was suffering from started gradually. These were general weakness, dyspnœa on slightest exertion, and attacks of epistaxis and hæmatemesis. On examination lymphatic glands all over body were found to be discretely enlarged and of elastic consistency, their average size being about that of a filbert. Spleen was palpable 2 inches below costal margin. There was no rash.

Blood count: Erythrocytes, 1,008,000; leucocytes, 14,200; hæmoglobin, 20 per cent.; colour index, 1; polymorphonuclear cells, 16·7 per cent.; small lymphocytes, 74·0 per cent.; other mononuclear cells, 9·3 per cent. A few normoblasts were seen, but very little alteration in size, shape, and staining characteristics of red cells was evident.

The patient died six days after admission. Post-mortem examination: Subserous hæmorrhages, fatty heart, large spleen, enlarged hæmorrhagic thoracic and abdominal lymph nodes. Slight increase in marrow of a greyish colour in sternum and tibia. Microscopically, heart, liver, and kidney showed fatty changes and leucocytic infiltration.

I was surprised to see it stated that a low leucocyte count was rare in this condition. Panton, Tidy, and Pearson state that in six out of eight cases of acute lymphatic leukamia the leucocyte count was within normal limits.[1] The above case is rather curious as it was one of three cases of leukæmia to be admitted within two months, whereas in the previous 10 years I had not seen a case in the Navy.

I am, Sir, yours faithfully,

S. F. DUDLEY,

One of H.M. Hospital Ships, July 18th, 1918. Staff Surgeon, R.N.

SKIN-GRAFTING.

To the Editor of THE LANCET.

SIR,—An article appears in THE LANCET of July 7th, 1917, on skin-grafting by Captain S. R. Douglas, Captain L. Colebrook, and Mr. A. Fleming. During 12 years' surgical practice in India I have used skin-grafts for a variety of cases, particularly burns, elephantoid tumours, chronic ulcers, &c., and I have always employed Thiersch's method, slightly modified. The results have been good in the great majority of cases, and I am not at all convinced that the operation advocated by the authors is a better one, and the special apparatus, &c., complicate an otherwise simple procedure. Skin-grafts have seldom become dislodged and most of the scars have been good. The raw surface from which the grafts have been taken heals very rapidly and I have *never* known it to go septic if dressed with gauze soaked in picric acid lotion. It may be that the authors have employed Thiersch's grafts cut too thin, for it is important that part of the dermis should be taken with the skin-grafts.

It has always been my experience that the weakest parts of the scar after skin-grafting are the skinned-over gaps between individual grafts, and in the authors' method these are multiplied. Moreover, the operation is more tedious and may not be completed at one time, and healing of the wound is therefore delayed.

Suppuration is a serious factor to consider in skin-grafting, but the destruction of grafts by tryptic ferments can generally be prevented by making small holes in the large grafts opposite the small pockets or depressions in the granulating area, and by applying suitable dressings on the lines described by the authors. In India green oiled-silk with small perforations is used as a covering, and over this

[1] Quarterly Journal of Medicine, July, 1914.

gauze is applied and kept moist by a saline lotion such as Locke's solution. The marvel has always been to me how persistently grafts adhere and grow in septic wounds when they are kept at rest and provided with moisture and drainage. I may mention here that in my experience pigmented skin-grafts of Indians are more resistant than grafts taken from the less pigmented skin of Europeans.

In such an operation as removal of elephantoid overgrowth of the scrotum the whole penis has to be skin-grafted at the end of the operation, and it would be most difficult to do this successfully by multiple small grafts. By employing Thiersch's method one large and thick graft is taken and fixed to the penis by fine sutures at corona, at base of penis and at line of junction of two edges of graft. When proper dressings are applied such a graft can be readily kept in position.

It requires a certain amount of practice to use Thiersch's razor efficiently, but with experience grafts of about $4 \times 1\frac{1}{2}$ inches can be made of almost any thickness. It is very important that the assistant should know how to keep skin of thigh taut while the graft is being taken.

Many of the devices described in the article under reference are most ingenious, but it is a question if they are necessary. Local anæsthesia by nerve-blocking and infiltration is an important advance on the method of general anæsthesia. The operation described by the authors may give good results in some cases, but it is important that the many advantages of large thick grafts should not be overlooked. In India they are constantly in use, and it was in the clinic of Lieutenant-Colonel C. R. Stevens, I.M.S., that I first saw large grafts applied in the way I have described in the operation for elephantiasis scroti.

I am, Sir, yours faithfully,

F. POWELL CONNOR,
Mesopotamia Expeditionary Force. Lieutenant-Colonel, I.M.S.

TEAM-WORK.

To the Editor of THE LANCET.

SIR,—I notice the following in your note upon the Cavendish Lecture before the West London Medico-Chirurgical Society: "We shall all endorse Sir B. Dawson's plea for the development of team-work in medical practice." If these words are intended to put the stamp of approval upon the present convulsive efforts to revolutionise the medical system of the country, I doubt whether you speak for the majority of the medical profession. By some the point may appear of minor importance. "Team-work" implies a few drivers, and the rest—cattle. What matter whether the poor dumb creatures realise or approve of their destination? Some very influential, able, and organised "leaders" are extremely busy in pushing forward grandiose schemes. The vast body of the profession is inarticulate, largely because leisure is wanting to take a practical interest in medical politics. Thus a golden opportunity presents itself for meddlesome and ambitious domination, to which two other factors contribute.

The first is the unprecedented political situation. The crisis of the war has forced upon us a makeshift constitution. We have a Government without the fullest constitutional authority, yet wielding dictatorial powers. We seem, indeed, to remember an understanding that these powers were to be used solely for war purposes, all controversial matters being banned "for the duration." But these dim memories are now dreamlike; and as we hear of vast schemes of reconstruction in every direction we wonder whether we are at last blessed with a Government of universal reformers. The second factor is the absence on service of a very large proportion of our doctors. Thus we have a unique, if ignoble, occasion for the strident grinding of the axes with which our teeth are being set on edge. Another aspect of the present reforming activity should be indicated. The zealots who are promoting these subversive changes and who are so determined to uproot the standards of individual liberty and individual effort are in very many cases men of established seniority, who will suffer least if their scheme miscarry, leaving a heritage of disaster to a younger generation.

I submit, therefore, that no steps are justifiable to revolutionise the medical profession until three conditions shall have been fulfilled: (1) Until we have a Government which can claim to be representative. Our present rulers, whether good, bad, or indifferent, represent nobody. (2) Until our colleagues have returned from the front. A nice reward it will be for their sacrifices if they come home to find everything turned upside down without having been consulted! (3) Until all members have had an opportunity of voting upon the proposals. What right have a few masterful individuals to coerce a great profession without taking account of the thousands and tens of thousands of its members who may prefer to be left to work out their own salvation?

I am, Sir, yours faithfully,

London, July 17th, 1918. E. O'CONNOR.

*** Teams do not drive; they pull, and all the medical profession must "endorse a plea" for pulling together. Such a misunderstanding of a well-known phrase spoils all the force of the subsequent rhetoric.—ED. L.

THE SERVICES.

ARMY MEDICAL SERVICE.

Col. J. Meek to be retained on Active List.

To be temporary Colonels whilst specially employed: Capt. (Brevet Major) C. H. S. Frankau, R.A.M.C., T.F.; temp. Major C. H. Miller.

ROYAL ARMY MEDICAL CORPS.

To be temporary Lieutenant-Colonels: S. L. Jones (whilst serving at the Notts Co. War Hospital), temp. Major (Hon. Lieut.-Col.) W. I. de C. Wheeler, and temp. Majors A. M. Paterson and H. W. M. Tims (whilst specially employed).

Major A. D. O'Carroll relinquishes the acting rank of Lieutenant-Colonel on reposting.

To be acting Lieutenant-Colonels whilst in command of a Medical Unit: Majors C. T. Edmunds and H. G. Sherron, and Capts. (acting Major) E. Percival and A. C. Hammond-Searle.

The undermentioned relinquish the acting rank of Major on reposting: Capt. (Brevet Major) R. W. D. Leslie, Capt. A. S. Cane, Lieut. (temp. Capt.) R. Stowers.

To be acting Majors: Temp. Capt. C. W. G. Bryan, Capts. T. H. Balfour and J. J. D. Roche, Capt. (Brevet Major) D. M. Corbett. Temp. Capts. E. G. C. Price, A. Randle, S. B. B. Campbell, H. S. Davidson, H. Emerson, P. N. Vellacott, S. F. McDonald, H. H. White, R. W. S. Christmas, D. Gillespie, W. F. Neil, Temp. Capt. J. D. Gunn, Capts. H. D. Lane, M. J. Williamson, N. V. Lothian, R. E. Barnsley, A. S. Cane, W. F. Christie; Temp. Capt. E. Burstal; Lieut. (temp. Capt.) A. Mansell; Temp. Capts. (while specially employed) H. E. Rawlence, R. O. H. Jones, C. R. Wills, J. G. Heath (whilst commanding troops on a Hospital Ship).

T. P. Greenwood to be temporary Captain whilst serving at Notts. County War Hospital.

Lieutenants (temporary Captains) to be Captains: R. P. Cormack, D. W. Beamish.

J. C. McGregor, from St. Andrews University Contingent O.T.C., to be Lieutenant.

J. W. Gill and J. T. W. Stewart (temporary Captains) relinquish their commissions on account of ill-health contracted on active service, and are granted the honorary rank of Captain.

Canadian Army Medical Corps.

Temp. Major C. Hunter to be acting Lieutenant-Colonel while specially employed.

Temporary Captains to be acting Majors while specially employed: A. Blair, H. O. Boyd.

SPECIAL RESERVE OF OFFICERS.

Capt. N. H. Linzee relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

J. K. T. Mills, from St. Andrews University Contingent O.T.C., to be Lieutenant.

B. G. Derry to be Lieutenant.

TERRITORIAL FORCE.

Major R. T. Turner to be acting Lieutenant-Colonel whilst specially employed.

Major (acting Lieut.-Col.) G. A. Troup relinquishes his acting rank on ceasing to command a Field Ambulance.

Captains to be acting Majors whilst specially employed: W. B. Keith, A. Oliver.

Capt. J. A. C. Macewan is restored to the establishment.

Capt. (acting Major) W. A. Brechin relinquishes his acting rank on ceasing to be specially employed.

Capt. F. W. Squair, from T.F.R., to be Captain.

Capt. D. P. M. Farquharson to be Major.

Lieut. (Temp. Capt.) J. V. Kinloch and Lieut. K. S. Beken to be Captains.

P. R. Fincher and R. G. MacGregor to be Lieutenants.

TERRITORIAL FORCE RESERVE.

Capt. E. G. Annis, from R.A.M.C., to be Captain.

ROYAL AIR FORCE: *Medical Branch.*

J. A. Giles is granted a temporary commission as Captain.

J. D. George and G. W. J. Bousfield are granted temporary commissions as Lieutenants.

THE governing body of Birkbeck College have appointed George Senter, D.Sc. Lond., to the office of Principal, recently vacated by Dr. George Armitage-Smith. Dr. Senter, who is well known for his research and writings in chemistry, formerly held the readership in chemistry at St. Mary's Hospital Medical School.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. J. C. T. Teggart, R.A.M.C., attached R.F.A., was educated at Glasgow University, and qualified in 1912. After holding an appointment at the Western Infirmary, Glasgow, he practised at Delny, Ross-shire.
Capt. R. Jacobs, R.A.M.C.

Died.

Major H. Betham Robinson, R.A.M.C., surgeon to St. Thomas's Hospital, the East London Hospital, and King George Hospital. An obituary notice appears on p. 189.
Capt. A. B. Foott, R.A.M.C., was educated at Queen's College, Cork, and qualified in 1914, a few days prior to the outbreak of war. After holding an appointment at the Cork Eye, Ear, and Throat Hospital he joined up.

Died of Wounds.

Major J. D. Proud, M.C. and bar, R.A.M.C., was educated at Charterhouse and at Durham University, and qualified in June, 1915, forthwith joining up. The award of the M.C. and of the bar were recorded in THE LANCET respectively of June 23rd (p. 969), and of Oct. 6th (p. 549), 1917.

Wounded.

Capt. J. C. P. Bayley, R.A.M.C., attached Manchester Regt.
Lieut.-Col. W. C. Croly, D.S.O., R.A.M.C.
Capt. R. L. Williams, D.S.O., M.C., R.A.M.C., attached S. Staff. Regt.
Major G. B. Holroyde, R.A.M.C.
Capt. W. St. C. Maclure, R.A.M.C., attached R.E.
Capt. P. Ardagh, New Zealand M.C., attached Infantry.

Missing.

Lieut. J. R. McGregor, R.A.M.C.

Previously reported Missing, now reported Prisoners in German Hands.

Capt. T. Blackwood, R.A.M.C., attached R.F.A.
Lieut. F. W. M. Lamb, R.A.M.C.
Lieut. F. B. O'Dowd, R.A.M.C., attached West Yorks Regt.
Capt. R. W. Pearson, M.C., R.A.M.C., attd. Durham L.I.
Capt. A. B. Simpson, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Lieut. D. Moir, M.C., Cameron Highlanders, attached K.A.R., died of wounds, younger son of Lieut.-Col. J. M. Moir, R.A.M.C., of Inverness.
Major J. D. Proud, M.C. and bar, R.A.M.C., died of wounds, only son of Dr. F. Proud, medical officer of health for Maryport, Cumberland.
Lieut. C. E. W. Brewer, R.N., killed at sea, youngest son of the late Dr. R. E. W. Brewer, of Newport, Mon.

THE HONOURS LIST.

The following awards to medical officers are in continuation of those published in THE LANCET of August 3rd :—

The Military Cross.

Temp. Capt. EDWARD ARTHUR ALDRIDGE.—For conspicuous gallantry and devotion to duty at the dressing station, remaining until the enemy were upon him, and having cleared his aid-post, working his way back, collecting the wounded and attending to them under heavy shell fire. His courage and self-sacrifice set a splendid example, and were worthy of the highest praise.

Temp. Capt. WILLIAM BRODIE GURNEY ANGUS.—For conspicuous gallantry and devotion to duty during recent operations. He was the means of saving the lives of many officers and men, especially on one occasion when the brigade suffered severe casualties from shell fire. He was untiring in carrying out his duties and removing the wounded to a place of safety.

Capt. JOHN WEBSTER ARCHIBALD.—For conspicuous gallantry and devotion to duty during recent operations. The battery position of the brigade was subjected to an intense bombardment in connexion with the enemy attack, and although shell fire round his own headquarters was severe, he visited all the battery positions by himself, instead of having the casualties brought to him. His complete disregard for personal safety in order to save the wounded being brought through the enemy barrage undoubtedly resulted in the saving of life and of many casualties. His courage and cheerfulness under a heavy and continuous strain was of the greatest value, and a fine example to all.

Capt. (acting Major) CHARLES PHILIP BRENTNALL.—For conspicuous gallantry and devotion to duty during two days at an advanced collecting post under conditions of great danger. Although heavily shelled he succeeded in keeping his post clear and getting away all the wounded. The collection and evacuation of wounded was rendered particularly difficult owing to the fact that the troops were executing a withdrawal.

Capt. CHARLES HERBERT BUDD.—For conspicuous gallantry and devotion to duty in attending to wounded under fire. Under heavy shelling he went forward and dressed wounded, and dressed one man under full observation of the enemy.

Temp. Capt. GEORGE MILNE CAMERON.—For conspicuous gallantry and devotion to duty when in charge of bearers. He worked incessantly for 12 hours collecting and evacuating the wounded under heavy shell and machine-gun fire. Many cases were successfully got away, which, but for his determination and absolute disregard of danger, would have fallen into the hands of the enemy.

Capt. DAVID CAMPBELL.—For conspicuous gallantry and devotion to duty, when on two occasions he was the only M.O. left with the brigade. He organised regimental aid-posts and established lines of evacuation, and during a long exposure to shell and machine-gun fire set an inspiring example to all.

Temp. Capt. DUGALD STEWART CAMPBELL.—For conspicuous gallantry and devotion to duty. He worked without rest, and when it was necessary to retire successfully brought away all the wounded, in spite of the district being subjected to a heavy gas bombardment. He was undoubtedly the cause of saving the lives of many wounded.

Temp. Capt. THOMAS HAY CAMPBELL.—For conspicuous gallantry and devotion to duty. When under heavy shell and machine-gun fire he organised a forward aid-post and evacuated over 500 wounded. No wounded man was allowed to pass without personal attention, in spite of the difficulties of doing so in an exposed position.

Capt. LOUIS ABEL CELESTIN.—For conspicuous gallantry and devotion to duty. He remained with a party which was covering the retirement, and attended to the wounded under heavy rifle and machine-gun fire. Later he dressed a medical officer's wounds, and carried him single-handed for a distance of over half a mile through heavy fire when the officer he was carrying died of wounds.

Temp. Capt. RICHARD COLLIER COATSWORTH.—For conspicuous gallantry and devotion to duty during an enemy attack. He early led his regimental stretcher-bearers through very heavy shell fire to remove all wounded that could be found. He organised the removal of wounded, and by his perpetual cheerfulness and coolness set a fine example to his men, and effected the successful evacuation of many wounded.

Temp. Capt. ALAN GIBB COOK.—For conspicuous gallantry and devotion to duty while clearing wounded under heavy machine-gun and shell fire during an enemy attack. When the officer in charge of the bearers became a casualty he carried on the evacuation of the wounded, though badly gassed himself. He frequently led squads to the front line in search of wounded and showed great disregard of danger.

Temp. Capt. WILLIAM FRANCIS CORNWALL.—For conspicuous gallantry and devotion to duty. When the enemy carried out a heavy bombardment with large calibre shells and gas he established on his own initiative a dressing station and continued to deal with cases of various units for five hours, during which time the shelling was intense. To evacuate the wounded he organised stretcher parties of prisoners, no other means being at the time available.

Temp. Capt. JAMES ROBERT CRAIG.—For conspicuous gallantry and devotion to duty. He kept in touch with the retiring troops, evacuating the wounded without relief for eight days and nights. While the advanced dressing station was under heavy fire and all the other officers had been either killed or wounded he continued to carry on his work.

Temp. Lieut. GWILYM CHARLES MONTAGUE DAVIES.—For conspicuous gallantry and devotion to duty. When a neighbouring village was being heavily shelled, he went there to see if he could help. Finding that the field ambulance had withdrawn, he re-opened the dressing station and remained there for hours, managing to evacuate a large number of wounded.

Temp. Capt. LLYWELYN AP IVAN DAVIES.—For conspicuous gallantry and devotion to duty when, all the R.A.M.C. in an area having been taken by the enemy, he was sent up to establish a system of evacuation. In spite of heavy shelling he kept his cars and bearers working for 24 hours, only retiring when the infantry passed him, and by so doing prevented many of the wounded from falling into the hands of the enemy.

Temp. Capt. EDWARD FORBES.—For conspicuous gallantry and devotion to duty. While the battalion was preparing to march off 3 officers and 13 men were wounded; this officer attended to them all under heavy fire. Later he was wounded while attending to his duties.

Temp. Capt. (acting Major) CHARLES COLDER FORSYTH.—For conspicuous gallantry and devotion to duty. Hearing that help was urgently required at a certain point, he organised stretcher-bearers to clear away the wounded, of which there were over 200. He remained in the area, which was heavily shelled, during the whole afternoon and until all the wounded had been evacuated. His spendid courage and initiative in organising this evacuation undoubtedly saved the lives of many of the wounded, who would otherwise have perished.

Capt. CHARLES WAINWRIGHT FORT.—For conspicuous gallantry and devotion to duty during several days when acting as bearer officer. The conditions under which the wounded had to be collected and evacuated were particularly difficult, owing to the fact that the troops were executing a withdrawal. By his total disregard of danger and initiative in bringing forward his bearers, often under heavy shell fire, he succeeded in clearing large numbers of the wounded.

Capt. FREDERICK GAMM, Spec. Res.—For conspicuous gallantry and devotion to duty for several days when in charge of an advanced dressing station, and until it was almost surrounded by the enemy. During this time, although under a continuous and heavy bombardment, he continued to dress casualties and organise stretcher squads, which he took out to search for wounded. By his courageous action many wounded were collected and evacuated, and his splendid example was a fine stimulus to all.

Temp. Capt. DAVID GILLESPIE.—For conspicuous gallantry and devotion to duty. During recent operations he did most useful work in tending wounded and arranging for their removal under fire. The work was often done under heavy machine-gun fire at medium range. His coolness and fine example greatly contributed to successful evacuation being carried out.

Temp. Capt. MORLEY EDWARD GORMAN.—For conspicuous gallantry and devotion to duty in carrying on his work when the dressing station was destroyed by shell fire and in visiting his posts and superintending the evacuation of the wounded under heavy shell fire. Throughout the operations he displayed the utmost coolness and contempt of danger; his cheery optimism and energetic personal example inspired confidence in all.

Temp. Capt. (acting Major) HOWARD BOYD GRAHAM, D.S.O.—For conspicuous gallantry and devotion to duty while in charge of over 300 bearers, always under heavy shell fire and often under machine-gun fire at close range. It was due to his judgment that the wounded were evacuated with a minimum possible loss in personnel. On one occasion, being cut off by the enemy, he led his party to safety by a wide detour. When his dressing station was heavily shelled, with the infliction of heavy casualties, he organised the rescue work, rallied the shaken bearers, selected the line of evacuation, and, with the aid of another officer, evacuated 54 casualties to a place of safety. His conduct through this fiery ordeal was magnificent.

Temp. Capt. EDWARD WILLIAM DACRE HARDY.—For conspicuous gallantry and devotion to duty. His dressing station was situated at cross roads, the only place available, and during a whole day was obviously a target for exceptionally intense bombardment. He displayed the greatest courage and supreme contempt of danger, remaining at his post and dressing wounded the entire day while everybody else was dug in.

Temp. Capt. GEORGE FRANCIS PALMER HEATHCOTE.—For conspicuous gallantry and devotion to duty throughout many days of active operations. He was absolutely tireless in his work of rescuing and caring for the wounded, and freely exposed himself to heavy rifle and machine-gun fire in carrying out his duties. By his splendid courage and energy throughout the whole operations he was instrumental in getting away most of the wounded.

Temp. Lieut. ROBERT JOHN HELSBY.—For conspicuous gallantry and devotion to duty when, the battery area being heavily shelled, he dressed the wounded with complete disregard of personal safety, and in spite of being blown up in a house and badly shaken.

Temp. Capt. FRANCIS HENDERSON.—For conspicuous gallantry and devotion to duty. Throughout ten days' fighting this officer set a splendid example. On one day for 12 consecutive hours he was engaged in leading squads of bearers to and from the regimental aid-posts. He frequently dressed men in the open when their condition needed it. He brought a wounded officer back in a car, several times stopping it under heavy fire to make the officer more comfortable.

Capt. (acting Major) HOWARD HENRY.—For conspicuous gallantry and devotion to duty during several days when acting as bearer officer. The conditions under which the wounded had to be collected and evacuated were particularly difficult, owing to the fact that the troops were executing a withdrawal. By his total disregard of personal danger and coolness, he set a brilliant example to the bearers under his command, and undoubtedly was the means of saving many lives.

Capt. ROBERT ALEXANDER HEPPLE, Spec. Res.—For conspicuous gallantry and devotion to duty. The advanced dressing station was hit by three shells simultaneously, when the building was demolished and several men killed or wounded. He at once set to work to recover the wounded from under the débris, and did not leave till all had been cleared, in spite of the continued intense shelling of the vicinity.

Temp. Capt. STEWART HODGSON.—For conspicuous gallantry and devotion to duty during recent operations. For a whole day, often under direct rifle and machine-gun fire, he attended the wounded and directed their evacuation. Although wounded he continued his duties with exceptional coolness and skill, until the advancing enemy compelled withdrawal.

Temp. Capt. HUGH LLEWELLYN GLYN HUGHES, D.S.O.—For conspicuous gallantry and devotion to duty. He worked day and night in the open, in spite of the heaviest shell and machine-gun fire, tending the wounded and helping them back to safety, with a spirit of cheerfulness and self-sacrifice rarely seen. After being wounded he still continued to perform his duties, until the wound necessitated his evacuation.

Temp. Capt. THOMAS WILLIAM JACKSON.—For conspicuous gallantry and devotion to duty during an enemy attack. He was with two other medical officers in a dressing station when the troops in front fell back. The dressing station was full of wounded, and this officer continued, with the two others, to tend the wounded, despite the close proximity of the enemy, till, thanks to a counter-attack by our troops, every case was cleared. This was a fine act of courage and devotion to duty.

Temp. Capt. GEORGE WILLIAM BLOMFIELD JAMES.—For conspicuous gallantry and devotion to duty throughout a retirement in remaining behind with the rearguard, dressing and evacuating wounded under very heavy fire, until his medical stores were exhausted and he was in danger of being cut off. It was due to his tireless energy that so few wounded fell into the hands of the enemy. His resource and cheerfulness throughout were a real encouragement to all.

Capt. ARTHUR MORRELL JOHNSON.—For conspicuous gallantry and devotion to duty in tending and evacuating the wounded in the front line and under continual fire. When the order to withdraw was issued he remained till the last, and it was entirely due to his courage and energy that all the wounded were cleared.

Temp. Capt. FRANCIS ESMOND KEANE.—For conspicuous gallantry and devotion to duty. Throughout the operations he displayed the greatest courage and grit, working unceasingly without sleep, establishing aid-posts, and evacuating wounded under heavy shell and machine-gun fire. His services to the battalion were most invaluable.

Temp. Capt. RICHARD KENEFICK.—For conspicuous gallantry and devotion to duty. While the regiment was consolidating its position, he attended to the wounded quite in the open and under very heavy fire, and arranged for their evacuation. He undoubtedly saved many lives which would otherwise have been lost. He was wounded in the foot, but did not relax his energy, and continued to attend to all the wounded in the vicinity.

Capt. JOSEPH ILLINGWORTH LAWSON, Spec. Res.—For conspicuous gallantry and devotion to duty in bringing in wounded under heavy shell fire, with no one between him and the enemy, thereby saving them from being made prisoners.

Temp. Capt. GEORGE AUSTEN LILLY.—For conspicuous gallantry and devotion to duty. In order to attend the wounded he frequently crossed an exposed piece of ground 300 yards in length. Later, when the horses had to be moved owing to heavy shelling, he rescued a badly wounded man, carrying him to safety.

Capt. HENRY GUY LUDOLF.—For conspicuous gallantry and devotion to duty. For six days he worked under continuous fire, and during the last two days was the only doctor on the spot attending to the wounded of five different battalions. He was himself suffering from a severe attack of neuritis, but stuck to his work till assistance came. During these six days his personal heroism and abnegation of self were beyond all praise, and owing to his gallant conduct the lives of many were saved.

Capt. JOHN ALEXANDER MACKENZIE, Spec. Res.—For conspicuous gallantry and devotion to duty at an advanced dressing station, under heavy shell fire, during an enemy attack. He persisted in his work, and successfully evacuated all the wounded before withdrawing his personnel. At another advanced dressing station later he stuck to his duty for 72 hours without rest.

Capt. KENNETH AHTHUR McLEAN, Australian A.M.C.—For conspicuous gallantry and devotion to duty during a heavy enemy attack. Under heavy fire he personally conducted bearer squads, organised the forward work of evacuation, and exerted himself to the utmost in saving wounded. His fine example served to keep the men under him working at high pressure, and ensured the complete evacuation of the positions.

Temp. Capt. ALAN COWAN MANN.—For conspicuous gallantry and devotion to duty. Throughout eight days' operations this officer did fine work in tending and clearing the wounded. On one occasion, when the line fell back, he remained with the wounded and succeeded in clearing all that could be found before he withdrew. The splendid work done by the stretcher-bearers was due to this officer's organisation and leading.

Temp. Capt. HARRY GODFREY MASSY-MILES.—For conspicuous gallantry and devotion during several days of severe fighting, when he kept in close touch with the battalion, working unceasingly, without rest, during the whole period, dressing the wounded, including the French. He showed great initiative in establishing forward R.A.P.'s, reconnoitring their sites beforehand under heavy hostile shell fire, thus greatly assisting the rapid evacuation of casualties. His courage and cheerfulness throughout a period of great strain were beyond praise.

Temp. Capt. WILLIAM GRAEME DENROCHE McCALL.—For conspicuous gallantry and devotion to duty when at a forward collecting post. During an afternoon large numbers of wounded had to be dealt with, and the approaches to the station were subjected to intense shell and machine-gun fire. He maintained the position for many hours, dressing and evacuating all wounded, though later he was in imminent danger of being surrounded. When the post was quite untenable he successfully withdrew all personnel and stores. His gallantry under conditions of extreme danger saved many lives.

Temp. Capt. ROGER McGRATH.—For conspicuous gallantry and devotion to duty when in charge of the bearers of his field ambulance. During the enemy's advance, and while exposed to heavy shell and machine-gun fire, he organised his bearers and evacuated many wounded, who otherwise would have been captured. He set a fine example of energy and courage.

Temp. Capt. ALEXANDER CHURCH BRODIE McMURTRIE.—For conspicuous gallantry and devotion to duty. On several occasions he brought in wounded himself under shell fire, and by his disregard of danger set a fine example to those under him. Owing to his arrangements and untiring efforts many lives were saved.

Capt. HAMILTON STEPHEN MOORE, Spec. Res.—For conspicuous gallantry and devotion to duty in constantly leading stretcher parties through intense shell and machine-gun fire, in order to evacuate the wounded. On one occasion the whole party except himself became casualties. He dressed his men in the open, and invariably stayed till all had been got away. His cool and determined gallantry was a great inspiration to all the men working under him, and his efforts saved many wounded from being captured.

Capt. FREDERICK CECIL NICHOLS.—For conspicuous gallantry and devotion to duty. When the front line was forced back he maintained his dressing station in the newly-formed front line until he had attended to every case, in spite of a heavy bombardment. Throughout the four days' fighting he displayed untiring energy and great personal courage.

Temp. Capt. ALGER ROY ORAM.—For conspicuous gallantry and devotion to duty. In recent operations this officer, under very heavy shell fire, continued to attend to the wounded and evacuate cases under the most adverse circumstances. On several occasions, by his fine example and personal courage, he saved many wounded who otherwise would have fallen into the enemy's hands.

Temp. Capt. JOHN LINDESAY PEARCH.—For conspicuous gallantry and devotion to duty while in charge of a bearer post. He repeatedly led squads of bearers to parts of the line where wounded were collected, and it was due to his fine example that so many wounded were saved during a period when communication with the front was extremely difficult. He showed courage under shell fire and was indefatigable in his duties.

Capt. ALLAN CAMPBELL PEARSON.—For conspicuous gallantry and devotion to duty when acting as second in command of a casualty clearing station. On several occasions and on different days he superintended the evacuation of wounded under heavy shell fire, and also, with the greatest courage and ability, supervised the salving of equipment during bombing and machine-gun fire from hostile aircraft.

Temp. Lieut. ROLAND WILFRED PEARSON.—For conspicuous gallantry and devotion to duty in the performance of his duties during lengthy operations. On one occasion two direct hits were obtained on his post, and a patient, who was being dressed, was killed. On another day he followed the battalion in a counter-attack, and rendered the most magnificent services to the wounded, under heavy machine-gun fire. By his courage, fine example, and great devotion he has at all times inspired his stretcher-bearers, and it was mainly due to him that so many of the wounded were got away by the bearers.

Temp. Capt. JAMES POTTER.—For conspicuous gallantry and devotion during lengthy operations, when he continuously attended the wounded under heavy shell, machine-gun, and rifle fire, maintaining his regimental aid-post until the enemy had nearly reached it. His splendid example of courage and devotion to duty were beyond praise.

Capt. (acting Major) WILLIAM JAMES PURVES.—For conspicuous gallantry and devotion to duty at a main dressing station, when by his courage, untiring energy, and grasp of the situation over 1000 wounded were passed through the station without a hitch, and when, owing to continuous shelling, he had to retire all cases were got safely away. This was especially difficult, as the troops were executing a withdrawal.

Capt. JOHN WOOTTON RAMMELL.—For conspicuous gallantry and devotion to duty in dressing the wounded and carrying out his duties under heavy rifle and machine-gun fire. Owing to his ceaseless endeavour and skill all the wounded were evacuated. All ranks speak with admiration of his courage and good work.

Temp. Capt. JOHN KING RENNIE.—For conspicuous gallantry and devotion to duty when, an advanced dressing station having retired, he organised another in a village, which he only left when the enemy entered it, working all the time under a heavy fire. Subsequently he again organised the evacuation of the wounded under difficult conditions, and saved many from falling into the hands of the enemy.

Capt. HENRY WHITTERON ROBINSON.—For conspicuous gallantry and devotion to duty. In spite of continuous shell fire, during which his aid-post sustained two direct hits, this officer worked without ceasing, giving unremitting attention to the wounded and organising bearer squads.

Capt. PETER JOHN RYAN.—For conspicuous gallantry and devotion to duty during lengthy operations in charge of bearers and advanced dressing stations. He organised the whole forward work, and it was due to his individual efforts and energy that so large a number of casualties were prevented from falling into hostile hands. He worked continuously throughout the whole retreat, and his success was such that no wounded man fell into the enemy's hands after once having been put under the care of the field ambulance bearers. His work was carried out under extremely difficult conditions, and often under heavy shell fire. His devotion to duty was quite beyond praise.

Temp. Capt. CUTHBERT SCALES.—For conspicuous gallantry and devotion to duty when in charge of stretcher-bearers. He collected and evacuated many wounded under heavy fire, and remained at his post until forced by the advance of the enemy to withdraw his collecting post further back. There he continued collecting and evacuating as long as possible, showing a fine example to his men.

Capt. HUBERT SHIELD.—For conspicuous gallantry and devotion to duty at advanced dressing stations. Under heavy fire, he managed to save all wounded from falling into the enemy's hands, and remained doing his duty till his stations were cleared. In one dressing station, which he alone ran for 16 hours, he dressed and evacuated over 300 men.

Capt. WILLIAM SMITH, South African M.C.—For conspicuous gallantry and devotion to duty during active operations. He displayed great courage in carrying on his duties after being blown up by a shell, which wounded him and killed two of his orderlies, and he remained at duty until his battalion was relieved.

Capt. THOMAS COPELAND STOREY, Spec. Res.—For conspicuous allantr y and devotion to duty. After the withdrawal from a wood, it was discovered that some of the wounded had been left behind. He went forward and spent an hour and a half in front of the line, searching the wood, and brought them all back, in spite of considerable hostile fire. Otherwise they would undoubtedly have fallen into the hands of the enemy.

Temp. Capt. RAYMOND BREWITT TAYLOR.—For conspicuous gallantry and devotion to duty. He searched for a missing stretcher-bearer for two hours under heavy shell fire, at last finding him in a shell-hole and assisting to carry him back. Throughout nine days' fighting he was constantly going forward, under fire, searching for and bringing in wounded.

Capt. WILLIAM WALKER, Spec. Res.—For conspicuous gallantry and devotion to duty. He proceeded to a village under heavy fire and succeeded in attending and evacuating several wounded. He only desisted when the enemy entered the village. Later, he succeeded in releasing a party of stretcher-bearers who had been cut off. Throughout the operations he has shown the utmost energy and courage.

Capt. CHARLES ERIC WATSON, Australian A.M.C.—For conspicuous gallantry and devotion to duty. Under very heavy artillery fire he continued to dress the wounded for two hours and a half. Though many of the bearers were killed and wounded, he stayed with the stretcher cases, and it was owing to his fine courage and energy that many of the wounded were saved.

Capt. HARRY ERNEST BANTRY WHITE, Spec. Res.—For conspicuous gallantry and devotion to duty during recent operations. He was medical officer attached to the battalion, and for eight days he worked continuously without rest and often without food, generally under heavy fire, attending to the wounded. His efforts were tireless, and his courage and devotion to duty were the means of saving many lives.

Temp. Capt. DAVID ROBERTS WILLIAMS.—For conspicuous gallantry and devotion to duty while in charge of bearers in evacuating wounded. On one occasion, going back and searching for wounded when, in spite of darkness, barbed wire, and torn-up ground, he brought away two men from an abandoned aid-post, carrying one on his back. On another occasion it was largely due to his determination and grit that a camp which was being heavily shelled was evacuated of all wounded, when he remained till the last and saw that all was clear.

Temp. Capt. CHARLES EDGAR WILSON.*—For conspicuous gallantry and devotion to duty when, during a rearguard action, he worked untiringly in the interests of the wounded, who all were safely evacuated in spite of having to pass over a long stretch of open ground exposed to fire. Through all this trying time he was cool and cheerful, showing a complete disregard of personal danger.

Capt. HENRY WILSON.—For conspicuous gallantry and devotion to duty. For five days, under all kinds of enemy fire, he showed an utter contempt of danger and disregard of self. His energy and splendid behaviour undoubtedly saved many lives, and through his powers of organisation no wounded were left behind when the battalion was relieved from the line.

* Since deceased. See Obituary, THE LANCET, May 4th, p. 653.

The following awards to, and promotions of, medical officers are in connexion with operations in East Africa :—

C.M.G.—Col. G. W. Tate, D.S.O., A.M.S.; Lt.-Col. R. G. Turner, D.S.O., I.M.S.

To be Brevet Lieutenant-Colonel.—Maj. (temp. Lt.-Col.) W. Benson, D.S.O., R.A.M.C.

Distinguished Service Order.—Lt.-Col. A. C. Adderley, R.A.M.C.; Temp. Maj. (acting Lt.-Col.) T. M. R. Leonard, Spec. List, West African Medical Service; Capt. (acting Maj.) A. McW. Green, South African, M.C.

Military Cross.—Capt. F. M. Barnes, R.A.M.C., Spec. Res.; Capt. H. D. Brown, R.A.M.C., Spec. Res.; Lt. N. S. Bruce, R.A.M.C., Spec. Res.; Temp. Lt. G. Burnet, R.A.M.C.; Capt. H. A. Crouch, R.A.M.C., Spec. Res.; Temp. Capt. M. C. Gardner, R.A.M.C.; Temp. Capt. E. Gibson, Spec. List, West African Med. Serv.; Capt. J. B. Lapsley, I.M.S.; Capt. G. S. Lawrence, R.A.M.C., Spec. Res.; Temp. Capt. T. H. Massey, East African Med. Serv.; Temp. Capt. H. R. Morehead, Spec. List, West African Med. Serv.; Temp. Capt. T. R. Sandeman, Spec. List, West African Med. Serv.; Capt. R. R. Scott, R.A.M.C., Spec. Res.; Capt. A. F. Wallace, Northern Rhodesia Med. Serv.

GALLANTRY AT SEA.—Surgeon E. A. Fiddian, R.N., has been awarded the bronze medal for gallantry in saving life at sea for assisting in the rescue of a shipwrecked British crew last January in the White Sea.

THE RED CROSS WAR HOSPITALS.—The annual report on the accounts of Auxiliary Hospitals in the British Isles for the year 1917 is a document which should prove of considerable value to all concerned in the control and support of those institutions, for the comparison of the working and expenditure between individual hospitals must lead to economy of administration. The report calls attention to the improvement in organisation, gives in detail the accounts, the number of patients treated indoors and outdoors, the cost of maintenance, and so forth. The number of hospitals dealt with is 1073, as compared with 960 in the report for 1916 and 753 in that for 1915. The average cost of maintenance per in-patient per day in 1917 was slightly in excess of 3*s.* 7*d.*, the average total cost of each in-patient for treatment being £7 3*s.* 5*d.* The total expenditure of the hospitals during the year was £3,466,892, as compared with £2,142,182 in 1916 and £1,023,937 in 1915. The total cost of maintenance was £3,144,362, the figures for 1916 being £1,937,221 and for 1915 £891,342. The total cost of administration for 1917 was £19,930. The report can be obtained from Room 46, 83, Pall Mall, London, S.W. 1, price 3*s.*

URBAN VITAL STATISTICS.

(Week ended August 3rd, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 12·1, against 13·1 and 13·1 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 11·4, or 0·4 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 3·0 in Cambridge, 5·1 in Swindon, and 5·8 in Wimbledon, to 20·2 in Exeter, 20·6 in Sunderland, and 31·5 in Aberdare. The principal epidemic diseases caused 255 deaths, which corresponded to an annual rate of 0·8 per 1000, and included 74 from infantile diarrhœa, 66 from measles, 63 from whooping-cough, 39 from diphtheria, 11 from scarlet fever, and 4 from enteric fever. The deaths from whooping-cough were the lowest recorded in any week of the current year; the deaths from measles and diphtheria showed a slight increase over the numbers recorded in the previous week. The 766 cases of scarlet fever and 927 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 21 and 34 below the respective numbers remaining at the end of the previous week. The 878 deaths from all causes in London included 38 from influenza, against 287, 192, and 86 in the three preceding weeks. The causes of 31 deaths in the 96 towns were uncertified, and included 5 in Liverpool.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 13·1, against 17·4 and 14·2 per 1000 in the two preceding weeks. The 280 deaths in Glasgow corresponded to an annual rate of 13·1 per 1000, and included 13 from infantile diarrhœa, 6 from whooping-cough, 5 from diphtheria, 3 from measles, and 1 each from enteric fever and scarlet fever. The 79 deaths in Edinburgh were equal to a rate of 12·4 per 1000, and included 1 each from whooping-cough and from infantile diarrhœa.

Irish Towns.—The 122 deaths in Dublin corresponded to an annual rate of 15·9, or 4·1 below that recorded in the previous week, and included 2 from infantile diarrhœa, and 1 each from enteric fever and measles. The 113 deaths in Belfast were equal to an annual rate of 15·0 per 1000, and included 7 from infantile diarrhœa and 2 from whooping-cough.

DONATIONS AND BEQUESTS.—The late Mrs. Elizabeth Tupper has left among other bequests £3000 each to the Cancer Hospital, the Hospital for Consumption and Diseases of the Chest, Brompton, St. Mary's Hospital, and Middlesex Hospital; £2000 each to University College Hospital, Gower street, the Royal Hospital for Incurables, Putney, Royal Naval Benevolent Society, Guy's Hospital, the Samaritan Free Hospital for Women and Children, Seamen's Hospital Society, the National Hospital for the Paralysed and Epileptic, and the London Hospital; £1000 each to the Society for the Prevention of Cruelty to Children, the Infant Orphan Asylum, Wanstead, the Royal London Ophthalmic Hospital, and the Earlswood Asylum for Idiots; and £500 to the Society for the Prevention of Cruelty to Animals.—By the will of the late Mr. Gunner Henry Patteson Strong the testator bequeathed £1000 to Guy's Hospital to endow a bed and £300 to the Dunster Cottage Hospital, Somerset.

Obituary.

FREDERICK THOMAS ROBERTS, M.D., F.R.C.P. LOND., D.SC. UNIVERSITY OF WALES,

CONSULTING PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL AND THE BROMPTON HOSPITAL FOR DISEASES OF THE CHEST.

WE announced last week the death of Dr. Frederick Roberts in his seventy-ninth year, who for a long period was one of the best known physicians in London, alike for his scientific opinions and as a teacher and an author. A Welshman by birth, he commenced his medical career by entering the Medical College at Liverpool, whence he proceeded to University College, London, joining the medical school. In the examination for the medical degree he was gold medallist in anatomy and physiology in 1860, became M.R.C.S. Eng. in 1861, B.Sc. Lond. in 1862, and graduated in medicine the following year.

After holding for a brief space of time the appointment of assistant physician to the Liverpool Northern Hospital, he returned, as was inevitable with his excellent student record, to University College, London, and in 1870, in which year he took the M.R.C.P. and the M.D. Lond., was appointed demonstrator of anatomy. The appointment marked the beginning of a great change in the system of medical instruction in the school. The system of teaching by "demonstrations" had begun to make its way elsewhere, but had not been adopted at University College. There were no demonstrations. There were, indeed, two demonstrators of anatomy who looked into the dissecting-room for a couple of hours every day. But that was all. The students had their lectures and their books, and they really did dissect; but for the most part they had to work out their own salvation with their own brains and discussions amongst themselves. The plan was a good one at bottom, but superior direction was lacking. Roberts came from Liverpool a fresh young man and full of energy, having lectured on almost every subject in the medical curriculum, his mind stored with an infinite variety of facts which were easily accessible and carefully arranged with all the method of a card-index. He at once started in the dissecting-room some excellent demonstrations on the convolutions of the brain, an innovation, as some of those who had almost finished their anatomy thought, and they proudly, perhaps conceitedly, held aloof from them. But Roberts's example was quickly followed in other departments, and demonstrational instruction and revision classes (and what are popularly known as "grinds") soon became as common at University College as everywhere else.

Roberts was a first-rate teacher of anatomy, as he soon had the opportunity of showing, for the professor, George Viner Ellis, fell ill, and the task of giving the set anatomical lectures devolved on his junior for a considerable time. It was not long before he joined the hospital staff as assistant physician, and those who had attended his anatomical lectures and demonstrations, and afterwards followed him in the out-patient room and the wards, could not fail to observe that his clinical and systematic lectures were arranged upon the familiar pattern. With him everything naturally fell into the tabular form—history, etiology, pathology, diagnosis, and treatment; and, though the students sometimes made fun of it, they found it an invaluable help in arranging their own ideas, not only for permanent use, but for the more transient requirements of the examination-room. His lists of the causes of any particular physical sign or symptom were most carefully prepared, and looking back it is interesting to remember how often "bad teeth" took almost as prominent a place as "pyorrhœa" takes to-day.

In 1877 Roberts became F.R.C.P. Lond. and in the following year full physician to the hospital. In his visits in the wards it was Roberts's special delight to demonstrate to his class the methods of percussion and auscultation, and Sir William Jenner used to refer students to him to learn how to percuss a chest. No little amusement was often elicited in comparing his light, fully-trained touch with the heavy, almost rib-breaking efforts of the new clinical clerk. In his appreciation of slight variations in the percussion note and the quality of cardiac murmurs his accurate musical ear stood him in good stead. It is always well that in a medical school different methods of clinical teaching should be represented, and this was strikingly the case at University College Hospital when Roberts first took charge of wards, with Wilson Fox, Ringer, and Bastian as his senior colleagues. His clinics were always crowded, and in addition to his sound and clear teaching there was a natural *bonhomie* about him which captivated the students and was better than a dose of medicine for the patients, who looked forward to his visit like a tonic. In remembering Roberts as a teacher, not a few will call to mind his course of lectures as Professor of Materia Medica. The subject as then taught was at the best not an exhilarating one, but somehow Roberts succeeded in making it attractive to a large and attentive class, and there must be many who, carrying their memories back to the early eighties, will recall the carefully prepared definitions of the various groups of therapeutic agents, among which that mysterious group, the "alteratives," must have proved particularly difficult for the lecturer to put in its right place. It was almost a matter of course that Roberts should write a handbook of medicine; and a very successful venture it was. Its title was the "Theory and Practice of Medicine." It passed through many editions and grew into a huge volume. As we turn its pages we find again, as in his anatomical and clinical teaching, everything falling into its proper pigeon-hole with charming accuracy and precision.

Thinking of all these things, and of how good a physician he was, and how large his public—for it must be remembered that he was also physician to the Brompton Hospital—one wonders how it was that Roberts did not secure one of the first consulting practices in London. It is impossible to specify the exact combination of qualities that lead up to complete success. Not that Roberts failed in this respect. He was busy enough. But he often spoke of his practice with some disappointment, and said that he would have done much better if he had gone on the operatic stage, till sometimes the thought arose whether his great reputation as a singer might have interfered with his reputation as a physician. Be that as it may, he certainly had the musical gifts of his race developed to the highest degree and an incomparable tenor voice, and a manner and style that made the trivial words of a light song go to your very heart. It was a voice without an edge, and till he was quite an old man Roberts's songs were always looked forward to and encored at Brompton dinners, at the annual University College festivals, and in his own house in Harley-street, where the music room was a shrine, and where the generous repast was always followed by a musical treat of the highest order.

Dr. Sidney Martin writes:—

Frederick Roberts was appointed assistant physician to University College Hospital at a time near the end of William Jenner's great career as pioneer in medicine and clinical teacher in the medical school. He was a pupil of Jenner, and was, like all others who came under his influence, profoundly affected by his teaching and personality. Roberts soon obtained a definite position in the medical school as the result of his industry and clinical teaching. He was not an original worker or thinker; but his mind was very methodical and his definition clear, so that his clinical demonstrations were highly appreciated, more particularly by the junior students. There were, indeed, some who were inclined to belittle his method of teaching, which perhaps classified the symptoms of disease in too methodical a manner. But there is no question that his method was of great value to many who were beginning the study of medicine at the bedside. His systematic lectures were always clear expositions of the subject. For some years he lectured in the particularly dull subject of materia medica with success. His lectures in medicine did not, like those given by Russell Reynolds and Ringer, deal with pictures of disease, but consisted in a categorical statement of the symptoms of particular disease; a method useful, indeed, for examinations, but not sufficiently stimulating, perhaps, for the thinking student. During the whole of his career at the staff of the hospital Frederick Roberts maintained his energy in teaching; he was always ready to help the student, and thus became a most important member of the medical school. Numerous are the practitioners of medicine who are grateful to him for his clear exposition of the symptoms of disease.

Roberts's active career in the medical school was at a period before the development of bacteriology, so that he was not in touch with the recent developments of medicine. If anything he belonged to the school of Walsh, which spent itself in the minute examination of the physical signs of

disease. This is a useful aspect of clinical medicine, but its too exclusive study is apt to obscure a wide view of the study of disease. As a colleague Roberts was delightful and loyal to his colleagues, to the school, and upright in all his dealing. There was no better friend to have, and his beautiful singing will remain in the hearts of his friends for all time.

Dr. Walter Carr writes:—

Among the many distinguished members of the medical staff of University College Hospital during the last quarter of the nineteenth century Dr. F. T. Roberts was in several respects an out-standing figure. His imposing personal appearance, his unfailing *bonhomie*, the special characteristics of his teaching, his many acts of personal kindness, his magnificent and well-trained voice, all combined to make him exceptionally popular with successive generations of students. Who can forget the way in which he would stride into his ward and, standing by the bedside of a patient, commence a clinical lecture on the causes of some particular symptom—"Firstly, nothing at all; secondly, bad teeth; thirdly .....," and so on, until every likely or unlikely cause had been discussed. Classification was of the essence of his teaching alike in the wards, in his systematic lectures on therapeutics, and in his well-known text-book on Medicine. Possibly the method was carried too far, as it tended to attach equal importance to frequent and to rare causes of disease, to common and to exceptional symptoms, to all-important and to comparatively valueless drugs; nevertheless, it served to make us thorough in the investigation of cases and to diminish the risk of our overlooking or forgetting less important causes or symptoms. Incidentally it was most valuable for the immediate purpose of helping us to pass examinations.

In some respects Roberts was in advance of his time. He impressed upon us the importance of the teeth at a period when they were only too frequently entirely disregarded and when pyorrhœa was as little thought of as were adenoids. He often foretold that a day would come when diseases of the pancreas would figure far more prominently in medicine than was then the case. Perhaps he was at his best when passing comparatively quickly from bed to bed he would make a few pertinent remarks on the salient features of each case. From his special experience at the Brompton Hospital, aided doubtless by his fine ear for sound, he was naturally particularly interested in lung diseases, and his pupils are never likely to forget the importance he very rightly attached to pleural adhesions and, above all, to "mixed morbid conditions in the chest." Only a few years ago the writer of these notes published a clinical lecture on this subject in one of the medical journals, in which he referred to his indebtedness to his old teacher. A few days later he received a characteristically kindly letter of thanks from Roberts, in which he said how often others had appropriated his teaching without any acknowledgment whatever.

The amount of work which Roberts got through, apparently without undue strain or effort, must have been enormous. In addition to a large private practice, he was regular in his attendance and teaching at two important hospitals; he was constantly bringing out a new edition of his popular book on medicine, not to mention a good deal of other literary work; he was a very active Fellow of the Medical Society of London, finally becoming President; and he seemed positively to revel in examinerships, of which he held a remarkable number. Nevertheless, he found time also for an unusual amount of social life, and no account of him would be complete without a reference to his quite exceptionally fine tenor voice, which fully maintained the traditional reputation of his native country—Wales—as a home of song.

Roberts retired from the active staff of University College Hospital in 1905, and his closing years were a period of enforced quietude and retirement, pathetic by contrast with the strenuous activities which have been set out above. He was a great figure in medical education during the last quarter of the nineteenth century.

HENRY BETHAM ROBINSON, M.D., M.S. LOND., F.R.C.S. ENG.,

SENIOR SURGEON TO ST. THOMAS'S HOSPITAL; SURGEON TO KING GEORGE HOSPITAL; MAJOR, R.A.M.C. (T.).

WE recorded last week the death on July 31st, in his 58th year, of Mr. H. B. Robinson, senior surgeon to St. Thomas's Hospital, and lecturer on surgery in the Medical School.

Henry Betham Robinson was born in August, 1860, received his school education at Dulwich College, and entered the medical school of St. Thomas's Hospital, London, where he won many distinctions, amongst them the scholarship and gold medal in medicine at the London M.B. examination (1885) and the gold medal for the B.S. In 1887 he became a Fellow of the Royal College of Surgeons of England, and was appointed Hunterian Professor in 1893, giving a course of lectures on Cystic Diseases of the Breast. In the same year he was elected on the surgical staff of his hospital, ascending the scale until at the time of his death he was senior surgeon on the acting staff, as well as consulting surgeon to two children's hospitals in the East End. His services as a teacher were largely in demand. He was the last surgeon on the staff to give lectures on anatomy at his medical school, and until his death he held the lectureship on surgery, the entire systematic course falling on him during the winter months owing to the absence of a colleague. For many years he was examiner in surgery at the Universities of London and Manchester. As surgeon at St. Thomas's Hospital he held a Territorial commission, and in August, 1914, he was called up and attached as *à la suite* officer to the Second London General Hospital. Soon after he accepted a similar appointment at the newly opened King George Hospital, and in 1915, when the military side of St. Thomas's became No. 5 London General Hospital, he took charge of beds there as well. Thus for three years he worked incessantly at three military hospitals as well as his civil ones, and only during the last few months was he relieved of beds at the first named. These exhausting years, in which his energies never seemed to flag, contributed doubtless to his early breakdown.

As a surgeon Mr. Robinson was notable for the thoroughness of his methods, combined with a quickness which was never practised at the expense of the patient. He was an excellent diagnostician, particularly in abdominal affections. For some years he was in charge of the throat department at St. Thomas's Hospital, after he had left it retaining both his skill and interest in that line of work. As a teacher he was an unfailing attraction to the students. He had a good delivery, formed clear opinions, and enunciated them in well-chosen but simple language. A factor in his success was the evident enjoyment that teaching gave him, and he still retained his ward-classes after ill-health had obliged him to give up operating. Mr. Robinson also wrote with a clear and trenchant style, but apart from an article in Quain's Dictionary and reports of cases in weekly and monthly journals his busy life gave him little time for literary work, and it is feared that his researches on the diseases of the mammary gland may remain unrecorded.

Of the personal characters which made Mr. Robinson such a popular figure at his school an intimate friend writes:—

"Even a stranger might have realised the mingled affection and respect with which Robinson was regarded by all at St. Thomas's if he happened to be a guest in the operating theatre and saw the surgeon, the dressers, and the nurses all bubbling together over some little touch of humour on the part of their chief which he unaffectedly enjoyed at least as much as the rest. This element of simplicity in his character made it possible for him to enter naturally into the social life of the school. His participation in the staff race was a feature at the annual sports. In his student days he had been a regular playing member of what might be called the 'ever-victorious' Rugby football team of the 'eighties,' and this was one of his most cherished recollections."

Mr. W. H. Battle sends us a further appreciation:—

"Mr. H. B. Robinson was a man whose earnestness of endurance was crowned by thoroughness of performance. There were few days on which he spent less than five hours at the operation table, and those associated with him appreciated more and more his accuracy of diagnosis and judgment, as well as his skilful operative work. There can be little doubt in the minds of those who know the immense amount of work which he did during the last three-and-a-half years of his life, that he sacrificed himself on the altar of duty quite as much as the man who goes abroad and dies there from one of the risks incidental to warfare in the field. Those of us who are left have to mourn the loss of a good colleague and faithful friend. His quiet unassuming life was an example to the profession; he let his efficient performance of duty and practical knowledge speak for him. Shortly before his illness necessitated absolute retirement he had the satisfaction of admitting his only son to the Cheselden Lodge of Freemasons, of which he himself was Master at his death."

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—As the result of the recent Final Examination, held from July 9th to 22nd, the following candidates were approved in the subjects indicated, but are not eligible for diplomas:—

Medicine.—W. M. Anthony, St. Thomas's; B. A. Astley-Weston, Bristol; P. Banbury, St. Thomas's; L. H. Bartram and F. T. Burkitt, Cambridge and St. Bart.'s; D. Campbell, M.D. New York, New York; Elizabeth Casson, Bristol; N. Cheua, Middlesex; C. B. Clarke, Cambridge and Univ. Coll.; W. Davies, London; Mary Day, St. Mary's; G. B. Dowling, Guy's; C. C. R. Downing, Cambridge and Univ. Coll.; H. Franklyn, Cambridge and St. Bart.'s; L. E. Frazer, Cambridge and St. Thomas's; W. A. Freedman, M.B., B.S. Durh., Durham; C. F. Good, London; Dorothy Winifred Gowers, Royal Free; W. R. G. Harris, London; F. Y. Hasaballa, Charing Cross; A. T. Hawley, Cambridge and St. Thomas's; E. T. Holden, Birmingham; A. W. Holgate, Univ. Coll.; A. St. G. J. M. Huggett and G. R. Hull, St. Thomas's; E. H. Johnson, Manchester; R. D. Jones, St. Bart.'s; F. W. Kemp, Charing Cross; H. W. Kerfoot, M.D., C.M. McGill, McGill; P. C. Livingston, Cambridge and London; T. D. Llewelyn, Cardiff and St. Thomas's; W. K. McKay, Guy's; T. C. McKenzie, Birmingham; C. F. McLean, Cambridge and St. Thomas's; C. D. Maitland, St. Thomas's; G. Millar, St. Bart.'s; F. Morcos, St. Mary's; W. A. W. Parkes, Birmingham; E. A. Pearson, London; H. J. A. Pollard, Cambridge and St. Bart.'s; H. L. Pridham, St. Bart.'s; F. A. Prosser, Liverpool; F. W. Reitz, Guy's; E. D. T. Roberts, St. Thomas's; L. I. Roberts, Univ. Coll.; R. H. O. B. Robinson, Cambridge and St. Thomas's; R. J. Saunders, London; Hilda Norah Shufflebotham, M.B., Ch.B., B.Sc. Birm., Birmingham; C. G. D. Siggs, Guy's; J. Spira, Brussels and St. Thomas's; F. H. Stuttaford and A. C. Teuten, St. Mary's; J. E. de V. van der Merwe, Guy's; W. E. M. Wardill, M.B., B.S. Durh., Durham; F. F. Wheeler, St. Mary's; E. C. Whitehall-Cooke, St. Thomas's; J. M. Winnett, London; and G. Winter, Birmingham.

Surgery.—J. C. Andrews, Cambridge and London; J. B. Barnett, Birmingham; H. F. G. Berncastle, Guy's; W. L. Berry, St. Bart.'s; J. M. Brydson, Durham and London; H. C. H. Bull, St. George's; W. M. Casper, Cambridge and St. Bart.'s; R. A. Cooke, Liverpool; C. F. Eminson, Charing Cross; G. A. Fisher, Cambridge and St. Bart.'s; G. A. Goolden, Cambridge and St. Thomas's; P. E. Gorst, Liverpool; F. Gray, B.A. Cantab., Cambridge and St. Bart.'s; E. G. T. Holden, Birmingham; C. M. Jones, Cambridge and Liverpool; E. G. Joseph, Edinburgh; V. J. F. Lack, London; P. Lloyd-Williams, St. Thomas's; G. L. Lyon-Smith, Cambridge and St. Bart.'s; H. C. McAlister, M.B. Tor., Toronto; E. K. Macdonald, St. Thomas's; R. S. Ralph, Guy's; A. H. J. Smart, Cambridge and St. Thomas's; E. E. R. Spurway, M.B., Ch.B. Birm., Birmingham; A. E. Ward, St. Thomas's; W. E. M. Wardill, M.B., B.S. Durh., Durham; and R. Wolff, B.Sc. Cape Univ., L.D.S. Eng., Middlesex.

Midwifery.—I. M. Abd-El-Said, Univ. Coll. Hosp.; N. S. Alder, St. Thomas's; J. H. Allan, Liverpool; G. W. Almeyda, London; Marjorie Back, Royal Free; H. Barbash, Cambridge and St Bart.'s; G. A. E. Barnes and B. F. Behman, Univ. Coll.; F. J. Bennett, Cambridge and Manchester; M. Z. Bochenek, London; G. A. A. Bradnack, Guy's; P. J. Briggs, Cambridge and Guy's; Ella Marianne Britten, St. George's; Anna Bridget Broman, Royal Free; H. Brookman, Middlesex; O. H. Brown, Charing Cross; J. M. Brydson, Durham and London; D. Campbell, M.D. New York, New York; Elizabeth Casson, Bristol; Marjorie Carnsew Chappel, Royal Free; H. B. Cole, Cambridge and St. Bart.'s; P. C. Collyns, St. Bart.'s; R. A. Cooke, Liverpool; J. C. Davies, St. Bart.'s; Mary Day, St. Mary's; J. P. de Silva, London; J. C. Dixey, Oxford and St. Bart.'s; G. B. Dowling, Guy's; R. H. Emmett, Cambridge and St. George's; R. S. Foss, St. Thomas's; E. J. Gaffney, L.D.S. Eng., Guy's; J. F. Gaha, Dublin; W. Göthe, Middlesex; C. Grantham-Hill, Cambridge and London; F. Gray, Cambridge and St. Bart.'s; C. H. Gunasekara, Cambridge and Middlesex; B. C. Hardiman, M.D., C.M. Queen's Univ., Queen's Univ., Ont.; Joan Margaret Redford Harris, Royal Free; O. S. Hillman, Middlesex; H. C. Hopkinson, Cambridge and Manchester; C. McC. Jones, Cambridge and Liverpool; E. G. Joseph, Edinburgh; H. Kamal, King's College; H. D. Kelf, St. Bart.'s; M. A. Keshvalu, Hyderabad and Univ. Coll.; R. B. P. Lansdown, Cambridge and Guy's; F. W. Lemarchand, St. Bart.'s; G. L. Levin, Univ. Coll.; L. Lyne, Guy's; Elizabeth Esther McCulloch, Liverpool; E. D. Macmillan, St. Bart.'s; Malati Madgavkar, Birmingham; A. A. E. S. Mansour, Charing Cross; T. Mensa-Annan, Cambridge and King's College; A. Mishriky, St. Mary's; G. T. Mody, M.B., B.S. Bombay, Bombay and Bristol; Eva Morton, Royal Free; C. F. Newman, Birmingham; V. A. Newton, Birmingham; W. H. Palmer, Cambridge and St. Thomas's; C. A. Paulusz, L.M.S. Ceylon, Ceylon and Guy's; G. A. Pennant, Cardiff and Bristol; F. L. Pickett, Manchester; F. A. Prosser, Liverpool; Enid Margaret Mary Quaife, Royal Free and St. Mary's; W. Reikan, Manchester; B. R. Reynolds, Cardiff and Bristol; Hilda Winifred Richards, St. George's; W. A. Richards, Cardiff and Charing Cross; J. C. R. Richardson and H. S. Robinson, London; J. C. Russell, Cambridge and London; Hilda Nora Shufflebotham, M.B., ChB., B.Sc. Birm., Birmingham; L. A. Simaika, St. Bart.'s; J. V. A. Simpson, Middlesex; Mary Sylvia Stocks, Royal Free and St. Mary's; C. E. Taylor, Cambridge and Univ. Coll.; A. L. Telling, Leeds; D. V. Townshend, Birmingham; R. W. Warrick and E. R. Webb, Guy's; G. A. O. White, Middlesex; R. L. Williams, Cambridge and St. Bart.'s; Ethel Dorothy Willis, Manchester; M. Wong, Cambridge and St. Thomas's; S. C. Woodhouse, London; C. Young, Middlesex; and F. Young, Guy's.

POST-GRADUATE COLLEGE, WEST LONDON HOSPITAL.—During next week clinics will be held each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.

WOMEN STUDENTS AT UNIVERSITY COLLEGE HOSPITAL.—The General Committee of University College Hospital has decided to admit women students to the hospital and medical school from Oct. 1st next. The Faculty of Sciences at University College has been open to women since 1877, and the Faculty of Medical Sciences since October, 1917. Women will thus now be able to take their whole medical course at University College and University College Hospital, and to avail themselves of the arrangements made with the National Hospital for the Paralysed, Queen-square, the Hospital for Sick Children, Great Ormond-street, and the Central London Ophthalmic Hospital, Judd-street, for students of University College Hospital to carry out a portion of their clinical studies at these special hospitals.

POOR-LAW MEDICAL OFFICERS' ASSOCIATION.—This association held its annual meeting at its offices, 34, Copthall-avenue, E.C. 2, on June 27th. As the President, Surgeon-General G. J. H. Evatt, C.B., was detained on military duties the chair was taken by Dr. A. A. Napper. The annual report showed considerable activity and an addition of 31 new members. The rules were revised and a discussion on the Poor-law and its future followed. The honorary secretary, Dr. A. Withers Green (City of London) read a short paper on the Future of the Poor Law. The subject was taken up by Lieut.-Col. C. Thackray Parsons, R.A.M.C., of Fulham Military Hospital, at some length, as well as by Dr. E. Claude Taylor, of the Hampstead General Hospital. Considering war conditions the meeting was well attended and the interest sustained. A full report will be found in the coming number (August 10th) of the *Medical Officer*, published at 36, Whitefriars-street, E.C., which is sent free to each member of the association whenever it contains an inset from the Poor-law Medical Officers' Association. Council meetings are held quarterly at the above offices. The annual subscription is 5*s*. It would be well if the Poor-law medical officers of each county or district were to meet together to discuss their interests, especially in view of probable coming changes, and send their conclusions to the honorary secretary.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on July 24th, with Sir Francis H. Champneys in the chair. Certain midwives were struck off the roll, the following charges amongst others having been brought forward:—

A midwife being in attendance at a confinement she neglected to disinfect her hands and forearms on each occasion before touching the generative organs of the patient, as required by Rule E. 4; she neglected to wash the patient's external parts with soap and water and then to swab them with an efficient antiseptic solution (1) before making the first internal examination; (2) after the termination of labour; (3) during the lying-in period, as required by Rule E. 8. A child suffering from inflammation of, and discharge from, the eyes the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5). A midwife neglecting to take and record the pulse and temperature of the patient at each visit, as required by Rule E. 14; neglecting to enter her records of pulse and temperature in a notebook or on a chart carefully preserved, as required by Rule E. 14. Not being scrupulously clean in every way, as required by Rule E. 2, and not keeping her register of cases as required by Rule E. 24. Having been in contact with a person suffering from puerperal fever the midwife neglected to notify the local supervising authority thereof, as required by Rule E.22 (1) (e); that in the years 1917 and 1918, with intent to avoid inspection by the local supervising authority, she falsely represented to the Inspector of Midwives of the London County Council that she was not practising or intending to practise as a midwife, but only as a maternity nurse under medical practitioners. Medical aid having been sought for a patient the midwife neglected to notify the local supervising authority thereof, as required by Rule E. 22 (1) (a); she did not on each occasion when attending the patient wear a clean dress of washable material, as required by Rule E.2. A child suffering from serious skin eruptions marked by the formation of watery blisters, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5); discontinuing her attendance at a time when the conditions of both mother and child were abnormal, in disregard of Rule E. 12, and entering in her chart lists of temperature and pulse purporting to record the daily temperature and pulse of the patient, well knowing that such entries were false.

At a meeting held on July 25th a letter was considered from the medical officer of health for the county of Durham asking:—

(*a*) Whether any objection can be raised to a registered medical practitioner employing a certified midwife to attend his midwifery cases, the midwife being paid a fixed salary for her attendance, including the collecting of fees due to her employer and paying them over to him. (*b*) Whether in such a case the midwife is bound to continue her attendance on the patient for ten days after the confinement or can she hand over the conduct of the case during the lying-in period to her employer. (*c*) What action should be taken by a county council desirous of appointing a subsidised midwife in a district not adequately provided with trained midwives where the local medical practitioners object to her appointment unless they receive a guarantee for the payment by the county council of their fees when called in on the advice of the midwife, whether the patient can afford to pay the fee or not.

The Board decided that the reply be:—

(*a*) That there is no objection to such an arrangement. (*b*) That under the circumstances specified the midwife is bound to attend for the period of ten days after the labour. (*c*) That as the County Council subsidises the midwife it ought to hold itself responsible for the payment of the doctor when required.

It was unanimously resolved that in the opinion of the Board it is desirable to pass the following resolutions, to come into effect if and when Clause 10 of the Midwives Bill, 1918, becomes law:—

(*a*) That having regard to the equivalent value of the standards of training and examination required by the Central Midwives Board for Scotland and by this Board it be an instruction to the secretary to admit to the Roll of Midwives, subject to compliance with the terms and conditions of Section 10 of the Midwives Act, 1918, any woman holding the certificate of the Central Midwives Board for Scotland in virtue of having passed the examination of that body, and to report his action to the Board. (*b*) That in the case of a woman applying to be certified under Section 10 of the Midwives Act, 1918, by reason of any qualification other than that of holding the certificate of the Central Midwives Board for Scotland in virtue of having passed the examination of that body, the secretary do report thereon for such action to be taken as the Board may deem expedient.

BRITISH SCIENTIFIC PRODUCTS EXHIBITION.—Under the auspices of the British Science Guild an exhibition of four weeks' duration will be held at King's College, London, during August and September, with the object of emphasising the need for scientific research and for the application of its results to the arts and industries. The exhibits will include chemical, electrical, surgical, bacteriological, and pathological appliances, optical apparatus, and various processes in food production and conservation, with the intent to show that by the combination of science and industry this country "has done nearly as much in the four years of war as the Germans did in the preceding 40"—this being the claims of the organisers.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Medical Treatment of School Children.

THE Lords amendments to the Education Bill have been agreed to by the House of Commons. A new clause setting out the provisions as to medical treatment of school children has been thus assented to in the following terms:—

"A local education authority shall not in exercise of the powers conferred upon them by paragraph (*b*) of Subsection (1) of Section 13 of the Education (Administrative Provisions) Act, 1907, or by this Act, establish a general domiciliary service of treatment by medical practitioners for children or young persons and in making arrangements for the treatment of children and young persons a local education authority shall consider how far they can avail themselves of the services of private medical practitioners."

EDITORIAL NOTICE.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

Communications, Letters, &c., to the Editor have been received from—

A.—Association of Certifying Factory Surgeons, Manchester, Hon. Sec. of; Association of Public Vaccinators of England and Wales, Lond.; Col. J. G. Adami, A.D.M.S.

B.—Capt. W. Brown, R.A.M.C.; Mrs. Cloudesley Brereton, Lond.; Dr. P. Bousfield, Lond.; Board of Agriculture and Fisheries, Lond.; Dr. M. K. Barradah, Cairo.

C.—Capt. C. M. Craig, R.A.M.C.; Lieut. T. E. Coulson, R.A.M.C.; Colonial Office, Lond., Private Sec. of; Mr. A. C. Chapman, Lond.; Dr. W. Carr, Lond.; Dr. E. L. Collis, Lond.; Dr. W. L. Cowardin, Oban; Capt. D. W. Carmalt-Jones, R.A.M.C.(T.)

D.—Dr. F. J. Devoto, Kelantan.

E.—Dr. G. S. Earl, Plymouth; Dr. J. S. Edkins, Lond.

F.—Miss P. Fingland, Liverpool; Sir W. M. Fletcher, Lond.

G.—Dr. L. Guthrie, Ockley.

H.—Capt. E. R. Hunt, R.A.M.C.; Dr. D. Harmer, Lond.; Capt. E. Hindle, R.E.

J.—Dr. R. Johnson, Lond.

L.—Dr. A. S. Leyton, Oxford; Local Government Board, Edinburgh; Local Government Board, Lond., Medical Officer of; Dr. T. Lumsden, Lond.

M.—Dr. H. Mallins, Watton; Dr. H. C. Miller, Lond.; Dr. E. McIntyre, Mitcham; Ministry of Information, Lond.; Miss J. Metcalfe, Newcastle-on-Tyne; Major D. G. Marshall, I.M.S.; Mr. G. Mayall, Bolton; Capt. F. A. Mosse, R.A.M.C.

N.—National League for Health, Maternity and Child Welfare, Lond.; *Nursing Times*, Lond., Editor of.

O.—Mr. H. C. Orrin, Lond.; Mr. J. Offord, Lond.; Dr. T. T. O'Farrell, Dublin.

P.—Dr. F. W. Pilkington, Kencott; Major L. G. Parsons, R.A.M.C.(T.); Major A. W. Pirie, C.A.M.C.; Major H. P. Pickerill, N.Z.M.C.

R.—Mr. N. Richardson, Lond.; Dr. H. S. Reynolds, Wisbech; Mr. G. J. Rayner, Lond.; Dr. H. F. Renton, Doncaster; Mr. P. B. Roth, Lond.

S.—Mrs. I. E. Speak, Halifax.

T.—Mr. H. S. Tawse, Nottingham; Lieut.-Col. E. N. Thornton, S.A.M.C.; Dr. A. H. Thompson, Lond.; Mr. A. Thornton, Marlborough.

V.—Vitamogen, Ltd., Lond.; Mr. S. K. Vaidya, Lond.

Offices: 423, STRAND, LONDON, W.C. 2.

Appointments.

BOURNE, A. W., M.B., has been appointed Temporary Obstetrician and Gynæcologist at the Municipal Hospital of the Willesden Urban District Council.

HUNTER, ALLISON MARY, Temporary Resident Assistant Physician at Ruchill Hospital, Glasgow.

Vacancies.

For further information refer to the advertisement columns.

Birmingham University.—Sen. Demonstrator of Anatomy. £250.
Blackburn County Borough.—Two Asst. M.O.H. £500.
Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200.
Bramcote Sanatorium, Nuneaton.—Res. M.O. £300.
Brighton County Borough Asylum, Haywards Heath.—L.T. Asst. Res. M.O. £7 7*s.* per week.
Brighton, Royal Sussex County Hospital.—Jun. H.S. £80.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Cheltenham Eye, Ear, and Throat Free Hospital.—Asst. S. £400.
East Ham Education Committee.—Temp. Asst. School M.O. £350.
Glasgow, Govan District Asylum, Cardonald.—Sen. Asst. M.O. Also Locum.
Great Northern Central Hospital.—Casualty Officer. £200.
Manchester, Ancoats Hospital.—Sen. H.S. £250.
Manchester County Asylum, Prestwich.—L.T. £7 7*s.* per week.
Manchester Royal Eye Hospital.—Sen. H.S. £120.
Middlesex Education Committee.—Asst. School M.O. £400.
Middlesex Hospital, W.—Obstet. and Gynæco. H.S.
Newcastle-upon-Tyne Education Committee.—Asst. School M.O. £350.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Anæsthetists.
Norwich, Norfolk and Norwich Hospital.—H.S. £400.
Nottingham General Hospital.—Two Female H.S. £250.
Nottingham, Ransom Sanatorium, Mansfield.—Res. M.O. £250.
Notts Education Committee.—Asst. Sch. M.O. £400.
Rainhill, nr. Liverpool, County Asylum.—Temp. Asst. M.O. 7 gs. wk.
Rochdale Infirmary and Dispensary.—Jun. H.S. £150.
Sheffield Royal Infirmary.—Res. S.O. £200. Also H.S. £150.
Stoke-on-Trent County Borough.—Asst. Tuberc. O. £360.
Sunderland, Durham County and Sunderland Eye Infirmary.—Locum.
Walsall General Hospital.—Female H.S. and Anæs. £175.
West London Hospital, Hammersmith-road, W.—H.P. £4 4*s.* per week.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £150 to £180.

Births, Marriages, and Deaths.

BIRTHS.

ALDRIDGE.—On July 31st, at Magdalene House, Glastonbury, Somerset, the wife of F. J. Aldridge, B.A., B.M., B.Ch. Oxon., of a son.

BENSON.—On August 2nd, at "Elmhurst," Devonshire-road, Sherwood, Nottingham, the wife of Lieutenant-Colonel W. A. Benson, D.S.O., T.D., R.A.M.C., of a son.

BUSHE.—On July 31st, at St. Hilary-terrace, Stoke, Devonport, the wife of Fleet Surgeon C. K. Bushe, R.N., M.D., of a son.

CHOPPING.—On August 4th, at Devonshire-gardens, Glasgow, the wife of Colonel Arthur Chopping, C.M.G., R.A.M.C., of a daughter.

HERDMAN-NEWTON.—On July 28th, at Tremorvah Lodge, Truro, the wife of Surgeon R. H. Herdman-Newton, R.N., of a son.

HILTON JONES.—On July 24th, at "Penygarth," Harlech, North Wales, the wife of Major R. O. Hilton Jones, M.C., R.A.M.C., of a son.

TATE.—On July 29th, the wife of Captain D. Laurence Tate, R.A.M.C., of a daughter.

MARRIAGES.

AITKEN—CHAPMAN.—On July 31st, at Commonhead House, Airdrie, Robert Aitken, M.B., Ch.B., Surgeon, Royal Navy, to Marion Adam, third daughter of Mr. and Mrs. William W. Chapman, Commonhead House, Airdrie.

DENNING—EMDIN.—On July 23rd, at St. Paul's Cathedral Church, Valletta, Malta, Surgeon Frederick Arthur Vere Denning, Royal Navy, to Daisy, only daughter of Engineer Captain A. R. Emdin, C.M.G., R.N.

FINDLAY—FORGAN.—On July 31st, at the British Consulate, Mukden, and at Wylie Memorial Church, Liaoyang, the Rev. James W. Findlay, M.A., to Margaret Rose Forgan, M.A., M.B., Ch.B.

DEATHS.

HOSKIN.—On August 5th, Theophilus Hoskin, M.R.C.S. Eng., L.R.C.P. Lond., aged 62.

ROBINSON.—On July 31st, Henry Betham Robinson, M.D., M.S., F.R.C.S., Major, R.A.M.C.(T.), Surgeon to St. Thomas's Hospital, of 1, Upper Wimpole-street, W., aged 57 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE Great Northern Central Hospital has received from the trustees of the will of Lieutenant Alexander Wernher the sum of £500 from the amount bequeathed by him for division amongst charities.

THE Combined Universities Conservative and Unionist Association has adopted Mr. Herbert G. Williams, M.Sc., as their candidate for the Parliamentary Division, which comprises the Universities of Durham, Manchester, Liverpool, Leeds, Sheffield, Birmingham, and Bristol.

Notes, Short Comments, and Answers to Correspondents.

THE SIGNIFICANCE TO MEDICINE OF THE CREATION OF A HEBREW UNIVERSITY AT JERUSALEM.

THE recent laying of the foundation stone of a Hebrew University at Jerusalem reveals the true spirit of the Jewish people. From the earliest times it has been considered by Jews to be a sin to live in a town in which there was no school, and now the provision, amidst the clash of arms, of means for higher education in the "place in the sun," which the British Government has promised to restore to them, expresses in the most emphatic manner the high value that the Jews continue to attach to intellectual and moral development.

Since antiquity the healing art has specially appealed to the Jew. In Talmudic times, although there was no indigenous school of Jewish medicine, enthusiasm for medical lore was great, partly because such knowledge was daily required for the elucidation of ritual observance. The administration of the dietary laws, for instance, demanded a thorough knowledge of morbid anatomy and pathology to be able to recognise post mortem whether an animal that was killed for food had previously suffered from disease likely to shorten its life, and thus render it *t'repha* or unfit for human consumption. The ancient Jewish Court of Justice often employed the services of a medical assessor in matters of medico-legal importance. Although much of the medical knowledge of the Talmudic period was imbibed by the Jews from their Roman and Greek contemporaries, yet there can be no doubt that they contributed a great deal to all the branches of medical science, for their opinions were often opposed to those of the Greek and Roman physicians.

In early post-Talmudic times—i.e., about the fifth or sixth centuries—laws were promulgated forbidding Jews to practise medicine, but in the seventh century the Arabian medical schools contained many Jewish students and teachers. In Egypt and Northern Africa most of the Court physicians between the sixth and the fourteenth centuries were Jews.

In modern and recent times the number of Jews who have distinguished themselves in medicine (either as practitioners or as investigators) and cognate sciences all over the world is out of all proportion to their population. The recital of such names as Henle, Remak, Cohnheim, Cohnstein, Zunz, Hermann, Hirsch, Romberg, Weigert, Weichselbaum, Ehrlich, Frankel, Neisser, Wassermann, Senator, Israel, and Baginski is sufficient confirmation of the statement that German medicine is to a large extent Jewish medicine. In the United States the names of Flexner, Jacques Loeb, Rosenau, and Solis-Cohen stand out pre-eminently; Italy with such men as Lombroso and Otolonghi; and even Russian medicine has had famous Hebrew names, although until the Revolution Jews were practically debarred from entering the universities.

With such a supply of talent amongst Jews it should not be difficult to fill the staff of a Hebrew University. Whether the creation of a special Jewish faculty will react beneficially upon medical science is difficult to foretell. An eminent Hebrew nationalist writer, when speaking of "the perennial spring of living creative power" among Jews, deplores the scattering of the Jewish genius among the cultures of other nations, instead of converging to a focus in a national culture of their own. The creation of a specifically Jewish place of higher study will afford the necessary facilities to those who possess the brains but lack the "golden key" or some other requirement for admission into a university. The intensive cultivation produced by concentration of effort under specifically Jewish surroundings will help some of that dormant Jewish talent to germinate which now dies for lack of stimulus. For this reason the medical faculty all over the world will welcome the establishment of a Hebrew University.

VITAMINES AND COOKING.

To the Editor of THE LANCET.

SIR,—I have charge of two grandchildren, aged 6 and 3, who enjoy excellent health on a diet of porridge, bread-and-butter and jam, vegetables, eggs, boiled milk, and a little meat, and occasional quantities of raw fruit. Except for the butter and fruit this is all cooked food. I know also some working-class families who live in good health on bread, margarine, potatoes, jam, tea, trifling quantities of milk, and meat once a week. Here again nearly all the food is cooked. These children ought not to be in such good health if it be true that vitamines, on the one hand, are necessary in small quantities for good health, and on the other that they are destroyed at a temperature of 100° C.—that is to say, by cooking. It is important that, if cooking destroys vitamines, the public should be told the evidence on which the statement is based. There is much evidence to the contrary, as in the case of the good health of the Scotch and Irish poor of past times, who lived on little else than cooked oatmeal and potatoes. The evidence of the prevention of beri-beri by a change from a diet of polished to unpolished rice is even more damaging to the view that vitamines are destroyed by cooking, for in both cases the rice is cooked.—I am, Sir, yours faithfully,

WALTER KIDD, M.D., F.R.S.E.

Alum Bay, Isle of Wight, August 3rd, 1918.

*** This important question was discussed in our columns several years ago (*vide* annotation, THE LANCET, March 21st, 1914, p. 841), and correspondence which followed upon it (March 28th (p. 931) and April 4th (p. 1002), 1914). It then seemed clear that some vitamines at all events were not destroyed at 100° C. Further studies since made suggest that though the heat employed in cooking impairs the efficiency of certain accessory food substances, it does not destroy them altogether. This is, as our correspondent points out, obviously the case with rice, since only cooked rice is consumed.—ED. L.

OCCUPATIONS FOR WOMEN.

UNDER the title of "Women's Work in War Time," Messrs. T. Werner Laurie, London, have issued (at the price of 1s.) a new edition of a useful little book compiled by Mrs. H. M. Usborne giving a brief sketch of occupations open to women in all spheres of life, including details of the training necessary for obtaining the appointments, its cost, and the emoluments which may be expected. The second part of the book contains short articles by various writers on such topics as "War Work and Future Prospects," women in the Civil Service and in agriculture, the care of school children, welfare work, and Red Cross work in the war.

PARASITIC MANGE.

A LEAFLET has been issued by the Joint Committee of the Board of Agriculture and Ministry of Food, calling attention to the prevalence of parasitic mange at the present time and the importance of the notification of the disease to the police by owners of animals. By an amendment introduced this year to the Order of 1911 an animal affected with mange may still be worked subject to certain conditions, but failure to notify involves a penalty of £20. Rules as to the prevention and cure of mange in horses are contained in Leaflet No. 8 issued free of charge by the Joint Committee, 6A, Dean's Yard, London, S.W.1. There is no doubt that parasitic mange has spread lately owing to the wide movement of horses, to indifferent care on the part of carters and horsemen, and to unhealthy nutrition in the horses themselves resulting from poor feeding. The revival of the rag and bone industry and the demand for small ponies may have been contributing factors. Since acariasis is communicable from animals to man precautions are necessary, especially to prevent men of the Army Veterinary Corps contracting scabies from the horse.

A "DROP-FOOT" SUPPORT.

Mr. C. H. Hough, medical officer in command of the Ethel Hedley Auxiliary Orthopædic Hospital, Calgarth Park, Windermere, calls our attention to an ingenious apparatus for supporting a "drop-foot," which is comfortable to wear and neat in appearance. The appliance consists of an anklet, made of leather or other material, which supports a spring attached to a metal loop which buckles round the instep. The spring which holds the instep band can be easily adjusted to any required position. The inventor is Mr. J. M. Sladen, Cleeve Howe, Windermere.

NECESSITOUS LADIES' HOLIDAY FUND.

THE war has reduced the incomes of many governesses, nurses, actresses, and other members of the poorer professional classes, which this Fund normally benefits. The Fund itself has suffered financially. A letter signed by the treasurer, Miss Constance Beerbohm, appeals for support in order to make a holiday possible for ladies unable to earn in the summer months. For those to whom a holiday is out of the question relief is supplied in the form of food, medicine, and clothing. The address of the treasurer is 48, Upper Berkeley-street, London, W. 1.

AN OVERWORKED MEDICAL MAN.

AN inquest was recently held at Camborne, Cornwall, relative to the death of a child who died before medical attendance could be procured. The medical witness stated that he was working from 12 to 16 hours daily; recently about one-third of the population of Camborne had been ill, and he was then sometimes employed for nearly the 24 hours. He added that it seemed absurd that Camborne, the largest town in Cornwall with a population of about 16,000, should have only two medical practitioners. The coroner suggested that the urban council should apply to the Army authorities for the release of an Army surgeon, and the jury endorsed the proposition.

The Lumleian Lectures
ON
CŒLIAC DISEASE.

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LECTURE II.*

MR. PRESIDENT AND FELLOWS,—In my first lecture I described the clinical features of the condition to which the term "cœliac disease" has been applied, and as a working hypothesis I assumed that the syndrome of symptoms to which Gee gave the name is actually a specific entity. I propose now to consider its pathology, and at the outset I must crave indulgence for the speculative character of much that I have to say.

MORBID ANATOMY.

As evidence of specificity one naturally turns to morbid anatomy and to bacteriology, and, failing these, one seeks a specific cause in disturbance of function in some particular organ or organs. How far is it possible to demonstrate by such inquiry that in so-called "cœliac disease" we are dealing with a morbid entity due always and only to one specific cause?

I must first consider its morbid anatomy, and, unfortunately, the available records and observations are meagre in the extreme.

Dr. Gee himself, in his original paper on the subject, says: "Naked-eye examination of dead bodies throws no light upon the nature of cœliac affection. Nothing unnatural can be seen in the stomach, intestine, or other digestive organs. Whether atrophy of the glandular crypts of the intestines be ever or always present I cannot tell."

Dr. R. A. Gibbons, also, writing a year later (1889) than Dr. Gee, says: "Examination of the bowel after death has led to the discovery of nothing."

The only detailed record of a post-mortem examination which I have been able to find is that published by Drs. Poynton, Armstrong, and Nabarro (1913) in the Proceedings of the Royal Society of Medicine.

It refers to a boy who had had a prolonged attack of diarrhœa lasting eight months in the second year of his life, and again at five years began to suffer with diarrhœa which recurred at intervals until his death at the age of 9 years. The stools were at times of the pale, creamy, offensive character which suggests cœliac disease, the abdomen was much distended, and the boy much wasted. His weight at 8½ years was 27 lb. No record was kept of his height, but he was, as I remember—for he was under my care repeatedly at a convalescent home—much below the normal height for his age. Eventually an attack of vomiting, with severe abdominal pain, for which no cause could be found at autopsy, ended in collapse and death.

The noticeable features at post-mortem were thickening of the walls of the whole intestine both large and small, the mucosa of which shared in the thickening and showed also patches of acute congestion; the solitary follicles were prominent in the large intestine, Peyer's patches in the small were not enlarged, the stomach wall and mucosa showed similar thickening and congestion.

The liver was large, pale, and soft, and showed marked fatty change. There was no obvious naked-eye alteration in the pancreas; there was no tuberculosis anywhere.

Microscopic examination showed much small round-cell infiltration of the mucosa and submucosa, but more in the stomach and small intestine than in the large bowel. In places there were small blood extravasations in the mucosa. The liver showed fatty degeneration. The pancreas showed "marked increase in the interlobular fibrous tissue, particularly that surrounding the ducts," indicating, it was thought, some interlobular pancreatitis.

In connexion with this case I will mention one which showed post-mortem appearances so closely similar that they point almost certainly to the same condition.

Clinically the diagnosis had been in question on account of the unusually rapid course and also the comparatively late age at which the symptoms began. A boy aged 7 years was under my care 19 weeks with looseness of the bowels, amounting at times to actual diarrhœa. He had been sent into hospital as a case of tubercular peritonitis on account of wasting and enlargement of the abdomen, but one early began to doubt this diagnosis, for the stools at times were suggestive of cœliac disease, and, moreover, there was, with œdema and purpura, frequently recurring tetany.

Examination of the stools showed no dysentery bacillus, but a large predominance of a bacillus which could not be exactly identified but resembled in many respects the *Bacillus lactis aerogenes*. On the ground that the case was probably one of cœliac disease the boy, after several weeks of unsuccessful treatment, was put upon a fat-free diet and at once improved greatly, as cœliac cases usually do upon such feeding, but a few weeks later had a relapse of looseness with much distension of the bowel, and died of exhaustion.

At post-mortem there was about half a pint of serum in the abdomen and the bowels presented a remarkable appearance; they were of a dark slaty colour externally, and looked, and were, thickened throughout; the stomach did not show this appearance. On opening the bowel the mucosa was seen to have a swollen and congested appearance throughout, but there was no ulceration.

The liver weighed 19 oz. in spite of being considerably congested; the normal average weight at this age is 23·6 oz., so that the findings in this case confirmed the results of clinical examination by percussion, to which I drew attention in my previous lecture. The pancreas weighed 1 oz. and showed nothing abnormal to the naked eye. There was no tubercle anywhere.

Microscopic examination of the duodenum, ileum, and colon showed much small round-cell infiltration of the mucosa and submucosa, and this was most marked in the duodenum. The liver showed engorgement with blood, but otherwise nothing abnormal. The pancreas showed some excess of fibrous tissue, especially around the ducts, the appearance being suggestive of some pancreatitis.

There was thus, except in the absence in this case of fatty change in the liver, a close agreement in the post-mortem findings in these two cases. Unfortunately scrapings were not taken from the mucosa of the bowel, so that its bacteriology remains doubtful.

It is clear that in these two cases there was an inflammation involving the whole intestinal tract, an inflammation obvious to the naked eye as well as to microscopic examination; moreover, the marked thickening of the wall of the bowel was something quite unusual.

I have examined large numbers of children who have died of diarrhœa, in some cases of many weeks' or months' duration, and in many of very acute intensity, but these ordinary cases of gastro-enteritis or ileocolitis show no such thickening of the bowel; often, indeed, the wall looks rather thinner than normal, as if it were wasted.

I lay stress on this point because it suggests that the inflammatory change was, at any rate, not merely a terminal occurrence; it had probably existed a considerable time, possibly months. On the other hand, it would not be safe to conclude that this was necessarily a primary manifestation, or, indeed, even an essential part of the disease; it is, at least, conceivable that the whole inflammatory process might be secondary to some functional failure of digestive secretions, with resulting abnormal decomposition of food residue favouring the growth of harmful bacteria, and so producing an inflammation entirely secondary in character in the wall of the intestine.

In this connexion I would recall the clinical observation which I mentioned in my previous lecture, that the character of the stools tends to change as the disease progresses.

The pale, porridge-like, rancid stools which are a feature of the earlier stage are often replaced after several months by darker brownish stools with much mucus, perhaps even a little blood, and with an odour offensive enough, but no longer typically rancid. In other words, the stools, which at first were compatible with a fault of digestion alone, at a later stage show clear evidence of inflammatory change in the bowel.

The same difficulty arises in regard to the changes found in the pancreas—Are they primary or secondary?

It is tempting to think of them as primary, as then it would be easy to explain the early occurrence of the pale fatty stools; but again the possibility, if not the probability, must be admitted that the increase of fibrous tissue, the pancreatitis if it be so, may be merely secondary.

BACTERIOLOGY.

If the morbid anatomy, so far as it has been observed, affords no reliable clue to the specific cause of this affection, it gives at least ground for conjecture that some specific bacterial agent may explain the appearances described in the bowel, and though, as I have suggested, these may be secondary rather than primary, the finding of an organism constantly, even where these secondary changes had already occurred, would be presumptive evidence that the organism found was the primary cause of the disease; at any rate, it would give good ground for seeking further evidence of its specificity.

The earliest observations of which I am aware are those by Herter (1908). He studied the fæces of these cases, which he called "intestinal infantilism," and considered that the most noticeable feature was the predominance of Gram-positive organisms. Two, in particular, he considered to be sufficiently constant and predominant to justify the suggestion that they may be causal—namely, a bacillus which he called *Bacillus infantilis* and the *Bacillus bifidus*. Both, however, are by his own admission found in the stools of healthy nurslings, and some observers have found the *B. bifidus* to be common in the normal stool at this age, and have found both of them also in ordinary cases of infantile diarrhœa.

It is therefore clear that neither of these is specific in the sense that its presence is evidence of the disease, nor even in the sense that if it becomes pathogenic at all it will produce this particular symptom-complex. Indeed, the only evidence of pathogenicity mentioned by Dr. Herter in the case of *B. infantilis* is the experiment on a dog which was fed on milk first sterilised and then inoculated with *B. infantilis*. The animal developed a persistent diarrhœa, which ceased only with the discontinuation of the *B. infantilis* milk. A second trial gave a similar result. Injected into guinea pigs, neither *B. bifidus* nor *B. infantilis* showed any pathogenicity.

In addition to these organisms various cocci were found in the stools, but no causal influence is claimed for them.

As confirming the pathogenic rôle of the *B. infantilis* and the *B. bifidus*, Dr. Herter points out that these organisms become less and less noticeable in the stools as the child improves, when such organisms as *B. coli* and *B. lactis aerogenes*, Gram-negative forms, take their place.

*Lecture I. was published in THE LANCET of August 10th, 1918, p. 163.

With these observations are to be contrasted those recorded by Drs. Poynton, Armstrong, and Nabarro in the paper already mentioned.

In their fatal case the stools were examined during life. It is to be noted that the boy was 8½ years old and had been suffering from this affection at least 3½ years when the stools were first examined bacteriologically; they showed predominance of Gram-negative bacilli, some Gram-positive diphtheroid bacilli, and Gram-positive micrococci. Plate cultures showed only Gram-negative bacilli in abundance, and subcultures gave most of the reactions typical of the *B. coli* group. At the autopsy scrapings of the mucosa from the large intestine were used to make cultures on neutral-red agar plates. Coliform and streptococcal colonies were found, but the organism to which special attention was directed proved to be a dysentery bacillus of the Flexner type modified, a Gram-negative bacillus agglutinating with a *B. dysenteriæ Y* agglutinating serum up to 1 in 2000.

In another of their cases bacteriological examination of the stool showed no dysentery bacilli; there were many Gram-negative bacilli and a few Gram-positive streptococci; in this case no opportunity occurred for taking scrapings from the intestinal mucosa.

Bacteriological investigations, for which I am indebted chiefly to Dr. D. N. Nabarro and to Dr. W. d'Este Emery, were made in 11 of my cases.

In three of these the stools only were examined and the dysentery bacillus was isolated from one, a girl aged 2 years, in whom the disease had lasted five months.

In six an agglutination test, as well as a bacteriological examination of the stools, was done, and in four of these the agglutination test gave a positive result with one or more strains of dysentery bacillus (in three almost equally strongly with the Flexner, Shiga, and Y strains); in one of these four a dysentery bacillus of the Flexner type was found in the stools; in two of the six cases where the double investigation was made both agglutination and fæcal examinations were negative as regards the dysentery bacillus. In two cases the agglutination test only was used; one was strongly positive for the Flexner and Y strains of dysentery bacilli and only less strong for the Shiga, the other was negative for all these. These results are shown in the accompanying table:—

Dysentery Bacillus in Cœliac Disease.

Case.	Agglutination test.			Fæces.
	Flexner.	Shiga.	Y	
1	Strong.	Strong.	Strong.	Negative.
2	"	"	"	"
3	Negative.	Negative.	Negative.	—
4	"	"	"	Negative.
5	Strong.	Partial.	Strong.	—
6	—	—	—	Positive.
7	—	—	—	Negative.
8	Partial.	—	Strong.	Positive.
9	—	—	Partial.	Negative.
10	—	—	—	"
11	Negative.	Negative.	Negative.	"

It will be seen, therefore, that out of the 11 cases no less than 6 gave evidence of infection with a dysentery bacillus.

In the two cases in which the stools only were examined and no dysentery organism was isolated the findings were:

In the one, a boy aged 2 years, in whom the disease had been present three months, a predominance of Gram-positive organisms, especially *B. bifidus*, together with streptococci, *B. coli*, and pneumo-bacilli.

In the other, a girl who died at the age of 4 years, after suffering with this disease for nearly three years, the stool a few weeks before death showed Gram-negative organisms predominant, mostly *B. coli*, no dysentery bacillus nor other non-lactose fermenters, a few streptococci, *B. bifidus* in small numbers, whereas about six weeks earlier the Gram-positive organisms, chiefly bacilli, had predominated, and the *B. aerogenes capsulatus* had been present in large numbers; on that occasion, as later, the dysentery bacillus was not found.

The bacteriological findings, it must be admitted, are far from conclusive of any specific infective cause. The most suggestive part is the finding in some cases of a dysentery bacillus, and perhaps the more significance is to be attached to this inasmuch as the serum of some cases was found to agglutinate this bacillus.

The apportionment of pathogenic influence must always be difficult in the face of such a plethora of bacteria as is shown by investigations of the intestinal flora in any particular case or group of cases, but the observations are probably still less conclusive when they are limited to examination of the fæces. More reliable conclusions can be drawn from investigation of the mucosa itself or of scrapings taken from it. An example of this is the discrepancy mentioned in the case quoted above where examination of the stools during life showed no dysentery bacillus, whereas this was isolated in cultures from scrapings of the mucosa taken after death. Herter also found that the *B. bifidus* was much more numerous in the mucus immediately in contact with the mucosa than it was in the fæces. While, therefore, negative results in the bacteriology of the fæces have a certain value they must be received with caution, especially where, as in several of my own cases, only one or two examinations were made. For this reason the agglutination test may be regarded as more reliable.

I think, however, that one must be careful not to attach too much importance even to the agglutination test until much more numerous observations are available, and in particular until similar observations have been made upon cases in the early stages of the disease.

All the cases in which I have mentioned the finding of the dysentery bacillus in the stools, or a positive result for the dysentery organism with the agglutination test, have been cases of at least several months' duration, the earliest fully three months, and some as long as three years.

Before we can regard the dysentery organisms or any other as the specific cause of this affection it is necessary to exclude the possibility that their presence may be a mere epi-phenomenon.

Agglutination, no doubt, goes some way towards this; it proves that the presence of the particular organism concerned is exerting some pathogenic influence on its host, but this does not prove that it is the primary pathogenic influence. The growth and the predominance of this or that organism depends largely upon the soil, and probably there is no part of the body where the soil varies so much as in the intestine, but its variations in health are, so to speak, within fixed limits and dependent partly upon the character of the ingesta and partly upon digestive processes.

It is known that with temporary disturbances of digestion there are alterations, if not in kind, certainly in the relative proportions of the intestinal bacteria, and it is therefore conceivable that with profound and prolonged disturbance of digestive processes the soil may be so altered that an organism like the dysentery bacillus, which is now known to be much more widely disseminated than was thought a few years ago, might find a particularly favourable nidus and add its pathogenic effects to those of the primary digestive trouble.

I suggest this only as a possibility. There is clearly a strong probability that in some of the cases of cœliac disease, if not in all, there is a primary infective catarrh of the bowel, and that this is due, in some at least, to the dysentery bacillus.

FAILURE OF FAT ASSIMILATION.

I turn now to another question which calls for consideration in seeking for the primary and essential cause of this disease. Is it possible that the *fons et origo* is some profound digestive disturbance and not infective at all? As I. pointed out in describing the clinical symptoms, one of the most characteristic phenomena of cœliac disease is the pale stool, with appearance and smell suggestive of excess of fat.

As a homely method of demonstrating this, I have observed the sooty, spluttering flame when a match dipped in these fæces is set alight. Microscopically, also, it is evident in some of the stools by the large excess of fatty acid crystals, and sometimes by the obvious excess of fat globules, but the only certain gauge is quantitative chemical analysis.

According to Dr. Cammidge,[9] the normal range of variation on an ordinary mixed diet is 10–25 per cent. of fat in the stool, whereas in cœliac disease Herter found in one case (a boy, aged 8 years, in whom the disease had lasted five years) the total fat in the fæces amounted to 25–47·2 per cent. In one of Dr. Cheadle's cases the fat in the stools varied from 19·8 to 49·65 per cent., and in another was 33 per cent.

Dr. Cammidge has estimated the fat in three of my cases.

1. A girl, aged 5¾ years; duration of disease, 3¾ years; percentage of fat, 26·9.
2. Boy, aged 18 months; duration of disease, five months; percentage of fat 73·1.
3. Girl, aged 3 years; duration of disease, 12 months; percentage of fat, 42·5.

I have no figures from my own cases to show what proportion the fat passed in the fæces bears to the fat taken in the food—a very important practical point. Herter, however, investigating one of his cases, found that there was a loss of 20–25 per cent., and on one occasion even as much as 40 per cent. of the ingested fat. The normal loss in health varies from 2 to 8 per cent.; the average is 5 per cent.

Failure to absorb the fat of the food may be due to various causes, but traced to their sources these fall into two categories: (1) lack of preparation of the fat for absorption through deficiency of the fat-splitting function of the bile or of the pancreatic secretion; (2) failure of the intestinal surface to absorb, in spite of the fat being sufficiently prepared by the fat-splitting processes and saponification.

Question of Hepatic Insufficiency.

The pale colour of the stools led Dr. Cheadle to suppose that the deficiency was mainly one of bile.

Speaking (1903) of the stools in these cases, which he grouped under the heading acholia, he said: "They are obviously as destitute of bile as those of complete obstructive jaundice." More in accordance with recent observations is Dr. Gee's statement: "The paleness is commonly supposed to signify lack of bile, but the colour of fæces is a very rough measure of the quantity of bile poured into the duodenum, nay, more, stools are not always so wanting in bile as they seem to be, in particular opaque white food such as milk curd," (he might have added, "milk fat") "undigested, will hide the colour of much bile."

Certainly of any organic change in the liver there is no hint in this disorder.

Even in the most severe cases and in the most extreme stage there is no tendency to jaundice, nor has any change been observed post-mortem, except that in one of the cases quoted above the liver was fatty, but such a change is found, presumably as a terminal occurrence, in various conditions where it is certainly no essential part of the disease, for instance, with abdominal tuberculosis.

Analysis of the fæces, however, in two out of three of my own cases showed some deficiency of bile.

Indeed, in the one mentioned above, containing 73·1 per cent. of fat, there was only a trace of stercobilin and no biliverdin. In the other, containing 26·9 per cent. of fat, Dr. Cammidge notes "the reaction for stercobilin is not as well marked as in a normal stool." In both these cases it seems natural to suppose that deficiency of bile is responsible, in part at least, for the failure of fat absorption.

On the other hand, I must mention that in the third case, although there was 42·5 per cent. of fat in the stool, there was no apparent diminution of stercobilin (incidentally, it is noteworthy that the colour of the stool in this case was nearly as pale as porridge, showing that the colour alone is little gauge of the activity of the liver). The deficiency of stercobilin in these cases has been noted also by Dr. Hutchison,[10] but he points out that there is no other evidence of hepatic insufficiency, in particular the urea secretion attains its normal level.

In connexion with this question of hepatic insufficiency I would recall the observations mentioned in my previous lecture showing that the liver dullness in cœliac disease is usually smaller than normal. I know not whether there is any connexion between the smallness of size and the deficiency of secretion, but it is, at least, a curious coincidence.

On the whole, there seems to be evidence that one of the fat-splitting agents, the biliary secretion, is deficient, at least in some cases. I shall consider later how far this is responsible for the failure of fat absorption.

Question of Pancreatic Insufficiency.

The chief agent in the preparation of fat for digestion being the pancreas some fault in this gland or its function has naturally been suspected.

Dr. Gibbons (1889) suggested that cœliac disease might be due to some profound inhibition of the functions of the pancreas. The combination of symptoms also, chronic looseness of bowels with arrest of growth, recalls the cases which Dr. Byrom Bramwell[11] described as "pancreatic infantilism."

But is there any satisfactory evidence of pancreatic insufficiency in these cases of cœliac disease?

Approaching the question first from the clinical side I tried in three cases Sahli's test, administering iodoform in glutoid capsules to see if the capsule, insoluble by the gastric juice, had been dissolved by the pancreatic secretion, so that the drug could be detected in the urine within a few hours after administration. In one only of the three this reaction—i.e., the failure of the drug to appear in the urine—indicated deficiency of pancreatic secretion.

I also tried Loewi's test, dropping adrenalin solution into one eye and taking dilatation of the pupil on that side as an indication of pancreatic insufficiency. In four cases out of six there was no dilatation of the pupil, in two there was slight but quite definite dilatation, and one of these was the case in which Sahli's test was also positive, in the other the Sahli's test was not used.

The microscopic investigation for azotorrhœa, as it has been called—in other words, failure of digestion of muscle fibres, which has been regarded as evidence of imperfect pancreatic digestion—gave negative results in five cases examined.

In five cases the amylase content of the urine was investigated on the lines directed by Dr. Percy Stocks.[12]

In the absence of any sufficient data for children of this age the normality or abnormality of the results could only be judged by applying the same method to control cases of approximately the same age. This was done, and it was found that on the whole there was remarkably little variation amongst the controls, 10 units was the number found in three cases, 6·6 in one, and 20 units in two cases, whilst of cœliac cases one showed 13·3 units, another 10, another 20, and another 6·7, so that in none was there an increase of amylase such as is supposed to indicate affection of the pancreas.

Whether the amylase content of the urine is a reliable index of the sufficiency of the pancreas has yet to be proved. It is difficult to believe that the amount of amylase in the urine can be a safe indication of the efficiency of the pancreas unless the diet is taken into account, for Pavlov has shown how profoundly the ferments of the pancreatic juice can be influenced experimentally by diet.

To sum up the result of my clinical investigations of the pancreatic function in these few cases, there were indications in some that it was defective, but in the majority all the tests applied proved negative.

So far, therefore, as these tests have any weight, the balance of evidence is against any pancreatic insufficiency as a constant or essential factor in the disorder.

There is another clinical observation which may point in the same direction—namely, the failure, at any rate in my hands, of pancreatic extract in treatment, a point of contrast between these cases and the "pancreatic infantilism" in which Dr. Bramwell obtained such rapid and remarkable improvement with preparations of pancreas.

Laboratory investigation of the stools gives but little support to the idea of pancreatic insufficiency.

Indeed, in the three cases in which Dr. Cammidge examined the stools for me, the trypsin index in each was rather unusually high, suggesting that there was even abnormal activity in that gland. In two of these Dr. Cammidge thought that the excess of trypsin was so considerable as to point to some active inflammatory change in the pancreas, an interesting suggestion in view of the post-mortem finding in the cases I have quoted.

Further evidence of pancreatic activity is the character of the fat passed in the stools. Herter's observations showed that the greater parts of the fats lost are in the form of fatty acid, and that the sum of the fatty acids and the soaps make up, on the average, about three-quarters of the fat lost. These results, compared with the normal averages found by Dr. Cammidge (1 per cent. of neutral fat to 20 per cent. of fatty acids and soaps), show a proportion of neutral or unsplit fat which would not be inconsistent with some slight degree of pancreatic insufficiency.

Even this, however, is negatived by the finding in my three cases already mentioned, where the proportion of split fat in the stool was much higher, varying from 25·9 per cent. to 72·1 per cent., as against only 1 per cent. of neutral fat. The percentages will be best seen from the accompanying table, in which the normal is given for comparison:—

—	Total fat.	Neutral fat.	Fatty acids.	Soaps.
Case 1	26·9	1·0	14·6	11·3
Case 2	73·1	1·0	33·8	38·3
Case 3	42·5	1·0	30·1	11·4
Normal, on mixed diet (Cammidge)	21·0	1·0	9·0	11·0

It is evident from these figures that there is no failure in the splitting of fats, and if one assumes that the pancreatic secretion plays the chief part in fat-splitting the idea of any "profound inhibition of the function of the pancreas" is clearly untenable.

Failure of Fat-absorbing Power of Intestinal Mucosa.

It would seem, then, that, although in individual cases the biliary secretion may be found deficient, there is no interference with the fat-splitting process which prepares fat for absorption, and therefore we must conclude that the fault lies in failure of the absorptive function of the intestinal mucosa. Is this a functional failure or is it due to organic change in the intestinal mucosa?

If we could assume as the primary factor in cœliac disease a functional failure of the fat-absorbing power of the intestines, this would account for many of the features of the disease, for, as I have already pointed out, the excess of unabsorbed fat in the stools favours putrefactive changes which in themselves probably render the stool irritating to the bowel and so would account for the looseness of the bowels; moreover, with putrefactive changes there would be alteration in the character of the intestinal flora, and probably conditions favourable to the growth of pathogenic organisms, so that, as a secondary phenomenon, inflammatory lesions would occur.

But apart from the difficulty of proving that purely functional failure of intestinal absorption ever occurs, there is such definite clinical evidence in a certain proportion of cases of cœliac disease that some catarrhal or inflammatory condition is an early, if not the earliest, pathological change that is seems a more probable view that even in the cases which appear to begin quite insidiously there is some degree of catarrh, for these, like the others which start with definite diarrhœa, show before long more or less of the typical recurrent looseness of the bowels.

Gee evidently suspected that there was some organic change in the intestinal mucosa, for he hints, as I have mentioned, "atrophy of the glandular crypts in the intestine," but even in the fatal cases which I have described, in which the disease had lasted in the one five months and in the other at least four years, microscopical examination showed no such atrophy. On the other hand, definite acute inflammatory infiltration was found, but it is extremely doubtful whether the appearances were consistent with inflammation which had lasted years, as it must have done if it is to acconnt for the non-absorption of fat, which is one of the earliest symptoms of cœliac disease.

Moreover, it is difficult to reconcile the presence of an acute inflammation as an essential factor in the disease with the observations of Dr. Gee that the bowel showed nothing abnormal in his case. The clinical facts also are opposed to any acute inflammatory condition as an essential factor, for sometimes the onset is quite insidious and without diarrhœa; on the other hand, the symptoms in the later stages of the cases which do badly, the passing of much mucus and sometimes blood, point unmistakably to some acute irritation, probably inflammatory process, in the bowel.

The first step in the disease may well be a catarrhal condition of the mucosa in the small intestine, where in health the absorption of fat occurs chiefly or entirely.

I suppose it is conceivable that such a catarrh, due to bacterial irritation, might eventually, especially with the constant irritation due to putrefactive change in the unabsorbed fat, become more acute or be altered in character by the supervention or predominance of some particular organism—e.g., the dysentery bacillus.

But though it is agreed that catarrh of the small intestine may interfere with the absorption of fat, it is difficult to see why, if this explanation be the correct one, the failure of fat-absorption should be so much more pronounced a feature in cœliac disease than in other diarrhœal conditions where catarrh of the upper part of the whole of the bowel occurs—for instance, the common summer diarrhœa or other forms of gastro-enteritis.

WASSERMANN REACTION.

In the search for a specific cause of cœliac disease the possibility of congenital syphilis had hardly presented itself to my mind, so conspicuously absent had been all the usual symptoms of such infection.

In the light, however, of recent experience showing how slight or equivocal may be the clinical evidence where a Wassermann test is found to be positive—and one must add that in some such cases, but by no means in all, the diagnosis of syphilis is confirmed by the results of treatment—it seemed advisable to apply this test to cases of cœliac disease. This was done in six cases; in three out of the six the reaction was positive.

It would be out of place here to enter into any general consideration of the significance to be attached to a positive Wassermann reaction obtained where all other evidence of congenital syphilis is lacking, but at the risk of being held guilty of heresy I will venture to say that in my opinion a positive Wassermann reaction, extremely valuable as it is as confirmatory evidence, is not by itself proof of congenital syphilis.

These cases of cœliac disease in which the test was positive were none of them in any way suggestive of congenital syphilis so far as family history or the child's own past history was concerned, nor on examination was there any symptom of congenital syphilis, unless the cœliac disease itself was to be regarded as such. Treatment with mercury in one case, so far from doing any good, seemed rather to hinder improvement; at any rate, the child began to improve directly it was stopped; in another it seemed to have no effect at all.

There seemed, in fact, so little to warrant accepting the reaction as proof of congenital syphilis that we sought corroboration in testing the parents and other members of the family.

In one severe case of cœliac disease, a girl aged 3 years and 5 months, the Wassermann reaction was done twice and was on each occasion strongly positive; the mother and the father were both definitely negative.

Another case, a girl aged 5½ years with moderately severe cœliac disease and showing, as did the previous case, very marked arrest of growth, gave a definite positive Wassermann reaction; her mother gave a negative; the father was abroad and could not be tested.

The third case, a girl aged 5 years and 4 months, a milder case of cœliac disease but showing arrested growth, gave a positive reaction; the father was not available for testing, but the mother and also the sister, 15 months younger than the patient, were both entirely negative.

In none of these cases had the relatives who were tested had any treatment for syphilis so far as was known.

I leave those who consider a positive Wassermann reaction to be *per se* proof of congenital syphilis to explain such cases with what ingenuity they may.

These findings seem to me rather to emphasise the uncertainty of significance attaching to this reaction where there is no other reason to suspect syphilis, and to support the view that there are other conditions beside syphilis which may give a positive result with this test.

TOXIC ABSORPTION.

I shall turn now from the unanswered, and at present unanswerable, questions of pathogeny which I have raised to a consideration from the pathological standpoint of some of the clinical phenomena of cœliac disease. One of the noticeable symptoms, especially in severe cases, is dropsy occurring chiefly in the distal parts of the limbs and also the face, and sometimes associated with ascites.

This is common enough in any prolonged diarrhœa in infancy and, indeed, with any condition of extreme wasting. As it occurs most commonly in advanced stages of disease it is apt to be regarded as chiefly, if not altogether, an evidence of failing circulation, with, perhaps, some hydræmia as a contributory cause.

Without denying that these may play some part, as also may the diminished urinary secretion in diarrhœa with the resulting retention of chlorides, I would point out that there may be another factor, and that the œdema which occurs in cœliac disease may well be determined by it—namely, toxic absorption from the intestine.

Apart from the fact that no particular substance having this effect has been isolated from the intestine or its contents, it may be objected that in cœliac disease wasting and feebleness are usually pronounced, and that therefore there is no reason for seeking further for a cause; at any rate, such a view would require support from cases in which these recognised causes are absent.

There are at least two groups of cases which seem to me to corroborate this suggestion.

First, a very common one in which there is puffiness of the eyelids, especially of the lower eyelid, accompanying chronic constipation or chronic indigestion; this surely is œdema at its vanishing point, or rather its first appearing point. I have thought that among the children brought to one for minor ailments one could often pick out those with chronic intestinal disorder, especially affecting the lower bowel, by this puffiness of the lower eyelids.

The second group of cases, in which clinical association and sequence seem to point to a similar connexion, is a rare condition of general œdema with no albumin in the urine and no evidence of organic disease. Puzzling cases are these, and various are the explanations which have been offered. I am not referring to those in which such a condition follows scarlet fever and is associated with diminution in the secretion of urine without albuminuria, but to children in whom there has been no recent illness, and the general œdema apparently stands by itself, an unexplained phenomenon. In some of these the stools are found to be extremely fœtid and offensive although there is no diarrhœa, rather indeed the reverse; therewith the urine may or may not be diminished in quantity.

An instance of this was a boy, aged 11, who a week before coming under observation was noticed to be puffy in the face, and three days later his legs were swollen; the bowels were open three or four times a day, and the stools were extremely offensive. There was some fluid in the abdomen and general dropsy. The urine contained no albumin, it was high coloured, and rather scanty. The boy was kept under observation, and the outstanding feature, apart from the œdema, was the foul fœtor of the stools.

I can offer no proof that the œdema in such a case is due to toxic absorption from the bowel, but the association suggests it.

How far the œdema which accompanies such a condition as ileo-colitis and prolonged failure of digestion is due to such absorption and how far to the wasting and exhaustion is, I think, open to question, but there is much to suggest that in some of these also the œdema is determined largely by the unwholesome character of the stools. I have particularly noticed that in some wasted infants the appearance and disappearance of œdema corresponded closely with variations in the degree of unwholesomeness of the stools, and seemed to be much more influenced by this than by the number of the stools.

This observation certainly applies to cases of cœliac disease, in which, therefore, I would suggest that œdema is to be regarded as due, in part perhaps to feeble circulation and hydræmia, but in part at least to toxic absorption from the bowel.

Certainly the œdema is not necessarily terminal. I have known it to occur in several cases quite early in the disease, and in those that recovered as well as in those that died.

Another symptom which is worthy of consideration in this connexion is purpura.

This, like œdema, is common enough as a late symptom of many diseases which end with emaciation and exhaustion, but it is particularly noticeable that in cœliac disease purpura is sometimes a recurring symptom for years.

For instance, in a girl who died at the age of 9½ years after suffering with cœliac disease from the age of 20 months, bruise-like patches of purpura appeared on many occasions from the age of 2½ years up to the time of her death, although during the greater part of this time she was well enough to be up and about.

In another case, a boy, aged 7¼, in whom the disease had been present for five years, but who was still well enough to get up and walk about, patches of purpura occurred from time to time, and noticeably in relation to unhealthiness of the stool; when the stools improved and became more normal the purpura would cease to appear, then a particularly unhealthy stool, without diarrhœa, would be associated with a fresh patch or two of purpura.

I would lay some stress upon the fact that often, so far from there being any increase of frequency of stools, there has often been a noticeable decrease in their frequency, perhaps no stools at all for 24 hours, just before the purpura appears. The non-frequency of stools may be more than a coincidence; delay in the evacuations of the unhealthy fæces may be a determining cause of the absorption which results in purpura.

But, even if this view be correct, the particular substance which causes the purpura is still to seek.

Mere constipation, even when most chronic and severe, does not cause purpura, although there may be various symptoms suggestive of toxic absorption, headache, lassitude, sallow skin, and so forth; it is probable, therefore, that the cause is to be sought either in the products of particular bacteria or in the chemical products of intestinal putrefaction, and only when these hypothetical substances are present does absorption from the intestine produce purpura.

It has been suggested that indol may be the poison in question; and when indol is being formed in large quantities in the bowel this is indicated by a marked indican reaction in the urine. It has been specially noticed that in many cases of purpura a marked indicanuria is present; in one of my cases of cœliac disease I found a very definite indican reaction during the eruption of purpura, and this reaction became much less, in fact, almost entirely absent, when the purpura ceased to appear.

Apart from œdema and purpura, the occurrence of tetany in cœliac disease probably points to toxic absorption.

Here, at any rate, the question of cause is not complicated by any likelihood of production by feebleness or failing circulation; the tetany may, as in one of my cases of cœliac disease, recur for years, and that when the patient is well enough to be up and about.

It is true that tetany has been attributed to deficiency of calcium salts in the blood; and in cœliac disease there is an obvious reason for excessive loss of calcium. Quite apart from the question of tetany, this drainage of calcium was emphasised by Dr. Herter in connexion with the amount of split fat in the form of soap passed in the fæces. In one case he found that in ten days a boy aged 8 years lost 1·07 g. of calcium oxide in 198 g. of soap in the fæces, and such a loss, though it may sound very small compared with the intake of calcium in the food, is really large in relation to the very small proportion of the food-calcium which can be absorbed in health.

But does this satisfactorily explain the tetany?

I think not. If it were so, one would certainly expect that the occurrence of tetany should correspond more or less closely with the periods when the fatty character of the stools is most in evidence. I have no analytical evidence that the early pale, rancid, obviously fatty stools contain more fat than the later brown slimy or shreddy stools in which excess of fat, if present at all, is certainly not obvious; but if one may assume this, as I think one fairly may, then there is no such correspondence between the tetany and the fatty stools; indeed, the reverse is the case, for tetany is not an early symptom in cœliac disease, it occurs after the disease has been present for a long time and usually when the stools, though extremely offensive, have lost the characteristic fatty appearance of the early stage.

Absorption of some toxic material from the bowel seems much more in harmony with the clinical fact.

ARREST OF GROWTH.

From these questions of toxic absorption I pass to the consideration of one of the most striking phenomena of cœliac disease, the arrest of growth.

Why do these children fail to grow? It is easy to reply vaguely that the cause is the general failure of nutrition, but such an answer is inadequate. It is unfortunate that much that has been written on the problems of growth entirely ignores the fact that increase of weight and length do not necessarily go *pari passu*, and that experimental evidence as to the one is not necessarily applicable to the other. A physiological illustration of this must be recognised by any one who measures many children at the growing age; a rapid increase in height is not associated usually with increase in weight, often, indeed,

with a marked decrease, and the child may be visibly thinner; this is very noticeable in infants and gives rise to much needless anxiety, though I have not seen it mentioned in a single text-book that an infant in perfect health will often cease to gain or will actually lose weight when it is growing rapidly in length.

In disease, also, there is no necessary correlation between the growth in length and the state of general nutrition as shown by the weight. As I have mentioned already a marasmic infant may grow steadily in length, and a child may become tall whilst wasted with chronic tubercular disease.

It would seem, therefore, on grounds of analogy that there is no justification for assuming that the remarkable arrest of growth in length in cœliac disease is a necessary corollary of the arrest of growth in weight, and, while it seems only reasonable to assume that both may be related in some degree—though not necessarily in the same degree—to the general failure of nutrition, the failure of growth in length is so much more pronounced in cœliac disease than in most other conditions of disturbed nutrition that we may well seek for some special cause.

Amongst the various possibilities which present themselves there is one which, I think, ought to be considered—namely, that deficiency of fat absorption may be sufficient cause for arrest of growth.

This suggestion has the support of experimental evidence; young rats fed on a diet of lean horseflesh, so that there was hardly any fat given, became stunted in growth, even though apparently in good health; with a diet exclusively of oxflesh, which, though still affording them too little fat, contains more than does horseflesh, the rats throve better, but their growth was still retarded to some extent. (Watson and Hunter.[13])

If the failure of fat assimilation be the cause of the failure of growth this would bring cœliac disease into line with Byrom Bramwell's pancreatic infantilism, where arrest of growth was associated with the passage of fatty stools and where improvement of fat absorption by administration of pancreatic extract, with consequent disappearance of the fatty character of the stools, was followed by rapid growth.

It is not apparent, however, how deficiency of fat in the diet has any special influence in arresting growth.

If the absorption of calcium is dependent to any considerable extent upon the splitting of fat and combination with the fatty acids thus set free, and if deficient absorption of calcium inhibits growth then the order of events is easy to understand. As I have already pointed out, Herter has already shown that there is an appreciable loss of calcium with the soaped fat passed in the stools of cœliac disease. Clearly the same result would come also from any considerable failure of fat splitting or saponification.

I have mentioned a case in which remarkable bending of the bones began at the age of 8 years, after the cœliac disease had been present nearly five years, and the child had been kept for four years on a diet containing a minimum of fat; an occurrence strongly suggestive of calcium deficiency.

I have shown, also, that there is very striking delay of ossification of epiphyses, which may indicate a deficiency of calcium, but, granted this deficiency, is it adequate cause for the striking arrest of growth in cœliac disease? I have shown in my previous lecture that growth in height shows no necessary relation to the date of commencement, nor to the stage of advancement of ossification in epiphyses.

That relative deficiency of calcium and rapid growth are by no means inconsistent is shown by what happens in cretins when thyroid treatment is begun at the age when walking has recently been acquired, the child begins to grow rapidly and at the same time if the child is allowed to run about much, the previously straight legs become bowed and bandy, presumably from deferred calcification of the rapidly growing bone.

The disease which might have been expected to throw most light upon this point is rickets.

There is strong evidence that fat deficiency in the diet is a large factor, perhaps the determining factor, in the causation of rickets; moreover, there is clear evidence of deficient calcium deposit in the rachitic bone. Here, then, we seem at first sight to have the required link bringing the fat absorption into direct relation with formation of bone.

But if this view of the pathogeny of rickets is correct we are faced by another difficulty in regard to cœliac disease—it should be associated closely with rickets; whereas one of the very striking facts which I have already mentioned in connexion with its symptomatology is the entire absence of rickets in most cases. Conversely also, if the failure of fat absorption be the cause of the stunting in cœliac disease, arrest of growth might be expected far more commonly than it occurs in rickets.

The problem is evidently a complicated one, and it is not rendered less so by a comparison with such a condition as the congenital steatorrhœa described by Garrod and Hurley,[14] in which the passage of 80 per cent. of fat in the fæces, amounting to a loss of 25 per cent. of the fat intake, was associated neither with arrest of growth nor with rickets.

THE LATE JOHN ST. CLAIR BOYD, M.D. R.U.I.—Dr. John St. Clair Boyd, the well-known Belfast surgeon, who died suddenly of cardiac disease, was a graduate of Queen's College, Belfast. After further study at Edinburgh and Paris he became an assistant to Mr. Lawson Tait in Birmingham when that well-known surgeon was at the height of his career. Returning to Belfast, he was appointed surgeon to the Samaritan Hospital, but ill-health obliged him to retire about ten years ago. He was also consulting gynæcologist to the Ulster Hospital for Women. Dr. Boyd was a man of literary taste and well versed in the study of the Irish language. He married a daughter of the late Dr. Stevenson Macadam, lecturer on chemistry in the Edinburgh Extra-Mural School.

THE TREATMENT OF CASES OF SHELL SHOCK IN AN ADVANCED NEUROLOGICAL CENTRE.

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WHILE in charge of an advanced neurological centre in France during the period November, 1916—February, 1918, I have had to deal with between two and three thousand cases of psychoneurosis (neurasthenia, hysteria, and psychasthenia), and in the following paragraphs I will endeavour to give, in broad outline, a general view of the methods of treatment which have seemed to be most useful, and a statement of certain statistical results. The great majority of cases came under my care within 48 hours of their breakdown, and I was able to return 70 per cent. of them to the line after an average of a fortnight's rest and treatment in hospital; of course, certain individual cases needed a longer rest in hospital, up to two or three months. I feel sure that this success was due more often to *prevention* than to cure. By seeing so many of these light cases so early I was able to *prevent* the development of further hysterical or pithiatic symptoms which would otherwise have taken place.

Essential Factors in Causation and Treatment.

It is important that the patient should have the benefit of a thorough examination of his nervous system at the earliest possible moment after the shock of the shell explosion. The incipient functional symptoms from which he is suffering make him fear, vaguely or definitely, that he has sustained some organic injury of the nervous system. This fear encourages the further development of such symptoms. It and its effects can be brought to an end by the reassuring remarks of the neurologist, after he has completed his examination. But those remarks must be repeated and forced upon the patient's notice. Especially is it the note of certainty in the doctor's voice which carries conviction. By one means or another the patient must be completely convinced of the truth of the doctor's explanation of his symptoms, and of the promise that they will quickly disappear. This conviction must pass beyond the stage of mere intellectual awareness and acceptance, and acquire the dynamism of strong emotion. Enthusiastic expectation of a rapid recovery is another essential condition of success, just as it was an earlier apprehension which was responsible for the development of the symptoms.

This is more than mere suggestion and counter-suggestion. The mechanical processes of auto- and hetero-suggestion do certainly come into play in the *fixation* of the symptoms and in their later development and multiplication. But the *origin* of the symptoms (tremors, difficulties of speech and locomotion, profuse sweating, headaches, diminution or loss of various forms of sensation, &c.) is to be found in the intense emotion of fear caused by the shell explosion, of which they are the objective physical manifestations. In like manner, although counter-suggestion plays its part in the cure of these functional symptoms, the factors which are of very much greater efficacy and importance in bringing about a *permanent* cure are: (1) persuasion, whereby the patient is rationally convinced of the true nature of his symptoms; and (2) the sthenic emotions of confidence, conviction, and expectation, which have a unifying effect upon the mind, and counteract the disintegrating effect of mechanical suggestion.

It will thus be seen that I adhere to Déjerine's theory of the pathogeny of the psychoneuroses in preference to that of Babinski. As regards the "period of meditation" which often elapses between the occurence of the emotional shock and the onset of the earliest symptoms, I would also follow Déjerine in holding that it is a period of subconscious emotional development. Babinski and his followers believe that it is a period during which auto- and hetero-suggestion coöperate to bring about the ultimate outbreak of the symptoms. The original shock, no doubt, produces some weakening of mental synthesis, although outwardly the patient does not appear greatly disturbed. The appropriate

emotional reaction, with its innervations and external manifestations, develops gradually during the following few hours or days, as the patient's intellectual awareness of the accident arouses by association earlier emotional memories. The symptoms that eventually arise are such emotional manifestations in a state of relative dissociation and permanence. As Déjerine says:—

"Everything that an emotion may create in an accidental and transient way hysteria may accomplish in a lasting way."[1]

Case of Delayed Onset of Symptoms.

I have several examples of this delayed onset of symptoms in the case of hysterical mutism and hysterical hemiplegia which I hope to analyse and describe on another occasion. But I have obtained the following unbiased introspective description from one of my officer patients who suffered from hysterical spasmodic contractions of the abdominal and leg muscles and profuse sweating and tachycardia, which came on some days after the time when he was exposed to heavy shelling. His account is as follows:—

"My feelings during the shelling are hard to define, as I was too fully occupied to allow for much thought on the subject. Owing to the small area to which we were confined, there was no opportunity of being able to give vent to the pent-up feelings that were in me, and in consequence my nerves were strung up to such a pitch that I felt that something in me would snap. Every shell fired seemed to be nearer the mark than the last, and the ground all around was covered with shell holes. The general feeling was that 'the next one' would land right in the post. Part of the trench had already been blown in. The back blast from each explosion flattened us up against the wall of the trench.

The days following I was always thinking of this episode, and nights I could never sleep, but would just doze and then wake up with a start, with my heart palpitating furiously and with great difficulty in breathing. I would also find myself in a profuse cold sweat, especially of the scalp, forehead, and hands. Then my legs began to be affected and would shake as though I had the ague. This would come on in the day at times, but invariably happened at night when I was lying down. About 10 days later I was troubled with my stomach [he means abdomen]; at night something—I suppose my nerves—started pulling me up forward as I lay down and my body shook all over. This would happen every two or three minutes. This action affected my back, and I had a belt of pain around me. During this time I was always troubled with my heart, and I found it hard to lie down at all. The cold sweats also continued."

Emotional Origin of the Symptoms.

This description, written by an officer unversed in psychology and quite ignorant of the question at issue, is in favour of the emotional origin of the symptoms, although, of course, factors of suggestion are not entirely absent. The emotion of fear in this patient during civil life always produced cold sweats, palpitations, and tremors of the limbs—just as in the case of a patient subsequently suffering from functional paraplegia it used to "take him in the legs" and he would feel weak at the knees. The period of incubation in some cases seems to correspond to the time during which the patient is struggling, with a certain degree of success, to repress the painful emotional memories and to remain "captain of his soul." The final outbreak of the symptoms represents the partial failure of this effort of repression, or rather is a condition of the success of the *psychological* repression. The symptoms are "convertion" symptoms, in Freud's sense of the term—i.e., they represent painful emotion converted into physical innervations.

With a certain class of patients, a more detailed form of mental analysis is necessary. In these cases the nervous breakdown is partly due to earlier mental worry, and the "active service" element is simply the last straw. The patient's mind is a battlefield of conflicting emotional tendencies, many of which he himself fails to recognise. By long talks with him, following up thread after thread in the association of his ideas, one can recall repressed memories of earlier epochs in his life, showing him the true emotional significance of them and their connexion with his present disability. In this way the patient learns to understand himself, and therefore I would call the method "*autognosis*." Self-knowledge brings with it self-control in the psychic domain. An analysis of the patient's dreams is often of the greatest help in this method. Indeed, the dreams of some of these patients are so terrifying that they have to be dealt with, and the quickest way to exorcise them is to analyse them—i.e., to trace the different parts of the dream back to their source in the patient's earlier life (by the method of "free" association), and so to discover the underlying unconscious dream thoughts which have been enjoying a disguised or distorted fulfilment in the dream itself.

[1] Psychoneuroses and Psychotherapy, pp. 269, 270.

Treatment.

I now come to a therapeutic method which I have found to be especially valuable in dealing with *early* cases of shell shock exhibiting pronounced symptoms of functional nervous disorder, such as functional mutism, deafness, paralysis, tremulousness, &c., accompanied by more or less extensive amnesia. It is a form of hypnosis, but free from the defects attaching to the ordinary use of that method. To explain by an example:—

Here is a patient who was blown up and buried by a shell explosion two days ago and lost consciousness. On regaining consciousness some hours later he found that he was quite dumb, and also had lost all recollection of the shell explosion and of the events immediately following thereon. In other words, he is functionally mute and has retrograde amnesia. His memory for other recent experiences is also vague, but he is in full command of gesture-language and can write down on paper all that he wishes to say.

I interview him alone in my office and tell him in a tone of conviction that I shall restore his speech to him within a few minutes if he will do exactly what I say. I then tell him to lie down on a couch, close his eyes, and think of sleep. I urge him *to give himself up to sleep*, to let sleep come to him, as it assuredly will. I tell him that he is getting drowsy, his limbs are getting heavy with sleep, all his muscles are relaxed, he is breathing more and more slowly, more and more deeply. Above all, that his eyelids are getting heavy, as heavy as lead, that he feels disinclined to open them, that he cannot open them however hard he tries. At this stage, which generally supervenes within two or three minutes, he really cannot open his eyes. This is a stage of very light hypnosis quite sufficient for my purpose.

I now tell him that the moment I put my hand upon his forehead he will seem to be back again in the trenches, in the firing line, in the fighting, as the case may be, and will live again through the experiences that he had when the shock occurred. This I say in a tone of absolute conviction, as if there is not the slightest shadow of possibility of my words not coming true. I then place my hand on his forehead. He immediately begins to twist and turn on the couch and shouts out in a terror-stricken voice. He talks as he talked at the time when the shock occurred to him. He really does live again through the experiences of that awful time. Sometimes he speaks as if in dialogue, punctuated with intervals of silence corresponding to the remarks of his interlocutor, like a person speaking at the telephone. At other times he indulges in imprecations and soliloquy. In some cases he is able to reply to my questions and give an account of his experiences. In others he cannot do so, but continues to writhe and talk as if he were still in the throes of the actual experience. *In every case he speaks and acts as if he were again under the influence of the terrifying emotion.* It is as if this emotion had been originally repressed, and the power of speech with it, and is now being worked off and worked out.

Abreaction.

This process of "working off" repressed emotion is what Freud calls "abreaction." In my view it is the essential therapeutic process in dealing with the majority of war psychoneuroses. The original shock caused a *dissociation* of consciousness—i.e., an apparent suppression of a certain series of memories, and of a certain motor function (speech). Now, without accepting Freud's sexual theory of the origin of the psychoneuroses, for which I have never been able to find any convincing evidence (i.e., as a universal pathogenic factor), I *do* accept his theory of the cause of mental dissociation—viz., that it is the result of mental conflict and involves repression of emotional states. The repression of any emotion at its inception involves the danger of dissociation, the ideas accompanying the emotion being then more ready to split off from the rest of the mind and pursue a subconscious life of their own.

In most cases of nervous shock caused by shell explosion a state of intense fear is aroused in the patient's mind, which, from its very magnitude, produces loss of self-control and apparent loss of consciousness. There is no real loss of consciousness, but the attempted repression and control of the fearful emotion at its inception brings about a splitting of the mind, which appears later as an amnesia of greater or less extent, often involving other losses of function also, such as dumbness, deafness, tremulousness, or paralysis. The fact that under light hypnosis, and with the appropriate suggestions, these memories return, together with the lost voice, hearing, &c., is evidence that they were not abolished at the time, but were simply split off from the main personality. It is also evidence that the shock worked mentally rather than by its accompanying *physical* concussion (which is often absent).

In my method, then, the patient goes through his original terrifying experiences again, his memories recurring with hallucinatory vividness. It is this which brings about the return of his powers of speech, and not direct suggestion, as in the ordinary method of hypnosis.

My second modification of the ordinary method is in my manner of awakening the patient. Remembering that his disability is due to a form of dissociation and that in some cases hypnotism accentuates this dissociation, I always suggest at the end of the hypnotic sleep that he will

remember clearly all that has happened to him in this sleep. More than this, I wake him very gradually, talking to him all the time and getting him to answer, passing backwards and forwards from the events of his sleep to the events in the ward, the personalities of the sister, orderly, doctor, and patients—i.e., all the time re-associating or re-synthetising the train of his memories and interests.

By the process of *abreaction* I remove the underlying *cause* of the patient's original dissociation, and in attacking this cause I cannot be accused of merely treating symptoms.

I agree entirely with Pierre Janet that only hysterical patients can be hypnotised—in fact that, as Charcot said many years ago, "hypnosis is an artificial hysteria." It follows from this that as the patient improves under treatment he should become less and less hypnotisable. This is the case with my form of the method. Hypnotism has been brought into disrepute by those seekers after the marvellous who have intentionally split up the personality of their subjects more and more in order to get ever more wonderful and abnormal manifestations from them.

Using this modified form of the hypnotic method, one can abolish that tendency towards "*equivalents*" which Janet mentions as one of the three stigmata of hysteria (the other two being *suggestivity* and *distractivity*). By this is meant the tendency which the patient shows to suffer from another functional symptom as soon as his original symptom is removed by suggestion under hypnosis. For example, a mute may develop headaches or gastric symptoms as soon as he has been made to speak by suggestion under hypnosis. By using "abreaction" this tendency is completely eliminated. The use of suggestion *without* hypnosis quite fails to remove this tendency to develop equivalent symptoms. The equivalent symptoms are often so vague that they are not noticed at the time, although they are none the less disabling.

Results of Treatment.

The hypnotic method is needed only for the very small minority of cases that arrive at an advanced neurological centre—only for those showing so-called major hysterical symptoms. In two series of 1000 cases each I treated 173, or 17·3 per cent., in the first, and 132, or 13·2 per cent., in the second by means of hypnosis. In these two series there were altogether 121 cases of loss of speech, or hysterical mutism. I succeeded in curing *every single one of these cases*. Many of them were deaf as well as dumb. These were given a paper of instructions to read, in which they were told to lie down, close their eyes, and give themselves up to sleep. When such a patient showed by the calm look on his face that he had reached a quiet frame of mind, I would suddenly and unexpectedly bang two books together near him, and have the pleasure of seeing his eyes flicker, and then find that he could hear. I could then continue the treatment by word of mouth in the ordinary way. Curiously enough, these deaf-mutes were the easiest of all my cases to treat.

Of course, there are some patients who are ready to malinger with major hysterical symptoms. I caught out 28 such patients in my first series of 1000 cases, and induced them to confess. But this is, happily, a very small proportion—less than 3 per cent.

If, finally, the modified hypnotic method is limited in application, wherever possible, to *one* treatment only, all the drawbacks with which the ordinary hypnotic method is beset are evaded. I only applied the method to the more severe cases, those that had later to be evacuated to the base.

Nevertheless, in such apparently severe cases as those of functional paraplegia this method was not found to be necessary. Vigorous persuasiveness was sufficient to produce a cure. In some of the lighter cases of mutism also this was found sufficient.

Stammering is much more difficult to cure than mutism. The patient can more easily cling to the first symptom than to the second, and every hysteric clings to his symptoms. But in several cases I have produced a complete cure, and a decided improvement in others. In several cases where the patient had stammered in civil life I was able to trace the stammer back to a shock in early life, in the first few years of childhood, and under hypnosis I was able to call up the experiences with hallucinatory vividness before the patient's mind. The stammering was not completely cured thereby, because it had become the habit of a lifetime, but this recall of the shock was the first necessary step towards a cure.

Another Illustrative Case.

As a further illustration of my method I will describe the case of an officer, aged 25 years, whom I treated in France in December, 1916, and whom I happen to have again under my care at Craiglockhart in May, 1918.

He had been sent into my neurological wards on account of his complete inability to stand shell fire, having the irresistible impulse to rush to his dugout and crouch down there the moment shells began to fall in his neighbourhood. Earlier in the year (1916) he had been wounded during an advance and had been left out in No Man's Land under continuous shell fire for several hours. He gave a history of great timorousness and extreme weakness of memory during his youth. I learnt from him that he had been nearly drowned at the age of 3 years, according to what his mother had told him. He himself, of course, could remember nothing of the incident. I should also add that he exhibited many psychasthenic symptoms—e.g., he would begin to count the squares round the top of the stove in his ward, and find that he could not stop counting them. He would be impelled to count them hundreds of times.

I hypnotised this officer and then directed his attention back to the drowning incident at the age of 3 years. He at once began to live again through this incident, gasping with terror as he again, in memory, fell into the water. He described the whole event with such a wealth of detail that it was difficult not to believe that he had been taken straight back to this early period in his life and was living again through the terrifying experience. Later on, he re-experienced with hallucinatory vividness the incident of his baby brother's funeral, seeing again the coffin being lowered into the grave and feeling the desperation of grief *as a present emotion*. He was 18 years old when this funeral took place.

I concluded from these and other results of the hypnosis that the patient's memory was intact, but that certain factors were interfering with the power of recall—viz., the very strong emotional tone of many of these memories, combined with repression of them following upon mental conflict. The "abreaction" of these painful memories in the hypnotic state—i.e., the working off of their emotional accompaniments—should therefore prove beneficial to the patient's powers of memory and to his general mental condition. This was found to be the case, and the patient appeared quite a different, and certainly a much more normal, person after the treatment.

A minor point of interest arising out of this case is that the patient was readily hypnotised in spite of his psychasthenic symptoms. Some authorities have held that psychasthenics are not hypnotisable.

In May of this year I learn from this patient that his mother vouches for the accuracy of his revived memories of the drowning incident in every particular. He is again in hospital suffering from certain neurasthenic symptoms, but he has completely recovered from his previous hysteria. He has done a year's duty since he was with me in France.

Other Treatment.

General hygienic measures are, of course, necessary in the after-care of severe cases, and suffice for the entire treatment of the largely preponderating light cases. Regularity is insisted upon in all habits—alimentation, excretion, sleep, exercise. The patients are put on physical drill and sent for short route marches. Many do light duty in the wards or in the grounds of the hospital. But to the "gospel of work" is added the gospel of cheerfulness and hope.

For insomnia suggestion treatment at night is often very efficacious. The patient can often be soothed to sleep and incidentally taught how to employ auto-suggestion in this case.

Only very rarely have I found it needful to *isolate* patients. But this device succeeded in the case of three patients showing persistent tremors of the head, where every other method had failed.

Summary.

The essential therapeutic agent in the case of *hysteria* caused by shell shock is "abreaction," or the working off of the repressed emotion caused by the shock. Mental analysis is a means to this end, and light hypnosis, applied under proper safeguards, is the quickest and most effective method of effecting this analysis, where amnesia is present and the case is seen early.

For cases of *neurasthenia*, which are the more numerous and involve emotional preoccupation often dating back many years, mental analysis and re-education, without hypnosis in any form, are the needful agents, although the abreaction of the original emotional disturbance or disturbances is again essential.

In both classes of cases the arousing of *sthenic emotion* in the patient's mind is an important adjunct in the cure, both in the form of enthusiastic confidence in his doctor and expectation of a complete recovery, and also in the form of

vivid interest in some form of occupation in the stage of convalescence, during which the mind becomes more unified and consolidated.

I have hitherto not mentioned *rest*, which is, of course, also fundamental. But no complete rest is possible while the mind is obsessed with bottled-up emotion. This emotion must be completely worked off, and then true rest will come. The preoccupations of the neurasthenic also must first be dealt with if any form of rest cure is to produce good results.

After three and a half years of work with nerve patients in military hospitals in Egypt, England, and France, during which over 4000 cases have passed through my hands, I feel no hesitation in saying that mental analysis is the ideal method of treatment, provided that it is carried far enough to produce true abreaction of emotional states. As an aid, and as a sort of short cut, the special form of hypnosis which I have described is very useful in early cases showing major hysterical symptoms.

In conclusion, I should like to thank Lieutenant-Colonel C. S. Myers, F.R.S., R.A.M.C., for his unfailing encouragement and most helpful advice as consultant psychologist in his frequent visits to my wards in France.

May 29th, 1918.

ON THE DIFFERENTIAL DIAGNOSIS OF THE DYSENTERIES:

THE DIAGNOSTIC VALUE OF THE CELL-EXUDATE IN THE STOOLS OF ACUTE AMŒBIC AND BACILLARY DYSENTERY.

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IN a paper on Dysentery published in 1913 by Savage and one of us,[1] it was pointed out that dysentery, from its first authentic record in the days of the Athenian pestilence during the Peloponnesian War up to the present time, has been *the* scourge of armies in the field, and that it has been responsible for more sickness, invaliding, and military waste than any other factor.

Scope of Investigation.

The greater part of the present paper was written by us in the spring and summer of 1916, and the results to be set forth in the bacillary section were based upon the microscopic and cultural examination of a series of 1165 cases (43 fatal) admitted to a general hospital in Egypt, from April 30th, 1915, to April 30th, 1916. As many stools as possible were plated out on a specially modified MacConkey's medium, and all the fatal cases were submitted to autopsy.

Unfortunately, our collaboration was interrupted by the recall of one of us (C. H. S.) to Government service in Australia, in the late summer of 1916, before we were able, owing to lack of amœbic material, to complete our paper together for publication.*

Since then a further very large series—though we have not the exact figures to hand—has come under our observation. This series included many cases of acute amœbic dysentery, and has been examined by one of us, who had had in addition the experience of 14 years' residence in Egypt and at El Tor upon which to draw. Any criticism, therefore, which may be directed against the amœbic part of this paper must be held to refer only to that one of us (J. G. W.).

Infantile diarrhœa, due, practically speaking, in Alexandria to the *B. dysenteriæ*, levies an appalling toll amongst Egyptian babies at the present day.

Amœbiasis, on the other hand, is a disease of protozoal origin, by reason of which it is much less infectious than bacillary disease, but immunity to it is less easily acquired and less complete.

It thus follows that the lower class Egyptian with his dirtier habits constantly exposes himself to both infections, but succumbs, as a rule, to the one only, unless his constitution has been previously strained by excessive hardship or disease. The better class Egyptian, on the other hand, thanks to his cleanlier habits, is usually exposed only to the bacillary infection, against which, owing to its far greater infectivity, precautionary measures are more difficult to apply.

The conclusion at which we arrived together—namely, that a diagnosis between the two great types of dysentery, amœbic and bacillary, can be made not only more rapidly but even with greater accuracy by simple direct microscopic examination of the stools than it can by cultural methods—has been strengthened by this further study and by a consideration of the results published by independent workers, particularly Bahr, Wenyon and O'Connor, Ledingham and Mackie, to mention only a few with whose work we are most familiar.

The results in particular of the investigations conducted by or under the ægis of the Medical Advisory Commission have established beyond all manner of doubt the contention which we, in 1915, were almost alone in upholding—namely, that bacillary dysentery has been, and is, the predominating and the more severe type of the disease in the whole of the Near Eastern area of operations.† To this conclusion we were led by investigations the object of which was to determine whether or not two diseases so distinct in their etiology and morbid anatomy would give rise in the dejecta to different types of cellular exudate, each peculiar to its own class—in other words, to determine whether a diagnosis could be made without identifying either the one or the other causal organism.

Importance of Early Diagnosis.

It is our purpose to show in this paper that—

1. Pure amœbic dysentery—i.e., uncomplicated by coexistent bacillary infection—gives rise to a characteristic exudate in the stools.
2. Bacillary dysentery, whether complicated by amœbic infection or not, also gives rise to a cellular exudate of specific character in the stools.
3. The finding of *Entamœba histolytica* in the midst of such a "bacillary" exudate indicates, not that the case is one of simple amœbic dysentery, but that a double infection is present, although all attempts to isolate dysentery bacilli may fail—as they do in many instances even when the case is one of "simple" bacillary dysentery.
4. In such cases of double infection, which are of more frequent occurrence than has been supposed, the diagnosis of the amœbic moiety can be made only by finding *E. histolytica*, for the reason that the exudate associated with the latter is comparatively so scanty and insignificant that it is masked by the overwhelming bacillary exudate. While the consequences of neglected amœbic infection may be disastrous, it is of still more immediate importance that bacillary dysentery should receive prompt recognition and appropriate serum treatment, for the following reasons:

(*a*) In fulminating cases, the time limit during which treatment is of any avail is much shorter in bacillary than it is in amœbic cases.

(*b*) In severe cases the patient rapidly becomes soaked with bacillary toxin, which results in severe degenerative changes occurring in myocardium, liver, and kidneys.

(*c*) The earlier a bacillary case is treated with *massive* doses of antiserum the more prompt and complete is recovery. While a delay of a day or two in instituting emetine treatment usually makes little difference to an amœbic case, a like delay in administering antitoxin to a bacillary patient may make all the difference between the abortion of the illness and months of invaliding and abdominal misery.

(*d*) Antidysentery serum is harmless to an amœbic patient; emetine, on the other hand, seems to us, as a result of our experience, to be a highly risky drug to administer to anyone whose myocardium is degenerated. As this does not occur in simple amœbic dysentery there is little risk in administering it in large doses to such cases, and even less to healthy carriers.‡

Pathology.

In order that the principle on which this cyto-diagnosis is based may be more fully understood it is necessary to give the briefest possible account of the pathology of the two diseases.

* From September, 1915, up to July, 1917, I (J. G. W.) was unable to obtain amœbic material in quantity sufficient for my purpose from European troops. All my cases of amœbic infection occurred in Egyptians of low class, among whom alone does the amœbic type of dysentery predominate. The explanation of this would appear to lie in their relative immunity to infection by the dysentery bacilli—a fact which is paralleled by their well-known immunity to organisms of the enterica group, which they have acquired through generations of existence in defiance of the most elementary rules of personal hygiene.

† We do not deny that there was a great deal of amœbic dysentery also in the summer of 1915, but not later.

‡ It must not be forgotten that *Entamœba coli* may coexist, as a harmless commensal, with *E. histolytica* or any of the dysentery bacilli.

By the term "dysentery" we understand a clinical condition the essential characteristic of which is the destruction of any part of the mucosa of the large intestine by one of the specific infections, amœbæ or dysentery bacilli; only those cases which showed evidence microscopically in the stools of such destruction in the form of mucosal sloughs and cellular exudate are included in the tables of our cases. Thus it is likely that many cases of early infection by dysentery bacilli which were recognised as such by the clinicians and treated immediately by them with massive doses of antiserum—with consequent abortion of the illness—figure in our returns simply as cases of enteritis. This was due to the fact that during the rush of the epidemic the pressure of work prevented the stools of all cases being examined until some days after the admission of the patient to hospital.

Pathology of Amœbic Dysentery.

Amœbic dysentery is due to infection by the *Entamœba histolytica*, and by it alone. No other amœba is capable of causing this disease, and it requires no help from secondarily infecting organisms of the bowel in the production of its lesions.

The life-history of this parasite is briefly as follows:—

The encysted form is swallowed with the food. Arrived in the small intestine, the digested juices there dissolve the capsule and set free the small daughter amœbæ, which make their way to the large intestine and thence down the lumina of the mucosal glands into the submucosa. There they grow into the adult or vegetative form, multiply by binary fission, and, in our opinion, give rise to a direct colliquative necrosis of the submucosa and muscularis mucosæ by means of a proteolytic ferment which they are able to secrete.

Direct communication with the lumen of the gut—i.e., ulceration—is only attained when either the solvent attacks the intercellular cement of the mucosa or the necrosis extends far enough to interfere with its blood-supply. According to which occurs first the mucosal cells are shed singly or *en bloc*, and an irregular ulcer with ragged, undermined edges is formed. The loss of substance is far greater in the submucosa than in the mucosa, as large vegetative amœbæ are found in the greatest numbers there; often sinuses lead from one ulcer to another under bridges of perfectly healthy mucosa.

As the amœbæ approach the surface of the mucous membrane again they divide more and more rapidly, and consequently become smaller and smaller until on the surface of the gut they assume the "*minuta*" form. Many of them now encyst, and they are passed out of the body in the stools as cysts or *E. minutæ*. It is worthy of note that the *E. minutæ* § produce no destruction of the tissues, and consequently no symptoms of dysentery; a fact which is distinctly in favour of the larger, or older, amœbæ producing a proteolytic ferment.

Adami was the first to point out that the reproductive and the higher functional activities of cells are mutually antagonistic; the more embryonic the cell the more readily does it multiply, and thus the more rapid is the growth of a neoplasm composed in greater part of cells of embryonic type. The smaller size of these amœbæ is due to their more rapid division, which has used up all their reserve of energy; consequently none is left for the development of that particular function which differentiates *E. histolytica* from all other amœbæ.

It has never been shown that the entamœbæ produce a diffusible toxin, or that they are capable of exerting any poisonous effect other than the proteolysis of cells in their immediate neighbourhood.

In consequence, the onset of the disease as a rule is insidious—it may be even unnoticed—and it is not until a comparatively large area of the gut is involved that the patient becomes at all acutely ill. It will thus be noted that the mucosal cells are in general healthy, apart from the areas of actual infection, while at autopsy the typical picture seen is one of areas of circumscribed necrosis, dotted like islands in the midst of healthy pink mucosa.

Now-a-days, when the emetine treatment is so universally adopted, cases where the bowel has undergone "gangrene en masse" are, fortunately, so rare as to warrant only passing notice. This condition is brought about by such an extensive amœbic invasion of the submucosa—and even the muscularis—with consequent thrombosis of blood-vessels, that the blood-supply of the bowel is cut off as effectually as by multiple thrombosis arising from any other cause.

The result is that the entire thickness of the bowel over a greater or lesser extent becomes gangrenous, and is passed as stringy black sloughs having a horribly fœtid odour. On very rare occasions it has even been impossible to remove the colon at autopsy, as all that remained to represent it was a slimy, stringy, black mass lying in a bath of corruption. Unless one had actually seen such a case it would be inconceivable that a man could survive long enough for his intestines and his peritoneum to attain such a state.

Sellards and Baetjer have shown that fatal cases of amœbic dysentery often terminate with a blood infection by members of the *Streptococcus fæcalis* group.

There is nothing astonishing in this if one considers how often the intestinal bacteria invade the body before death in different chronic and subacute diseases. The astonishing part is that it does not occur more frequently in amœbic dysentery—a disease in which there is such an extensive solution of continuity of the mucosal barrier. The point which we wish to emphasise is that in the vast majority of cases of non-fatal amœbic dysentery no such invasion of the blood stream can be demonstrated by hæmoculture.

This may be due to one or two causes acting together or separately.

In the first place, the liver may act as an efficient bacterial filter; in the second, the bowel itself is probably endowed, even when diseased, with a high immunity against just such organisms. Wright has shown that different parts of the body possess different degrees of resisting-power against pyococci. It seems reasonable to suppose that this local immunity acquired by countless minute inoculations with the bacteria-containing fluid in which the mucosa has been bathed since birth is sufficient to protect not only the body against invasion by these bacteria, but even the mucosa itself when the latter is partially destroyed by amœbæ.

In amœbic dysentery only when extensive areas are killed by interference with their blood supply does any secondary infection of the mucosa take place, just as a limb may become affected by wet gangrene after the blocking of its blood-supply. When, however, a pathogenic organism, such as a dysentery bacillus, which is a stranger to the mucosal barrier, and against which the mucosa is in consequence not immunised, arrives on the scene in sufficient numbers and virulence immediately its destructive properties come into play.

When sections are made through the edges of early amœbic ulcers, and more particularly when the unbroken amœbic nests in submucosa or liver are examined histologically, the salient point to strike the observer is the absence of the usual cellular infiltration characteristic of inflammatory reaction.

This is all the more striking when a comparison is made with the corresponding sections of early bacillary dysentery which is an inflammatory disease.

Again, the so-called amœbic liver "abscess," when sterile, is not an abscess at all. It is a primary colliquative necrosis of hepatic tissue, which is broken down and changed by a proteolytic enzyme from protein to albumoses and peptones; the patient's symptoms are due to the absorption of these poisons directly into the blood stream and can be reproduced experimentally by the intravenous injection of peptone.

To sum up: the pathology of histolytica amœbiasis is a primary degeneration due to the chemical digestion of the cells in the *immediate* neighbourhood only of the amœbic enzyme. It is not a primary inflammation with consequent degeneration; any inflammation which occurs is due to secondary microbic infection, is generally not severe, and takes place late in the disease.

The nature of the cellular exudate in the stools and in the uncontaminated liver "pus" is in entire accord with this basal fact of its pathology.

Pathology of Bacillary Dysentery.

Very different from the amœbic lesions are the changes which occur in bacillary dysentery. The infecting agents belong to a different kingdom.

The two diseases are so totally distinct that the only excuse for grouping them both under the heading of "Dysentery" is that of historical usage. In logic it were as reasonable to group cancer and tuberculosis of the intestine under the same heading because they may both give rise to what used to be called the "bloody flux."

Whatever may be the route of infection the essence of the pathology of bacillary dysentery is the intense diffuse catarrhal inflammation of the mucosa, which according to the severity of the attack may resolve or may go on to degenerative changes, such as coagulation-necrosis and sloughing. It is a primary inflammation of bacterial toxic origin, with all the cardinal signs of this condition—viz., "*rubor, tumor, calor, dolor et functio læsa.*"

The process is essentially one of diffuse destruction of the superficial layers of the mucosa, accompanied by œdema, large immigration of leucocytes, diapedesis of blood cells, and hæmorrhagic extravasation—such as is seen in all cases of acute bacterial inflammation of tissue. The immigration of polymorphs is an especially noteworthy feature. At autopsy the appearance of the intestine in any case of bacillary dysentery will vary with the intensity of the infection and the length of time the patient has survived it.

In the so-called fulminating ileo-colic dysentery, the entire surface of the lower part of the ileum and large intestine (*always excepting Peyer's patches and the appendix*) is seen to be the site of intense inflammatory change. No part escapes, as it does in amœbic dysentery; the bowel wall is œdematous, enormously thickened, deep plum-red in colour, and the mucosa may resemble the surface of a large granulating wound. A case of this intensity is more likely to be met with in patients who happen to be affected with renal disease of long standing, and death takes place from poisoning before the changes later to be described have had time to occur.

If the patient survives this stage, the superficial layers of the entire mucosa undergo coagulation-necrosis, become bile-stained, and are replaced by a green diphtheritic false membrane which may entirely hide the red granular layer underneath it. Here or there smaller or larger areas of this membrane may have sloughed, disclosing buds of granulation tissue of greater or lesser extent. Coincidently, small but numerous intramucosal hæmorrhagic extravasations take place.

If the patient again survives this stage small superficial ulcers, affecting particularly the summits of the valvulæ conniventes and mucosal folds, are formed. The minutely eroded, pinkish-grey "coraline" appearance of these ulcers, which run transversely across the bowel along the ridges of the mucosal folds of the colon, and are often present in large numbers, confers a very characteristic appearance. The sloughed mucosa is gradually replaced by well-formed and vascularised granulation tissue, and later by fibrous hyperplasia; if the patient recovers entirely the large intestine becomes shrunken into a thick-walled firm tube, with narrowing of its lumen and permanent damage to its functions.

Again, the ulcerative process may continue and spread, with the result that the gut wall may be honeycombed with myriads of small ulcers and so finally resemble a piece of red porous rubber.

§ They never contained red blood cells.

These ulcers, in spite of the fact that they may give rise to the so-called "worm-eaten condition," can easily be distinguished from the amœbic ulcers by the fact that they are more superficial, more regularly circular or oval, and have cleaner cut edges than the ragged undermined amœbic ulcers. Their depth will vary with the amount of fibrous change that has taken place in the bowel wall around them, which may be so great as to make them appear deeper than they really are. Whereas the thickened peritoneum may often constitute the base of a healed amœbic ulcer, it is extremely rare to find a bacillary ulcer penetrating deeper than the muscularis mucosæ. In all our experience we have yet to come across a case of perforation or peritonitis in pure bacillary dysentery.

Varying with the intensity of the infection, certain areas of the intestine are affected more than others.

Rogers states that the descending colon and rectum are more frequently involved than any other part. In our experience, on the other hand, the cæcum, first part of the ascending colon, and the flexures have been more profoundly affected than the other parts of the large gut.

When complete recovery has occurred after a less extensive infection than that first described the mucosa is often seen to be atrophied and stained a dirty slate-grey colour as a result of the diffuse intramucosal hæmorrhagic extravasation. In healed amœbic ulcers, on the other hand, this staining is seen only in and immediately around the cicatrices of the ulcers.

Concurrently with the local changes are those produced in heart, liver, kidneys, adrenals, and probably the nervous system, due to the absorption of the toxins formed in the gut by the dysentery bacilli.

In bacillary dysentery, as in diphtheria, the patient dies of intoxication. It may be definitely stated that as a general rule dysentery bacilli do not invade the blood stream, except during the stage of premonitory fever before diarrhœa begins. On one or two occasions certain observers have claimed to have isolated them by blood culture; but this invasion of the blood must be looked on as an accident in the course of the disease, and the occasions on which a general dysenteric bacillæmia takes place are so rare that the probability of its occurrence is negligible.

Just as the amœba is responsible for the ulcers of amœbic dysentery, so, in our opinion, is the dysentery bacillus alone accountable for the damage to gut and general system. We do not deny that secondary infection of the blood stream may and does take place occasionally in the course of both diseases, ‖ but we controvert the idea that any such infection is to be regarded as a regular concomitant.

It has been known for many years—in fact, since Todd first worked out the poison of Shiga's bacillus—that the "non-mannite-fermenting" type of dysentery bacillus produces a soluble toxin. Whether this toxin is really extracellular and diffusible from the first or whether it becomes so owing to a rapid breaking down of the bacillary bodies, and consequent liberation of endotoxin, is a matter of no moment. The fact remains that a filtrable toxin is easily demonstrated in cultures of this bacillus.

It has been the fashion to deny to the mannite-fermenting group of dysentery bacilli this attribute of being able to produce a diffusible toxin.

Everyone who has had experience of dysentery due to the mannite-fermenting type of bacilli must have been forced to the conclusion that a similar and equally virulent toxin was at work in these cases, as in those in which Shiga's bacillus was the morbific agent. The clinical symptoms are the same, and the degenerative changes in the organs seen at autopsy are indistinguishable from those seen in cases of death from Shiga's bacillus.

In May, 1913, one of us (J. G. W.), using a slight modification of the technique devised by the late Sidney Rowland to extract toxic nucleo-albumen from *B. pestis*, succeeded in obtaining from different mannite-fermenting strains of *B. dysenteriæ* a toxin which killed rabbits in doses of 0·01 g., in the same way as did the living bacilli. This toxin was afterwards used by one of us with very good results in the manufacture of antidysenteric serum from horses. This point is mentioned here to prove that whatever the type of infecting dysentery bacilli similar toxic changes occur in all.

Diagnosis Based on the Cytological Picture of the Stools.

It will thus be seen that it is easy to diagnose between the two great types of dysentery when they reach the post-mortem table, so definite and peculiar to each is its morbid anatomy. We were led, therefore, to hope that on *a priori* grounds the differences in the nature of the exudate and desquamated cells found in the stools of each variety would be sufficiently constant and characteristic to constitute a basis for differential diagnosis at once reliable and rapid.

Our investigations have led us to the conclusion that it is possible to arrive at such a diagnosis, based entirely on the cytological picture peculiar to each type of the disease.

The character of any given stool will depend upon the particular stage of the disease at which that stool has been evacuated. It will depend to a much less extent upon the nature of the food which the patient has taken, in that in the vast majority of cases both types of patients—amœbic and bacillary—will have been treated on similar dietetic lines; further, our examination is restricted to any sloughs, bloody mucus, &c., which may be mixed with the fæcal matter.

‖ Embolic suppurative nephritis (renal pyæmia) was a not uncommon termination of fatal cases of bacillary dysentery among pilgrims at El Tor. A form of *B. coli* was always isolated from the emboli—never a dysentery bacillus.

Cyto-diagnosis in Amœbic Dysentery.

If some of the bloody mucus from a case of "simple" amœbic dysentery be examined microscopically (under the $\frac{1}{6}$" and $\frac{1}{12}$" objectives) the first thing to strike the observer will be the scantiness of the cellular exudate, though red-blood corpuscles may be very abundant. This point has particularly impressed us when examining material taken from the surface of an ulcer at autopsy.

Another salient characteristic is the preponderance of mononuclear cells over polymorphonuclears, a feature which contrasts sharply with the picture seen in bacillary dysentery. (Compare Figs. 1 to 9 with 12 to 15.)

Next to the scantiness of the cellular exudate the most noteworthy element in the film is the picture presented by the actual cell components—most of them look half-digested, and have a "mouse-eaten" appearance (Figs. 10 and 11). The process evidently begins at the periphery, and the nucleus is the last to be involved. In many cases groups of nuclei appear to become agglutinated by means of their semi-digested surrounding cytoplasm.

The process is apparently a slow one, the cytoplasm being gradually digested and dissolved and the unchanged nucleus being left bare or clothed merely in a narrow strip of ragged cytoplasm. Fig. 5 shows this very clearly; the stool was obtained 24 hours before the death of the patient, an Egyptian, from acute amœbic dysentery. At autopsy the entire large intestine was found to be studded from end to end with amœbic ulcers of all shapes and sizes; non-agglutinating vibrios were obtained in culture, but no dysentery bacilli could be isolated. Of far greater value in demonstrating the absence of bacillary infection in this case was the healthy pink colour of the mucosa between the ulcerated areas. (The diagnosis was made at first from the nature of the cellular exudate alone, though amœbæ were found later.)

We have recently had occasion to examine one of the very advanced cases of gangrenous amœbic dysentery described earlier in this paper. (Figs. 7 and 11.)

Curiously enough, this patient (an Egyptian) also harboured non-agglutinating vibrios in his intestines, but at autopsy there was no evidence of cholera and no vibrios could be isolated from the small intestine. Here again it was possible to make an ante-mortem diagnosis of the condition of the large bowel by means of the stringy black sloughs, the appalling fœtor of the stool, and the fact that microscopically hardly any polymorphonuclear cells were seen—nothing but amorphous débris apparently more or less completely digested, and a few nuclei from which all the cytoplasm had been stripped. Many of the nuclei, even, were semi-digested and degenerated; but of all the structures involved they were evidently the most resistant to the degenerative force in action.

In our opinion, this type of degenerative change can be explained only on the supposition that in amœbic dysentery no toxin is at work in the organism at all comparable to that produced by the dysentery bacilli.

As will be shown later, the cells in a bacillary stool give evidence of being poisoned *en bloc* and undergo rapidly the changes characteristic of toxic necrosis and autolysis, the nucleus being among the first parts of the cell to be affected.

Further, the fatty changes to be described as occurring invariably in cells composing the bacillary exudate are never seen to anything like the same extent in amœbic stools, when examined fresh in Sudan III. solution; all that one sees are isolated "lumps" or dots of fat, suggesting that the cells had previously ingested some fatty material rather than that it was of intrinsic cytoplastic origin.

Consequently, all the evidence goes to prove, in our opinion, that every morbid change seen in amœbic dysentery can be explained on the hypothesis of proteolytic digestion of living tissue by the amœbæ.

To sum up the characteristics of a "simple" amœbic stool:—

1. Scantiness of cellular exudate, especially the polymorphonuclear element.
2. Preponderance of mononuclears over polymorphonuclears.
3. Evidence of proteolytic digestion of the cells, beginning at the periphery and affecting the nucleus last.
4. Absence of all phenomena characteristic of inflammatory reaction, toxic necrosis and consequent autolysis.

Cyto-diagnosis in Bacillary Dysentery.

A very different picture is seen on examining microscopically the blood-stained muco-pus from a case of bacillary dysentery, whether in the acute, subacute, or chronic stage.

Here the first feature to strike the observer is the abundance of cellular exudate, composed largely of polymorphonuclear leucocytes. Desquamated and degenerated mucosal cells are also common, but the polymorphonuclear neutrophiles predominate. Blood may or may not be present according to the stage of the disease, whereas it is hardly ever absent from the stools of amœbic dysentery.

The polymorphonuclear neutrophiles show the characteristic changes consequent on toxic necrosis more than any other leucocytes, the eosinophiles less and the lymphocytes least of all. The cell is evidently poisoned *en masse*, and whether the further changes about to be described are directly caused by the toxin or are merely autolytic phenomena resulting from the death of the cell is of no moment. The important point for our purpose is that the process is obviously different from that which takes place in the cells of an amœbic exudate.¶

¶ The nuclei seem to be specially sensitive to the action of this toxin, as the changes described, particularly fragmentation and agglutination of small chromatin masses round the nuclear membrane, and "ringing" of the nuclei, have not been observed by us in similarly prepared films of pus obtained from other sources—e.g., boils—or at least to nothing like the same degree.

A type of cell which is always present, often in large numbers, and which seems to be associated more frequently with bacillary (especially cases which are improving clinically) than with amœbic dysentery somewhat resembles a free resting amœba, and it is important not to mistake it for one. (Figs. 17 to 19.)

There is, in our opinion, little doubt that this mistake has been often made, and that as a result the numbers returned as amœbic dysentery in 1915 were unwarrantably high. Particularly do we consider these remarks applicable to cases of so-called "running amœbic dysentery," often accompanied by a rise of temperature, which responded beneficially to serum treatment. These cells may have also given rise to the diagnosis "post-amœbic colitis."

As these cells are larger than a polymorphonuclear leucocyte, and as the changes in them are much the same as those occurring in other leucocytes, it will be convenient to describe them as a type.

They are very large mononuclears, 15 to 30μ in diameter, with basophilic non-granular cytoplasm, and are probably macrophages of endothelial origin. They are possibly identical with the cells described by Jurgens, Dutcher, and Bahr in the stools of bacillary dysentery some years ago.

The cytoplasm, if not too degenerated, contains numerous vacuoles in which there may be entire polymorphonuclear leucocytes, lymphocytes, red cells, or their fragments, and bacteria, more or less digested. Curiously enough, the ingested leucocytes are much less degenerated than their hosts. By Achard's method of eosin staining these large cells can usually be demonstrated to be dead. In others, as a result presumably of more advanced degeneration, the cytoplasm, instead of being granular and vacuolated, is swollen, hyaline, transparent, and apparently in a state of hydropic degeneration; it stains very poorly or not at all with iron-alum-hæmatoxylin.

The degenerative process begins early in the cytoplasm, which first becomes granular, then vacuolated, and finally hyaline. It may show dots or granules, which are greenish when examined in the fresh state and intensely black when stained with iron-hæmatoxylin.

These are probably fragments extruded from the pyknotic nuclei. In fresh specimens these dots are frequently seen to exhibit distinct Brownian movements and are apt to be mistaken for bacteria or other débris which the cell has ingested. Coincidently with the cytoplasm the nuclei begin to show very definite karyorrhectic and karyolytic changes, both in fresh and stained specimens.

The nucleus first becomes swollen, then granular; finally its centre becomes transparent and the chromatin is aggregated under the nuclear membrane, leaving the centre bare. (In other cases pyknosis may be the only change, as seen in the stained specimens.) The nucleus then bursts, and the granules resulting from this action appear as a scattered line of irregular dots—green in the fresh and black in the stained specimens—which are apparently caught in the periplast, all that remains of the cytoplasm.

Later these dots disappear, and the cell is represented only by the periplast, which is usually regularly circular. (Fig. 15.) These cells, as their suggested origin implies, possess certain feeble powers of amœboid movement, a characteristic which is liable to entrap the unwary.

Fig. 18 shows one of these macrophages (fixed and stained by the Schaudinn-Heidenhain method), which suggests that it has been caught in the act of throwing out a pseudopodium.

These endothelial macrophages resemble resting or dead amœbæ most closely when they show the aggregation of chromatin granules scattered around the periphery of the nucleus; then one sees a large round cell, vacuolated and containing ingested cells, with a nucleus which exhibits the "ringing" so characteristic of the nucleus of amœbæ. The fact, however, that the nucleus in a degenerating amœba is the last structure to disappear may be of some guidance in differentiation.

Similar degenerative changes to those mentioned occur in the leucocytes and also to a less extent in the mucosal cells.

Fatty degeneration is always present in the cells composing the exudate in bacillary dysentery. In the very early stages this change is very slight and the intracorpuscular globules present in leucocytes and desquamated mucosal cells appear as dust-like red granules when examined under the immersion lens, and a Sudan III. in alcoholic solution is run in under the coverslip.

Later these globules become larger and larger, until in the advanced cases the greater part of the cell body is filled with them. In some we have even seen the leucocytes distended with large red globules crammed together inside the periplast like potatoes in a sack. This condition is best seen in the liquid green pea-soup type of stool, without obvious muco-pus or blood, characteristic of advanced subacute or chronic bacillary dysentery. (Fig. 10.)

Another point to strike the observer in cases of *acute* bacillary dysentery is the extraordinarily small number of bacteria present; the film, in fact, looks more as though it had been taken from the pus of a streptococcal abscess than from a stool. (Contrast Figs. 3 and 12.)

To sum up the characteristics of a bacillary stool:—

1. Abundance of cellular exudate, mostly polymorphonuclear.
2. Preponderance of polymorphonuclears over mononuclears.
3. Evidence of toxic necrosis of cells, the degenerative changes occurring early in all parts of the cell, including the nucleus. This degeneration may go so far as to leave only the circular periplast of the cytoplasm, thus constituting the "ghost-cell," the presence of which in any quantity is very typical of bacillary infection.
4. Evidence of phenomena characteristic of intense inflammatory reaction to microbic infection.

Results of Cultural and Cyto-diagnostic Methods.

The cultural method of diagnosing bacillary dysentery is of value only when positive results are obtained.

It is, at best, a difficult operation—how difficult in all but the early acute cases only those who have had years of experience at this work fully appreciate. It is slow, laborious, uses up an enormous amount of glass-ware and medium, and necessitates a fully equipped laboratory with a well-trained staff. All these difficulties are multiplied under active service conditions, and we have no hesitation in saying that the experience of this campaign has shown it to be a complete failure, alike for statistical and clinical purposes, in that results reach the clinician too late to be of any guidance to him in his treatment.

We contend that our method of cyto-diagnosis is not only much more rapid and less laborious, but also that statistics based on it give a much truer idea of the incidence of bacillary infection than do any that are based on the isolation of dysentery bacilli—at least, under active service conditions.

A study of the various reports issued periodically by the field laboratories shows how far their return of positive findings falls below the real figure of bacillary cases. In one instance this represented only 7 per cent. of "blood and mucus" cases in which an expert protozoologist could find no amœbæ. The bacteriologist in charge at the time was a man of exceptional ability and long experience in this particular subject.

Appended are the figures of "cases of dysentery and suspected dysentery" for all the laboratories of Egypt—including those at the various bases under the direction of experts working under optimum conditions—during the first quarter of 1917.

1. Total number of cases examined	4037
2. Number showing blood and mucus	1127
3. Number of cases microscopically examined	3818
4. Dysenteric amœbic findings	300
5. Number of cases bacteriologically examined	3094
6. Dysenteric bacilli, typical and atypical, isolated	475

No. 6 gives 15·3 per cent. of No. 5.

Even if the whole of No. 4 be subtracted from No. 2 the percentage of No. 6 to No. 2 is only 57·4. Even this is too high a figure, as cysts are included in No. 4, and such stools usually do not contain blood and mucus. Further, no account is taken of mixed infections.

Mutability of Organisms.

Again, the cyto-diagnostic method has the further advantage of obviating a difficulty which recent experience has shown to beset the cultural method of diagnosing bacillary dysentery.

We refer to the doubt often present in the bacteriologist's mind as to whether a given organism which he has isolated is to be regarded or not as the actual cause of the disease. There is no doubt that the group of bacilli capable of causing dysenteric infection is a very large one, with much more elastic bounds than it has hitherto been customary to allot to it. This applies particularly to the so-called "mannite-fermenting group," the membership of which has of late years been expanded to admit a host of new candidates, all of which show a certain relationship in their serological and biochemical reactions to the classical Flexner-Y types.

The bacteriological work of the present campaign, while adding to our knowledge, has at the same time added vastly to our confusion in this respect.

Almost weekly a new type of bacillus—non-motile, Gram-negative, anaerogenic, non-lactose-fermenting—has turned up on our plates, each new type showing in infinite gradation affinities with, and divergence from, the classical in its bearing towards recognised agglutinating sera and fermentation of sugars. For instance, to take only two examples from opposite ends of the scale, we have on several occasions isolated a bacillus having all the bio-chemical and cultural characters of a typical *B. Shiga*, but showing no agglutination whatever with any Shiga-agglutinating serum at our disposal.

One such strain—isolated from one of us after a mild attack of dysentery—was as virulent when tested in rabbits as any type of *B. Shiga* in our possession.

Another bacillus was agglutinated up to 1:2000 by Y-serum from the Lister Institute, though not by normal serum, Shiga or typhoid serum in low dilution; yet this strain—the purity of which was tested by replating—fermented every sugar on which we tried it. It produced permanent acidity, but no clot, in milk.

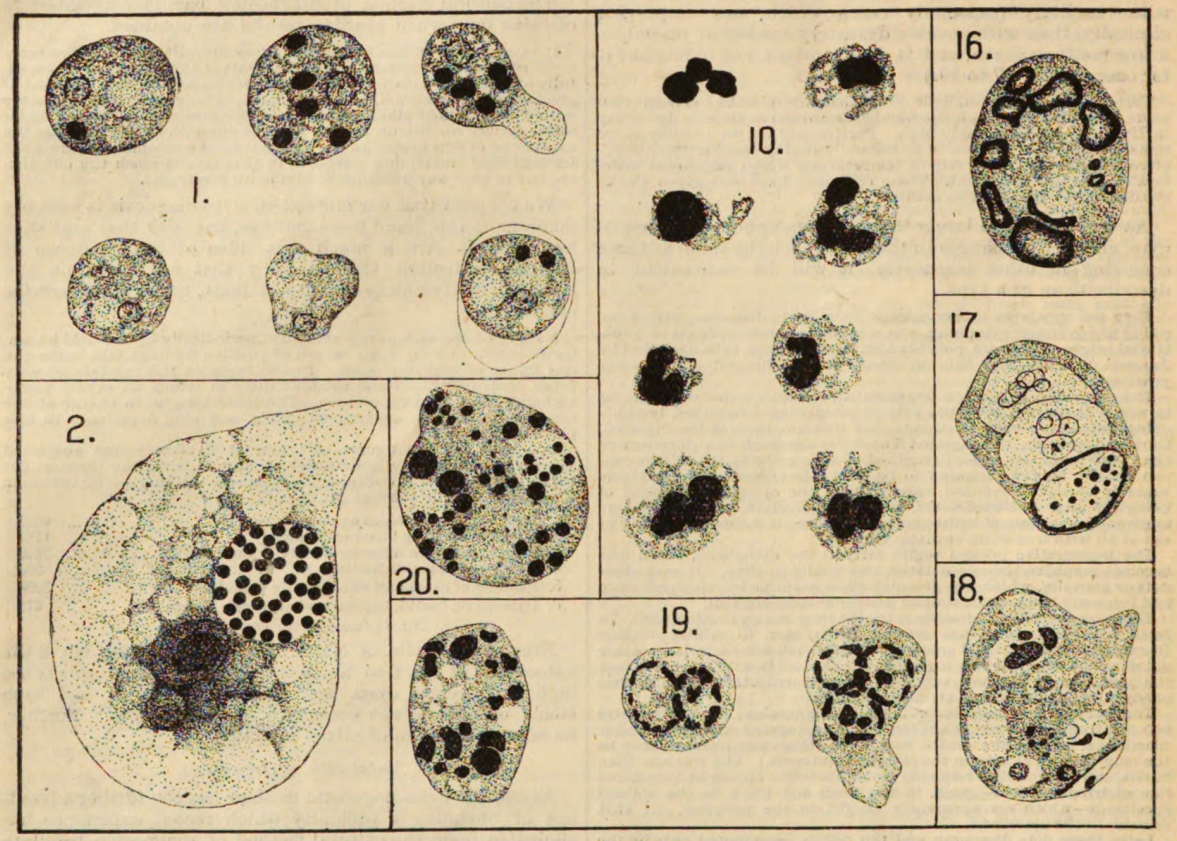
We may add here that the results of bacteriological investigation of a large series of cases of bacillary dysentery in the Central Laboratory, Alexandria, fully confirm such statements.

With all diffidence we hazard the suggestion that all pathogenic bacteria having their habitat in the intestine are actually or potentially mutable.** Apart from the facts bearing on mutability of the organisms of the enterica and dysentery families, we feel tempted in this connexion to quote others of a similar nature, relating to this phenomenon.

Thus, Bordet has shown that his *B. pertussis* could be changed by repeated subculture into an organism having entirely distinct cultural and agglutinative reactions.

** *Cæteris paribus*, the more nearly the infecting bacillus approaches the classical type, the more severe is the course of the disease, and the more prompt the response to serum; and vice versa.

FÆCAL FILMS FROM CASES OF ACUTE AMŒBIC (1–11) AND BACILLARY DYSENTERY (12–20).



DESCRIPTIONS OF ILLUSTRATIONS.

1. *Amœbic Dysentery.*

FIG. 1.—Types of *Entamœba histolytica*. Stained Schaudinn-Heidenhain-Wenyon method. Zeiss 1/12, Oc. II.

FIG. 2.—*Entamœba coli* with degenerated and vacuolated cytoplasm and ingested bodies, parasites. Note the unaffected appearance of the nucleus. Drawn in black and white, but stained as follows: Schaudinn-Heidenhain (Wenyon's modification): Decolourised completely in acid alcohol —> ammonia alcohol, and 50 per cent. spirit, —> counterstained 12 hours in Borrel's blue 1 c.cm., Gauducheau's stain 4 c.cm., dist. water 5 c.cm. Washed in 50 per cent. alcohol, to which a little 1 : 5000 acetic acid was added —> 0·5 per cent. eosin in alcohol —> absolute alcohol —> differentiated in oil of cloves (controlled under microscope) —> xylol —> Canada balsam.

By this method nuclear chromatin is stained blue-black, neutrophile cytoplasm pink, red blood cells crimson. The advantage of this method over the original Schaudinn-Heidenhain is that the cells inclusions can be differentiated from fragments of chromatin, and the nuclei of leucocytes, from which the cytoplasm has been stripped, from red blood cells. (This method is referred to hereafter as "W" stain.)

From a case of amœbic dysentery. Zeiss 1/12, Oc. VIII.

FIG. 3 (original in colours, but reproduced in black and white).—Fæcal film from a case of acute amœbic dysentery. "W" stain. Zeiss 1/12, Oc. II. Note the preponderance of mononuclears, the mouse-eaten appearance of the cytoplasm, the stripping of the unaffected nuclei. An amœba is seen, showing the characteristic nucleus.

FIG. 4 (original in colours).—Fæcal film from a case of acute amœbic dysentery. Modified "W" stain. Zeiss 1/12, Oc. II. An amœba containing red blood cells is seen, but the nucleus is not so obvious by this stain, as the iron hæmatoxylin was omitted.

FIG. 5.—Fæcal film from a fatal case of amœbic dysentery. This man died with symptoms of cholera, and vibrios (non-agglutinating) were present in the stools. Autopsy revealed multiform amœbic ulcers, thickly studding the large intestine from cæcum to rectum. The peritoneum was full of ascitic fluid; the spleen was hard and enormously enlarged; the liver in an advanced state of cirrhosis—a case of "Egyptian splenomegaly" (Ferguson).

FIG. 6 (original in colours).—Fresh fæcal film from a case of acute amœbic dysentery. Note the scantiness of cellular exudate. Zeiss 1/12, Oc. II.

FIG. 7.—Film from surface of colon—Schaudinn-Heidenhain-Wenyon stain. This was taken at autopsy from a case of advanced gangrenous amœbic dysentery such as is described in the text. Zeiss 1/12, Oc. II. Note the digested appearance of the cells.

FIGS. 8 and 9.—Fæcal films from fatal cases of amœbic dysentery—Schaudinn-Heidenhain-Wenyon stain. Zeiss 1/12, Comp. Oc. VI. Compare the macrophage containing a lymphocyte and red blood cells in Fig. 9 with the amœba in Fig. 8. Note that the nuclei of leucocytes and mucosal cells are unaffected, while the cytoplasm has suffered severely. In some instances it has disappeared, leaving the nucleus bare.

FIG. 10.—Leucocytes from fæcal films of amœbic dysentery, to show digestion of cytoplasm. Schaudinn-Heidenhain-Wenyon stain. Compare the nuclei with those seen in bacillary films.

FIG. 11.—A single field from the intestinal contents of the case of gangrenous amœbic dysentery mentioned above, showing a lymphocyte, a mucosal cell, a polymorphonuclear leucocyte, and a red blood cell. Schaudinn-Heidenhain-Wenyon stain. Zeiss 1/12, Comp. Oc. VIII.

II. *Bacillary Dysentery.*

FIG. 12 (original in colours).—Fæcal film from a case of acute bacillary dysentery. "W" stain. Zeiss 1/12, Oc. II. *B. Shiga* isolated. Compare with Fig. 3.

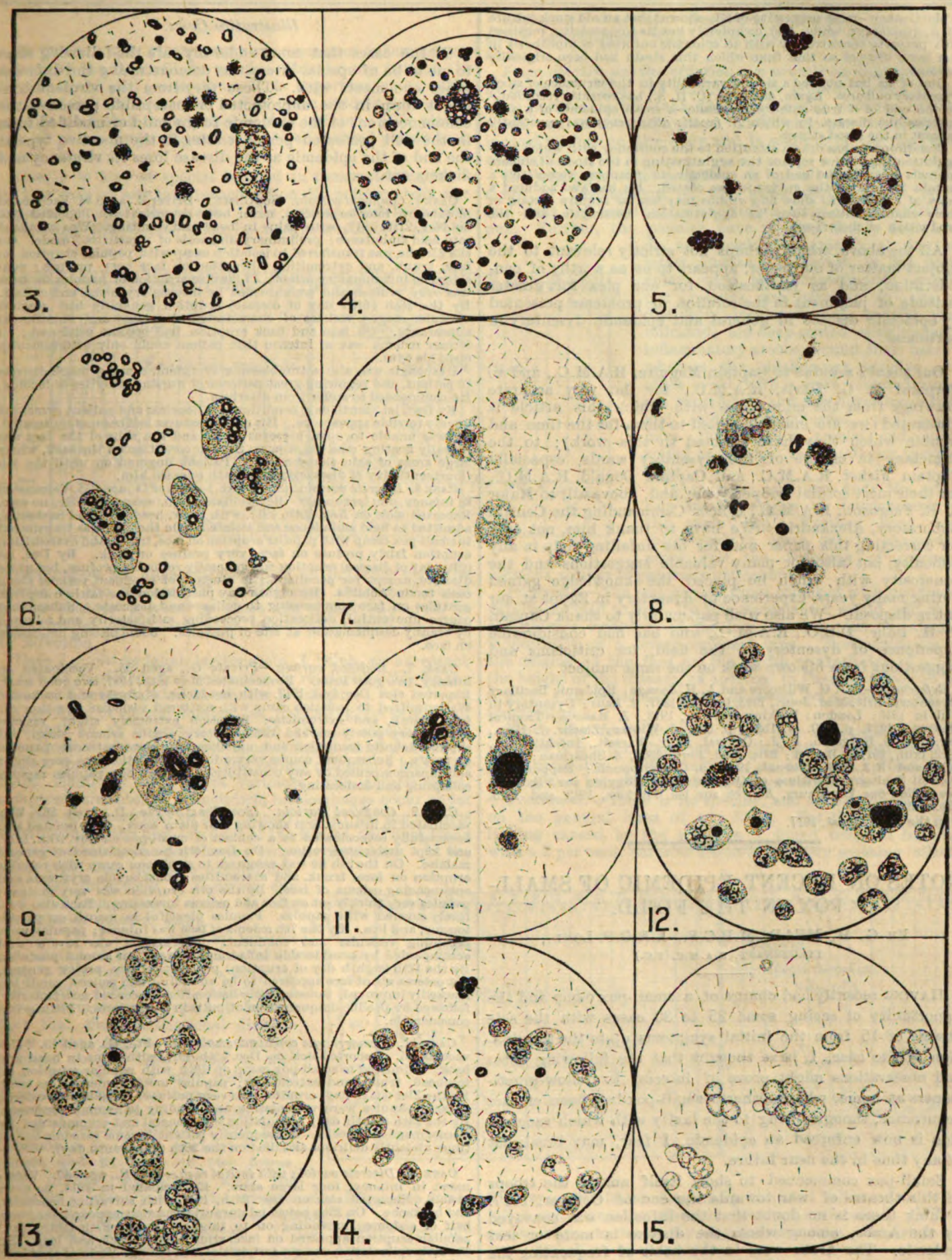
FIG. 13.—Fæcal film from a case of acute bacillary dysentery. "W" stain. Zeiss 1/12, Oc. II. *B. dysenteriæ* mannite-fermenting type isolated. Drawn in black and white. The cell at 1 o'clock contains an ingested red blood corpuscle.

FIG. 14.—Fæcal film from a case of acute bacillary dysentery of about 1 week's duration (Schaudinn-Heidenhain-Wenyon stain, Spencer 1/12, Oc. II. *B. dysenteriæ* mannite-fermenting type isolated). Note the fragmentation of the nuclei and the regular outline of the cytoplasm.

FIG. 15.—Fæcal film fresh preparation in saline from stools of subacute bacillary dysentery unstained. Spencer 1/12, Oc. II. (*B. dysenteriæ* mannite-fermenting type isolated.) To show degenerative changes in leucocytes and formation of "ghost cells."

FIG. 16.—Polymorphonuclear neutrophile probably hydropic, from fæcal film of bacillary dysentery, "W" stain, drawn in black and white. Zeiss 1/12, Oc.V. To show fragmentation and centrifugal tendency of nuclear chromatin.

FIG. 17.—Macrophage of endothelial origin from a case of subacute bacillary dysentery (*B. dysenteriæ* mannite-fermenting type, probably *B. Tor No. I*, isolated). Schaudinn-Heidenhain-Wenyon stain. Reichert 1/12, Oc. XII. The nucleus shows early karyolysis, two polymorphonuclear leucocytes ingested.



DESCRIPTIONS OF ILLUSTRATIONS (*continued*).

FIG. 18.—Shows a similar cell with much more advanced degenerative changes from another case (technique as in Fig. 17). The cytoplasm is swollen, probably hydropic, and shows a projection resembling a pseudopodium towards 1 o'clock. Inclusion forms are represented by a polymorphonuclear leucocyte, a lymphocyte, red blood cells, and their fragments. The nucleus is not obvious, but is probably represented by a line of pyknotic chromatin granules near the periphery of the cell from 4 to 7 o'clock. There is no reason to suppose that any of the changes are artificial or extra-corporeal. (Flexner's bacillus isolated in almost pure culture from the stool.)

FIG. 19.—Leucocytes from a case of bacillary dysentery (Schaudinn-Heidenhain-Wenyon stain. Zeiss 1/12, Compens. Oc. VIII.). The largest cell is probably a macrophage with pyknotic nucleus, the smallest probably a polymorphonuclear leucocyte, and the cell of irregular contour possibly a macrophage, showing the nuclear stigmata peculiar to degeneration produced by toxins of bacillary dysentery.

FIG. 20.—A leucocyte from a fresh preparation stained with Sudan III. from a bacillary stool. To show fatty degeneration of cytoplasm (drawn in black and white). Zeiss 1/12, Oc. VIII.

MacConkey—most suggestive of all—showed that an old stock culture of *B. diphtheriæ*, which had completely lost its toxigenicity, regained this property concurrently with an epidemic outbreak of diphtheria in the same district as that from which this strain had been originally isolated.

One of us has noticed a similar variability in the virulence of stock dysentery cultures. Again, one of us (C. H. S.) has recently recorded—at the end of a true enterica epidemic—a small epidemic of a mild enterica-like disease, in which *B. fæcalis alkaligenes* was constantly present in the blood stream.

Crendiropoulo has drawn attention to the constancy with which non-agglutinating vibrios replace the agglutinating in the stools of cholera contacts towards the end of an epidemic, to disappear completely a certain time after the epidemic has ceased. He has also adduced a mass of evidence to show how vibrios may lose or acquire certain of their characteristics, such as agglutination, hæmolysis, and the production of cholera-red.

All the above, while perhaps not strictly relevant to the subject matter of our paper, appears to us as worthy of consideration, and as justification for our plea for greater latitude of judgment in the solution of problems presented by epidemic disease in general and epidemic dysentery in particular.

Our thanks are due to Captain Maguire, R.A.M.C., and to Corporal E. G. Davis, R.A.M.C., for the very accurate drawings from the microscope with which this article is illustrated (we are much indebted to them for the time and trouble which they have devoted to this work); to the clinicians in charge of the dysentery wards, especially Captain Fisher, R.A.M.C., and Captain Donald, R.A.M.C., for their most cordial coöperation; and, above all, to Major A. R. Ferguson, R.A.M.C., Officer Commanding the Central Laboratory, Alexandria. We have to thank him, not only for correcting this paper and for his unfailing help in any difficulty, but also for many valuable suggestions and the generosity with which he placed the knowledge gained during many years' experience of dysentery in Egypt at our entire disposal. We also wish particularly to thank Captain P. H. Bahr, D.S.O., R.A.M.C., who has had considerable experience of dysentery in the field, for criticisms and suggestions from his own work on the same subject.

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In the Field, Sinai, 1917.

NOTES ON RECENT EPIDEMIC OF SMALL-POX IN THE FIELD.

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LIEUTENANT, R.A.M.C. (T.C.)

HAVING recently had charge of a small-pox camp and the opportunity of seeing some 25 to 30 cases with the sole charge of 15 from the initial symptoms up to the termination of the case, I have thought that the following notes and observations might prove of interest to fellow-practitioners at home, where hitherto small-pox has been of rare occurrence, though owing to the laxity with which vaccination is now enforced an epidemic, I fear, may break out at any time in the near future.

Small-pox commenced to show itself among the troops in this theatre of war towards the end of October, 1917. I think there is no doubt that the infection was conveyed by the Arabs, among whom the disease is more or less endemic. The Arabs were in the habit of frequenting the camps for the purpose of selling their produce.

The fact that the disease was early got under control was, I think, entirely due to the following measures that were taken: 1. Vaccination or revaccination of the personnel of all troops in the infected area who had not been vaccinated within the past five years. 2. The early recognition of the first cases. 3. The rigid isolation of suspected cases, together with the isolation of all contacts. 4. The segregation of such troops from which definite cases had been removed. 5. The exclusion of Arabs from the camps.

Illustrative Cases.

Of the cases that came under my care the following seem to me to be of special interest as demonstrating the different types one meets with. These vary from the virulent confluent form in the unprotected or susceptible person at the commencement of the epidemic to the mild or modified form in the well protected person ending in the abortive type at the end of the epidemic as the disease loses its virulency and flickers out.

CASE 1. *Confluent variola.* (See Chart.)—Driver R., aged 43. Vaccinated in infancy, four large scars, never been revaccinated. Reported sick on Nov. 21st, 1917, with pains in head and vomiting. Was admitted into field ambulance; preliminary diagnosis of "gastritis" made. On the 23rd he was transferred to isolation camp with papular eruption on face, trunk, and extremities. Eruption on face very profuse; considerable inflammatory œdema. Likewise eruption of papules on back was very profuse and accompanied by intense erythema and œdema. By the 26th (fifth day of disease) eruption generally had reached vesicular stage; vesicles of characteristic loculated and umbilicated appearance. On face and back eruption had become confluent; on former œdema was so intense that patient could only with difficulty open his eyes.

Dysphagia was also a troublesome symptom, causing much distress to patient, and requiring great patience of nursing orderlies in feeding. He commenced to suffer from diarrhœa.

By Dec. 1st (tenth day) condition was hopeless and patient presented a truly terrible appearance. His entire features had become obliterated. He was unable to open his eyes at all and the skin of the face was literally floating on a sea of pus. Similar condition on the back, where large areas of skin sloughed off. Patient lingered on until the 4th (fourteenth day of disease), when death released him.

CASE 4. *Discrete variola.* (See Chart.)—Driver D., aged 33. Vaccinated in infancy, one large scar. Revaccinated 1915, unsuccessfully, no scar. Reported sick on Nov. 26th, 1917, with fever, headache, and backache; admitted to field ambulance and isolated. On the 28th was transferred to small-pox camp with papular eruption on face, trunk, and extremities; eruption fairly profuse on face, very profuse on back. By Dec. 1st (fifth day of disease) eruption was generally vesicular, profuse, but quite discrete, except for peculiar little clusters of confluent vesicles along each tendo Achillis. By eighth day pustulation was fairly complete, pustules on face commencing to collapse and desiccate. Subsequent course uneventful, desiccation proceeding satisfactorily and followed by branny desquamation at site of pustules. Some pitting noticeable on face.

CASE 7. *Modified variola.*—Private G., aged 33. Vaccinated in infancy, two good scars. Revaccinated May 16th, 1917, two good scars. Reported sick Dec. 2nd, 1917, with headache, dizziness and backache. Was admitted to isolation camp with scattered vesicular eruption on face, trunk, and extremities. Eruption extremely slight, vesicles having very poorly marked inflammatory areolæ around them, but showed definite loculation and umbilication; few scattered papules on palate. Subsequent course very mild. Pustulation was very slight and unaccompanied by any constitutional upset, the papules rapidly collapsing and desiccating.

CASE 9. *Confluent variola.* (See Chart.)—Pte. D., aged 28. Was vaccinated in infancy, arm showing four plain scars. Was isolated and successfully revaccinated as a contact of small-pox on Nov. 26th, 1917, and kept under observation. On Dec. 4th he complained of general malaise. On the 5th he was removed to small-pox camp with papular eruption on face, trunk, and extremities; considerable erythema and commencing œdema of face. By the 6th eruption was very profuse; papules very thickly set on face and œdema increasing. Back also profusely covered with papules. Papules plentiful in mouth, on palate, tongue, and lips. By the 7th œdema of face was intense; papules were becoming vesicular and confluent. Pustulation was severe and accompanied by considerable inflammatory reaction around pustules. By the 12th (eighth day of eruption) pustulation was pretty general, but œdema about face appeared to be subsiding and general condition markedly improved. Subsequently desiccation proceeded satisfactorily, followed by prolific desquamation of cutis in large pieces. Pitting was considerable.

CASE 11. *Hæmorrhagic confluent small-pox.*—Pte. G., aged 19. Unvaccinated. Reported sick on Dec. 15th, 1917, with pains in head and back. Admitted to small-pox camp on 19th with papular eruption on forehead, trunk, and extremities: papules most numerous on back. By the 21st (sixth day) eruption was very profuse; considerable œdema of face; papules were vesiculating and tending to become confluent. By the 24th (ninth day) pustulation was general and accompanied by hæmorrhage into pocks. Subsequently patient became toxæmic and at times violently delirious and died on the 29th (fourteenth day).

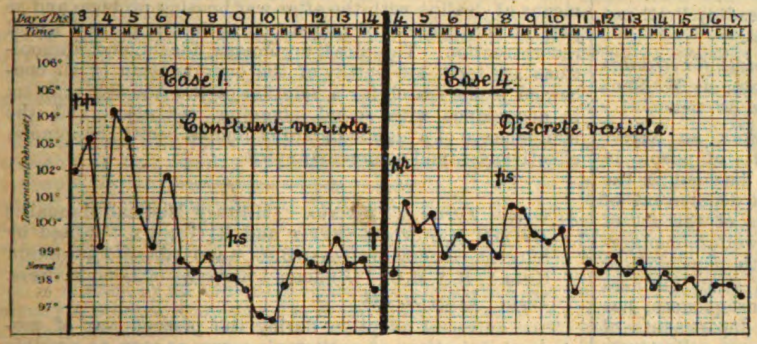
CASE 12. *Discrete variola with initial rash.*—Pte. R., aged 30. Vaccinated in infancy, four large scars. Revaccinated in 1914, no scars visible. Reported sick on Dec. 24th, 1917, with shivering, headache, and backache. On 25th petechial purpuric eruption appeared on lower half of abdomen, extending on to thighs. On the 27th (third day) papular eruption appeared on face, arms, thorax, back, and legs. By the 29th vesiculation was general, initial rash fading. Vesicles remained quite discrete. Pustulation was mild and subsequent course uneventful.

CASE 15. *Modified abortive variola.* (See Chart).—Driver O., aged 18. Vaccinated in infancy, four plain scars. Revaccinated Jan. 6th, 1918, two plain scars. Reported sick on the 9th, complaining of headache and diarrhœa. Was admitted to small-pox camp on the 13th with few scattered papules on face, arms, and back. Subsequently only a few papules matured, remainder aborting without reaching vesicular stage. On eighth day T. rose and pain in left shoulder; swelling, heat, and tenderness in region of left acromio-clavicular joint. The joint was wrapped in wool and immobilised by binding arm to body and aspirin administered. The trouble rapidly subsided; subsequent course uneventful.

Comments.

In Cases 1 and 11 the early appearance of inflammatory œdema of the face will be noted. This, in my opinion, is an important and grave sign. It is important as an early sign and aid to diagnosis, and is often evident when the papules are rather more palpable than visible. It is also a sign of grave prognosis, and when well marked points to a severe attack.

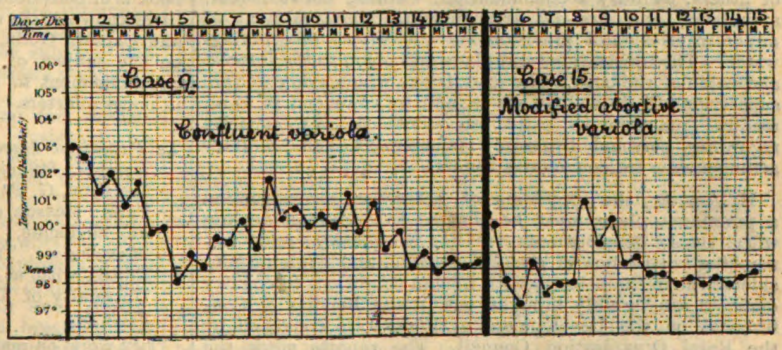
Case 9 is also of special interest in demonstrating that in this case at any rate revaccination did neither abort nor apparently modify the attack. The patient must have been incubating the disease when he was revaccinated, and the revaccination had apparently little or no influence upon the course of the disease. From this case alone one would gather that to prevent or abort the attack one must be revaccinated either before or immediately after exposure to infection.



Case 7 might be taken legitimately, I think, as an attack of variola modified, and consequently rendered mild, by the successful revaccination 11 months previously.

Case 11 is of special interest as indicating the severity of an attack in an unprotected person, also on account of the complication of hæmorrhage. Hæmorrhagic small-pox occurs in two forms. In the one, the variety commonly known as black small-pox or purpura variolosa, the constitutional symptoms are intense. Punctiform hæmorrhages occur under the skin and there may be also hæmorrhages from the mucous membranes in the first few days of the illness, and death may supervene before the papules are properly developed. In the other type, that this case exemplifies, the case progresses as a severe one and the hæmorrhages occur in the vesicular or pustular stage.

Case 12 is of a peculiar interest on account of the prodromal or initial rash. This rash, being of a purpuric character, might have indicated a severe hæmorrhagic type but for the fact that the constitutional disturbance was slight and everything pointed to the case being a mild one. Of the 30 or more cases that passed through my hands this was the only instance of an initial rash. These rashes are said to occur more commonly in some epidemics than others and to occur in two forms, the diffuse scarlatinal and the macular or measly form, the common site being the lower part of abdomen and inner side of thighs.



Case 15 is of special interest. 1. The abortive type may have been due to successful revaccination three days before the initial symptoms or to the epidemic exhausting itself and the cases becoming of a milder type. I am inclined to the latter view. 2. Arthritis is stated to be not uncommon in small-pox, and may go on to suppuration.

Of complications, pharyngitis and dysphagia were present in the severe cases, together with a certain amount of laryngitis and bronchitis. The fact that we escaped serious complications such as corneal ulcers, iritis, otitis media, &c., I attribute in no small measure to the care and attention the nursing orderlies gave to keeping the eyes, nose, and mouths of the patients clean and free from all noxious matter.

Differential diagnosis.—Small-pox in its mild form might easily be confused with chicken-pox and also pustular acne.

From *chicken-pox* the eruption can usually be distinguished by its distribution. In small-pox the eruption tends to be more profuse on the face, back, and upper portions of the chest, and on the extremities. In chicken-pox the eruption is most profuse on the body and is scantier on the face and extremities.

In small-pox the eruption is usually in the same stage of development in the same part of the body and does not come out in successive crops, as in chicken-pox. Further, the papules have a hard shotty feel and do not develop so quickly as in the latter disease. Moreover, in the vesicular stage the characteristic small-pox vesicles are circular in shape, distinctly loculated, and usually umbilicated, are deep-seated, with definite inflammatory areolæ around their bases; whereas the chicken-pox vesicles are often ovoid, with a more rounded apex, are superficial, and are never loculated, and seldom umbilicated, and never have the definite areolæ and infiltrated bases that the small-pox vesicles have.

In *pustular acne* one finds the eruption in all stages of development in the same site. Further, acne pustules tend to come out in successive crops and the presence of scars of previous attacks is generally noticeable.

Prognosis.—The majority of those attacked with confluent variola are said to die. To this statement I would add that early severe erythema of the face, accompanied by œdema, is indicative of a severe confluent type. The subsidence of the œdema of the face on the eighth or ninth day—i.e., at the height of the disease, as occurred in Case 9—I took to be a good sign, especially when followed by a gradual fall in temperature.

When the fever increases after the appearance of the pustules it is a bad sign, but a subnormal temperature after the appearance of the pustules, as occurred in Case 1, is more grave, being indicative of a poor resistance.

Treatment.—There is no specific, and treatment has to be on the general lines of any fever. For the burning and itching caused by the eruption I found frequent bathing with a 2 per cent. carbolic lotion had a very soothing effect. The eyes should be frequently irrigated with warm boric lotion and attention given to the nose and mouth. When crusts begin to form oily applications seem best, such as weak carbolised oil or vaseline.

For the odour of the disease, which is very objectionable both to the nurses and patient, I found a little oil of eucalyptus sprinkled about the floor and bedding had the effect of both drowning the obnoxious smell and giving a fragrant and soothing atmosphere for the patient's respiratory passages, which are frequently more or less affected.

In conclusion, I should like to acknowledge my gratitude to my commanding officer, Lieutenant-Colonel Burke, D.S.O., R.A.M.C., for the valuable aid he rendered me in arriving at a diagnosis in the early cases.

Reviews and Notices of Books.

WAR AND HOUSING PROBLEMS.

I. *Welfare and Housing: A Practical Record of War-time Management.* By J. E. HUTTON, Manager of the Labour and Catering Department of Vickers, Ltd.; Member of the Food Investigation Committee of the Ministry of Munitions. With 12 illustrations from photographs and two plans. London: Longmans, Green, and Co. 1918. Pp. viii. + 192. Price 5*s.*

II. *Village Life After the War.* London: Headley Brothers, Ltd. 1918. Pp. v. + 118. Price 1*s.* net.

III. *New Towns After the War: An Argument for Garden Cities.* By "NEW TOWNSMEN." London: J. M. Dent and Sons, Ltd. 1918. Pp. 84. Price 1*s.* 8*d.* net.

I. War conditions have made welfare work an urgent necessity. The aggregation of vast numbers of people in munition factories and community centres has led to the establishment of welfare management as a department of social science and an indispensable section of the art of human betterment. It is now realised that welfare management must be conducted in accordance with physiological and psychological principles as well as on strict business lines. War, with its concomitants and consequences, has compelled the nation to elaborate special departments of prophylactic and remedial assistance which can collectively be grouped under the general heading of social medicine. Mr. Hutton's informing manual furnishes an interesting and practical work which will prove of real service to many medical advisers and will do much to stimulate endeavours for the establishment of medico-sociological work for factory workers on a scientific and effective foundation. The descriptions are based on actual experiences in connexion with the various war industrial centres conducted by the firm of Vickers, Ltd. The work formulates the essentials of welfare supervision, explains measures for temporary and permanent housing, and describes principles and practices governing catering, the conduct of canteens, and the estimation of food values. There are also suggestive chapters on motor transit, amusements, works police, and industrial unrest. The information in the chapter on Hospitals and Medical Service is of particular medical interest, and we also direct attention to the helpful section which deals with welfare work from the women's point of view. There are appendices dealing with certificates of fitness, sanitary accommodation, washing conveniences, ambulance and first-aid arrangements, the treatment of minor injuries, and provision for the supply of drinking-water. The illustrations and plans add much to the interest and value of the book. The work is one which every welfare supervisor will do well to study, and we commend it to all medical practitioners called to advise in any capacity regarding personal hygienic management and sanitary arrangements for community benefit.

II. Among the problems of after-war reconstruction a prominent place must be allotted to questions dealing with rural developments. The complexity and far-reaching importance of social, economic, and hygienic considerations in the betterment of human conditions in country districts are forcibly brought out in the Reports of Conferences on the Development of Rural Life convened by the Rural Organisation Council. The reports merit the serious study of all medical officers of health and others interested in the protection and progress of human health and happiness in country districts. Amongst the subjects discussed are means for the increased production of food, legislative and other measures for the organisation of satisfactory conditions particularly in view of demobilisation, wages, rural credit, coöperation, housing, rural planning, de-urbanisation of industries, education and social amenities, provision of village community centres, protection of commons, provision of open spaces and the arrest of rural disfigurement, rural continuation school buildings, and the development of country industries and handicrafts. Such a brief enumeration is sufficient to indicate the importance of the volume of transactions and the aims of the Rural Organisation Council, the headquarters of which are at 25, Victoria-street, Westminster, London, S.W. 1.

The objects of the Council are thus defined:—

"To improve the conditions of Rural Life in Great Britain, and for those purposes to federate and secure the harmony and coöperation of any subscribing and approved non-party societies or associations concerned with rural life, while preserving their separate individuality and independence, and in particular to assist the publicity work and the financial needs of the federated societies and associations and generally to take steps for the promotion of agricultural prosperity in Great Britain, and to pursue or carry out any other lawful objects or functions which may conduce to the above objects or any of them."

III. An informing brochure has been issued to expound the aims of the National Garden Cities Committee, the headquarters of which are at 19, Buckingham-street, Strand, London, W.C. 2. This body advocates the building of new towns and the development of existing small towns as a means of dealing with the after-war housing problem and as part of the process of industrial, agricultural, and social reconstruction. The pleas, arguments, ideals, and admonitions set forth are worthy of the consideration of all concerned in the search for a solution of the housing problem in accordance with sound planning, æsthetics, and the maintenance of a high standard of human health, happiness, effectiveness, and community spirit.

Abnormal Forms of Tetanus. (Military Medical Manuals.) By MM. COURTOIS-SUFFIT and R. GIROUX. Edited by Surgeon-General Sir DAVID BRUCE and Captain FREDERICK GOLLA, R.A.M.C. London: University of London Press. 1918. Price 6*s.* net.

THE universal adoption during the present war of prophylactic injections of antitetanic serum as soon as possible after a wound has been received has modified in many cases the symptoms of tetanus. Man has been converted from a highly susceptible to a resistant subject, and as a result local tetanus, formerly a very rare type, now constitutes nearly 20 per cent. of the total number of our cases of tetanus. It is to the credit of the authors that they were able to give the first systematic account of the various forms of abnormal tetanus. It is curious, however, that their experience does not furnish many examples of the purely local form, never spreading beyond the group of muscles originally affected, with which we are so familiar in this country. The majority of the types described by them would be classified as cases of generalised tetanus with a local onset. In view of our later experience, much of the space devoted to a rather discursive and not very authoritative account of the general therapeutics of tetanus might have been with advantage given to a discussion of the pathology and the differential diagnosis of local tetanus from the various types of contracture. The book is of considerable value as a clinical exposition of some little known types of tetanus. The editors, Sir David Bruce and Captain Golla, sound a not unnecessary note of warning on the subject of treatment, recent statistics giving little encouragement to the uncritical optimism that is prevalent in many quarters.

Le Paludisme Macédonien: Caractères Cliniques et Hématologiques, Principes de Thérapeutique. Par P. ARMAND-DELILLE, G. PAISSEAU, P. ABRAMI, et HENRI LEMAIRE. Paris: Masson et Cie, Editeurs Libraires de l'Académie de Médecine. 1917. Price 3 frs. 50. *Malaria in Macedonia.* Translated by J. D. ROLLESTON, M.D. Edited with a Preface by Sir RONALD ROSS. London: University of London Press, Limited. 1918. Pp. 115. Price 6*s.*

THE work on malaria published in this country during the last year has established for most of us the following three things: (1) that only by a microscopic examination can a diagnosis of malaria be made; (2) that it is unscientific to speak of the treatment of malaria, when we should distinguish between the treatment of simple tertian and malignant tertian malaria; and (3) that it is essential when we speak of "curing" malaria to state clearly what we mean by the word "cure." "Cure" as regards malaria strictly means that the parasites in the body have all been killed. As we have at present no means of ascertaining whether this is so or not, our only means is to examine the blood periodically and determine whether or no parasites are present in the blood. A rigor by itself is no evidence of malaria, not even in a case that has shown parasites, for a reference to the records of the work done in this country will show, even in malaria cases, rigors without parasites in

the blood. The nature of these remains to be determined just as much as the nature of any other rigor of unknown origin. If we are to judge the value of the curative treatments for simple tertian malaria recorded in the last chapter of this book we must have these facts in our mind. We see no means of deciding whether any of them are of use, when nothing is said about the observation period. We cannot observe patients for ever, but we can only estimate the value of "Job's treatment," "the Italian treatment," "Carducci's treatment," or "Ravaut's treatment" (p. 109) if we know for how long these treatments have "cured" their cases, whether for one day, one week, one month, or one year. As regards the treatments themselves the reasons for them are not given, and we are asked to accept an *ipse dixit* as equivalent to a conclusion based on facts. In the important matter of curative treatment, as distinct from the treatment of a paroxysm, we find no guidance in this work.

The authors regard primary malaria as invariably due to the malignant tertian parasite and secondary malaria as due to the simple tertian malaria parasite. Not all observers in this country will agree with their view, for infections originating in this country where the first attack was due to the simple tertian parasite have been recorded. It will be gathered from these remarks that we do not consider all the authors' statements proved, but as a basis for further study the book will be found of great use, and it should be in the hands of all who are called upon to treat malaria. The work is marked by an admirable clearness of style, and the summary of clinical symptoms due to the different species of parasite is excellent.

I. *Minor Maladies and their Treatment.* By LEONARD WILLIAMS, M.D.Glasg., Physician to the French Hospital. Fourth edition. London: Baillière, Tindall, and Cox. 1918. Pp. xi. + 402. Price 7*s.* 6*d.* net.

II. *The Art of Keeping Well.* By RONALD CAMPBELL MACFIE, M.A., M.B., C.M., Hon. LL.D. Aberd. With one colour and three half-tone plates. London: Cassell and Company, Ltd. 1918. Pp. xi. + 244. Price 6*s.* 8*d.* net.

I. Dr. Leonard Williams's book, first published in 1906, is now in its fourth edition. The author exposes in a preface the inadequacies of existing methods of medical training which permit the young practitioner to enter on his professional life incompletely equipped for dealing with derangements which, in all probability, will form the major part of his practice, and thus fully justifies what follows in his book. The work deals with colds, coughs, and sore-throats, indigestion, constipation, diarrhœa, vomiting and giddiness, rheumatism, neuralgia, and headache, goutiness, and minor glandular insufficiencies. There are informing chapters on the maintenance of general health, the care of old age, the supervision of mentally deranged subjects, and the use of certain drugs. Dr. Williams possesses a vigorous style and writes with directness and humour.

II. Dr. Macfie has written an interesting and serviceable book on the principles of health, designing his work for non-medical readers. But it will prove of service to medical advisers who are called upon to explain physiological facts to their patients, or to lecture to nurses, ambulance and first-aid classes, as well as to those called to direct the instruction of welfare workers. The subjects dealt with relate to man's food requirements, the dietetic characters of the principal foodstuffs, digestion and absorption, the mechanism of breathing, air and climate, muscular activity, sleep, the care of the skin, breathing and clothing, and also the hygiene of the home. There are helpful chapters on alcohol, tobacco and drugs, common minor ailments, and the relationship of body and mind. Dr. Macfie has the knack of expressing in attractive form guiding truths and governing principles.

JOURNALS.

The British Journal of Children's Diseases. Vol. XV., April-June, 1918. Edited by J. D. ROLLESTON, M.D.Oxon.—Mr. R. Thompson writes on cases of urinary disease in children, which, he states, are not so common as in adults owing to the absence of obstructive causes such as enlarged prostate or pregnancy. Obstructive lesions, however, may occur as a sequel to tuberculous peritonitis or abdominal adenitis, which may cause kinking or compression of the ureter. Mr. Thompson records cases of pyonephrosis due to aberrant blood-vessels, renal calculi, or fibrous adhesions kinking the ureters in children aged from 8 to 13 years, and draws attention to the fact that in children symptoms of renal calculus may occur on the side which is not affected. The commoner symptoms of vesical calculus in children, in his experience, are frequency of micturition and incontinence. The prognosis is not good, and lithotrity should always be preceded by cystoscopy. The prognosis of traumatic stricture in children is also unfavourable; if possible the stricture should be excised and the ends sutured.—Dr. E. Bronson contributes a paper on Erythema Nodosum Associated with Tuberculosis, and records a case of acute pleural effusion in a boy, aged 9 years, suffering from erythema nodosum. Dr. Bronson concludes that the supposed relationship of erythema nodosum to acute rheumatism lacks clinical support; that the sequence of fairly well-defined prodromal stage, often with sore-throat, eruptive stage, and slow convalescent period, supports the theory of a specific disease of mildly infectious type; that the possibility of it being a non-specific cutaneous manifestation of general toxæmia must be considered; that the strong reaction to tuberculin and the clinical association of the two conditions are in favour of the tuberculous etiology. Finally, that the etiology of erythema nodosum has not yet been established.—In his article on the nature of von Jaksch's disease Dr. Gordon Ward adopts the following hypothesis. The disease is a reaction of the infantile blood-forming organs to infection. The actual infecting organism is not known, and is not necessarily specific. The particular reaction is only produced when rickets is present. There are therefore two essential factors—viz., infection as an exciting factor and rickets as a predisposing factor.—Dr. H. W. L. Barlow, in his notes on small-pox in childhood, gives an account of the recent outbreak of small-pox in the East-End of London. It was largely an affection of childhood. Of the first 30 patients 14 were under 15 years of age. Of these, 5 had never been vaccinated at all or only after the commencement of the actual illness, and 9 were vaccinated for the first time in the incubation period. The combination of a considerable degree of infectivity with a rather low virulence seems to have been a characteristic of the epidemic. Only one case, a girl aged 6½ years, died.—"Can the Clinical Manifestations of Congenital Heart Disease Disappear with the General Growth and Development of the Patient?" is the title of a note by Dr. Parkes Weber, who quotes two recent cases from the *Guy's Hospital Gazette* to show that such an eventuality is possible, and relates a similar case in a boy who used always to be cyanotic and had a tremendous thrill and a murmur audible at a slight distance from the chest. His development, however, was good, and he was ultimately passed for military service, nothing abnormal being found by the examining doctor. Dr. Parkes Weber also contributes a note on erythema iris in a boy, aged 6 years, in whom the eruption consisted of three patches, the largest in front of the trunk, and a smaller one on each side.—Mr. P. B. Roth relates a case of hæmophilia with effusion into the knee-joints in a boy, aged 6½ years. The condition at first was regarded as tuberculous, but the correct diagnosis was established by a history of hæmophilia and by the following X ray findings which Mr. Roth considers pathognomonic of hæmophilia. There were extensive wearing away and absorption of the cartilage and bone of the femur, tibia, and patella, as well as the formation of new bone at the edges and a deep shadow surrounding the bones, obviously due to distension of the synovial cavity with blood. To obviate ankylosis Mr. Roth proposed to apply two "knee-cages" to limit the movements of the joints and so prevent further attacks of effusion, and also to give regular doses of thymus gland and calcium and magnesium salts.—Dr. James Burnet records a case of pregnancy in a girl, aged 14, in whom menstruation had commenced at 12. The father was a boy of about the same age. Pregnancy lasted 268 days and resulted in the birth of a healthy male infant weighing 9 lb.—Drs. Marcel Labbé, Targhetta, and Ameuille publish the first two cases of infantile kala-azar in France. The patients were Serbian refugees, aged 6 and 9 years respectively, living at Nice, and had probably been infected by a pet dog.—Dr. E. Jeanselme and Mme. Chatelain describe an epidemic of familial syphilis in which a soldier home on leave infected his wife and indirectly five other members of the family.—In a note on a fifth cusp and hereditary syphilis Dr. C. Mantoux contests Sabouraud's claim that a fifth cusp on the inner surface of the first upper molar is invariably associated with inherited syphilis. In 7 cases with this fifth cusp examined by Mantoux none presented any history or signs of inherited syphilis, and the only two who had a positive Wassermann reaction were the subjects of acquired syphilis.—The abstracts from current literature deal with diseases of the blood, circulatory system, urogenital system, dermatology and syphilis, and school hygiene.

A RECENT Order of the Scottish Local Government Board makes the notification of ophthalmia neonatorum compulsory as from Nov. 1st, 1918.

Reports and Analytical Records

FROM

THE LANCET LABORATORY.

DRIED MILK (AMBROSIA BRAND).

(AMBROSIA LIMITED, BRIGHTON CHAMBERS, DENMAN-STREET, LONDON BRIDGE, S.E.)

THE importance of dried milk has recently been emphasised in a report of the Local Government Board reviewed in our columns.[1] The consensus of opinion of the authorities quoted in that report is in favour of the use of dried milk in infant-feeding, when, of course, breast-feeding is not available, and it appears that the physical and chemical changes produced by the processes used in the preparation of dried milk so alter its character that it is better assimilated by the infant than is ordinary cow's milk, whether raw, boiled, or sterilised. Further, even if the milk powder is not entirely soluble on reconstitution, its digestibility is not affected except for good. This probably is largely due to the fact that the casein of dried milk separates on the addition of gastric juice as a fine, soft curd, and not in lumps, as is the case with ordinary cow's milk. Such conclusions are of the utmost importance, since they justify the drying of milk and the conservation in this way of our available milk-supplies, well known to be unsatisfactory, because milk in the fluid state is perishable and liable to contamination on its way from its source to the consumer. The specimen submitted to us by the above company presents all the characteristics of a dry milk powder prepared from clean milk by an effective drying process and under strictly hygienic conditions. Our analysis gave the following results: Moisture, 1·60 per cent.; proteins, 28·71 per cent.; fat, 29·29 per cent.; milk sugar, 35·20 per cent.; mineral matter, 5·20 per cent. It will be seen that the proportion of fat is most satisfactory, and in general the results show that in this powder is preserved the complete food value of cow's milk of good quality. We understand that the dairy and works of this company are situated in Devonshire, and that, although primarily the manufacture was installed in order to supply the troops with milk food, a balance is reserved by permission of the War Office for the purpose of infant feeding.

"CLAROCIT."

(ARNOLD AND SONS, GILTSPUR-STREET, LONDON, E.C.)

"Clarocit" consists of a round tablet of a soap-like nature, and has been designed for preventing the condensation of moisture on laryngoscopic mirrors and lenses. The procedure is simple. Some "clarocit" is taken up by the moistened finger or suitable cloth and rubbed on the glass surface. A dry film is obtained when left for a few moments, which is removed by polishing. The method, according to the trials we made, answers admirably, condensation of moisture from, for example, the breath being completely prevented. The price of the tablet seems to us somewhat excessive, but of course the difficulties of all production are to-day abnormal. There are two sizes, 2*s.* 6*d.* and 5*s.* respectively, and the tablet we examined weighed not more than ¼ oz. A very small quantity, however, suffices for the purpose.

HAY FEVER OUTFIT.

(DUNCAN, FLOCKHART, AND CO., EDINBURGH. LONDON OFFICE, 155–157, FARRINGDON-ROAD, E.C.)

This outfit comprises (1) the ophthalmic test, and (2) the vaccine prepared from the pollen of Timothy grass. The diagnosis is indicated by the former and treatment by the latter. A drop of the toxin solution is instilled on the eyeball of the patient, and the strength of the solution (supplied in capillary tubes) which first causes the ophthalmic reaction is noted. The dose of the pollen vaccine is based on this indication, and is one-third to one-half of the number of units of ophthalmic solution which first produces a reaction. Thus a patient giving a diagnostic reaction with 25 units would receive 10 to 15 units of the vaccine hypodermically. The vaccine is contained in a graduated series of doses in ampoules, providing a good range for the varying indications of the patient.

[1] THE LANCET, April 6th, 1918, p. 509.

Both ophthalmic reaction solution and the pollen vaccine are prepared in the laboratory of the Royal College of Physicians, Edinburgh, in which has also been prepared for some time a tuberculin described by Professor Beraneck, director of veterinary medicine at Neuchâtel. This tuberculin is a mixture of equal parts of a filtered culture of tubercle bacilli on an albumose-free medium, and a phosphoric acid extract of bacillary bodies. It is claimed that this tuberculin is less toxic than, and equally efficacious to, Koch's tuberculin.

FLY-QUIT PRODUCTS.

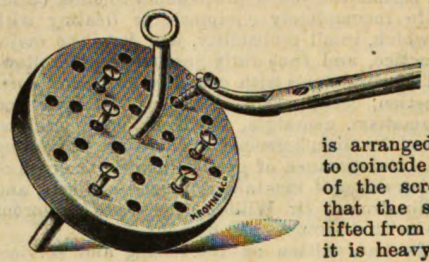
(LAWSON AND COMPANY, LIMITED, ST. PHILIP'S, BRISTOL.)

We referred to these preparations in this column in THE LANCET of Sept. 1st, 1917, since when further attention has been given to increasing their efficiency and convenience as muscicides. They are non-poisonous, and "fly-quit" spray has been found useful in rendering meats and uncooked food-stuffs fly-proof without affecting the normal flavour of the food material in any objectionable way. The concentrated preparation forms an emulsion with water which is non-staining and of broad "wetting" power. As a muscicide the toxic action is slow, so that the flies do not as a rule drop dead amongst the food or, indeed, indoors if they are free to escape. Another preparation is "fly-quit" oil, which is used against blow flies out-doors; and, lastly, there is "fly-quit" emulsion, which has been successfully employed for killing both flies and larvæ in manure and refuse heaps. The preparations are free from offensive smell and have the pleasant characteristics of wood-tar.

New Inventions.

A "SCREW STAND" FOR USE IN BONE-PLATING.

IN plating bones according to the principles of Lane I have found much time wasted and much annoyance caused by difficulty in seizing hold of each screw with the screw-holder preparatory to inserting it in the bone. I have therefore devised a screw stand which does away with all the difficulty (see figure). It is arranged at an angle to coincide with the neck of the screw-holder, so that the screws can be lifted from it in a second; it is heavy and will not overturn; it is lifted straight out of the steriliser by the ring and placed on the instrument table, so that all chance of contamination of the screws is avoided. Moreover, in seizing the screws only one hand is required, and in a typical operation several minutes are saved. The stand is made by Messrs. Krohne and Sesemann.



PAUL BERNARD ROTH, F.R.C.S.,
Senior Surgeon, Kensington General Hospital; Surgeon, City of London Military Hospital.

THE LANCET, VOL. I., 1918: THE INDEX.

OWING to the continued shortage in the paper-supply, the Index and Title-page to the volume of THE LANCET which was completed with the issue of June 29th have been printed separately, and copies have been supplied gratis to those subscribers who have, up to August 14th, intimated to us their wish to receive them. Other subscribers will be similarly supplied, so long as the stock remains unexhausted, on application to the Manager, THE LANCET Office, 423, Strand, London, W.C. Such applications should be sent in at once.

THE LANCET.

LONDON: SATURDAY, AUGUST 17, 1918.

The Small-pox Danger.

IN a report to the Local Government Board on the incidence of small-pox throughout the world in recent years Dr. BRUCE LOW has given a detailed account of the behaviour of this disease which shows its presence in almost every quarter of the globe. He sounds a warning note as to the dangers likely to arise in this country from the continued neglect of vaccination and revaccination by a large section of the public. The accumulation at home of this unprotected material is attended with considerable risks at the present time, and these are likely to become still more serious at the end of the war when large bodies of troops, as well as other persons, will arrive in this country from areas in which small-pox is endemic, or where recent epidemics have been occurring. This is no alarmist pronouncement but a justifiable and probable surmise.

In the present day many of the younger generation of British medical practitioners have had little or no opportunities of becoming acquainted with small-pox. Under normal conditions the occurrence of an imported case in a well-administered district is swiftly and successfully dealt with by immediate isolation of the patient and segregation of the contacts, along with vaccination and revaccination. But it is not so easy to deal with cases in some other countries. There are certain races among whom small-pox is almost always present, and this is the case with the Arabs inhabiting the region from Morocco to the western shores of the Persian Gulf, among whom small-pox as well as exanthematic typhus is always occurring, and who, when coming from the interior to coastal towns or to depôts on the caravan routes, convey small-pox to the susceptible individuals who may come in contact with them. An instance of this is given in a communication which we publish in our columns by Lieutenant G. H. MEAD, R.A.M.C.(T.C.), entitled "Notes on a Recent Epidemic of Small-pox in the Field." Here is given illustration of the danger from the visits to camps of friendly Arabs selling their fruit and vegetables to our soldiers and camp followers. Lieutenant MEAD describes a localised outbreak, comprising about 30 cases, of which he had the supervision, and he gives some interesting clinical facts concerning the patients under his charge. We infer that vaccination and revaccination of men in our expeditionary forces have not been so persistently carried out as in former days. Incidentally, Lieutenant MEAD shows the danger of small-pox to those who have reached middle age, and who, though vaccinated in infancy, have not been revaccinated, and have consequently long lost their previous immunity. He also illustrates the folly of postponing revaccination till after exposure to the infection and therefore too late to arrest the development of the disease; and, further, he shows the serious nature of a small-pox attack in an unvaccinated person who has been exposed to a virulent strain of the infection. Lieutenant MEAD'S "Notes" are worth study by those who wish to keep themselves posted up in the possible occurrence of small-pox, first in our expeditionary and secondly in our home communities, wherever somewhat analogous conditions occur.

Dr. BRUCE LOW, in his report, refers to the disastrous pandemic of small-pox which began during the Franco-German war, and which spread over the whole of Europe, extending to the western hemisphere, and causing, in Europe alone, about half a million of deaths in three or four years, of which number not far short of 50,000 occurred in England and Wales. He is evidently alive to the possibility of such sinister history repeating itself. The existing conditions of a great European war, with a battle-front from Flanders to Mesopotamia, involve countries in which small-pox is already present; in addition to this we have to reckon with the displacement from their homes of large numbers of the poorer classes, as well as refugees, deported populations, and prisoners of war, many of whom are unvaccinated; and their aggregation takes place under unwholesome conditions of over-crowding, distress of mind, and privation, with consequent lowering of vitality. Now all these things are likely to intensify the type of the disease. Should such virulent strain of infection be introduced into this country, with its accumulations of unvaccinated children and unrevaccinated adults, it is more than probable that a serious epidemic would follow. The situation would be further aggravated at the present time if the epidemic began in the absence on military service of many of our medical officers of health, public vaccinators, inspectors of nuisances, vaccination officers, and other officials, who in ordinary circumstances could be trusted to deal successfully with the early manifestations of a small-pox epidemic. The public who have in a large measure lost their former dread of small-pox in consequence of its comparative disappearance from our land, and have, therefore, neglected vaccination, would almost certainly suffer severely. Dr. BRUCE LOW'S report comes as a timely reminder that with all our boasted progress in sanitation and preventive medicine we cannot afford to ignore the danger of small-pox; nor can we continue as a nation to neglect the only prophylactic against it known to medical science—namely, vaccination and revaccination.

40 D.

THE Regulation under the Defence of the Realm Act commonly known as 40 D having now been in force for some months, it is not too early to begin to inquire into its value as a measure of public health, for evidence is becoming available on which to base a judgment. It must be as a public health measure that the Regulation stands or falls, since it was introduced as such, and was not held out by its promoters either as a device for making promiscuous sexual intercourse safe for men or as a form of duress for women of loose morals.

The public health intent of the Regulation is made evident from its phrasing, which runs as follows:—

"No woman who is suffering from venereal disease in a communicable form shall have sexual intercourse with any member of H.M. Forces or solicit or invite any member of H.M. Forces to have sexual intercourse with her."

Now, in the first eight charges under the Regulation in various parts of the country, from Manchester in the north to Portsmouth in the south, four convictions were obtained and penalties of two to six months' imprisonment with or without hard labour inflicted. In four cases the accused was acquitted, although in one of these the woman was committed to prison for a month for keeping a brothel. Last week, at a London police court, the solicitor acting for the Commissioner of Police said that so far as his experience went prosecutions under the Regulation had not turned out satisfactorily; of five cases conducted by himself all had failed. The difficulty, he added, was due to the time elapsing between inception of the disease and examination of the woman. In the case actually before the court no hardship, he said, could be alleged, as the woman was a prostitute. In a similar case brought early last month before a London police court a charwoman was fined for assisting in the management of a disorderly house, although the magistrate acquitted her under Regulation 40 D after the gaol medical officer had reported that he could find no evidence of disease. We observe, therefore, that up to the present time, in a large proportion of cases, it has proved impossible to establish the existence of "venereal disease in a communicable form," although in some at least the women were demonstrably living a disorderly life. It may without unfairness be concluded that a searching bacteriological examination, involving the use of the vaginal speculum and the expression of secretion from the urethra and cervix uteri, may fail to establish evidence of infection in cases where clinically it was almost certainly present. And this conclusion is entirely in harmony with the admitted difficulty—some experienced clinicians go so far as to call it impossibility—of curing gonorrhœa in the female. Quite apart from the fact that the woman may be acting merely as carrier of infection without at the time clinically suffering herself from venereal disease, it may frequently happen that an infective spot is present in the genital tract which is beyond the reach of the most exhaustive examination. Put shortly, the coitus test is more delicate than the bacteriological. With regard to the latter test, Regulation 40 D runs:—

"A woman charged with an offence under this regulation shall ..... be remanded ..... for the purpose of such medical examination as may be requisite for ascertaining whether she is suffering from such a disease."

But in practice no medical examination suffices to ascertain the presence of infection, and this negative aspect in itself, we believe, discredits the Regulation as a public health measure. Also difficulty may arise in regard to positive medical evidence. In a case where the woman is shown to be infectious, and where sexual intercourse has taken place, the length of time elapsing between inception of the disease and examination of the woman, adduced by counsel as a legal difficulty, may leave the medical examiner himself in doubt as to which party infected the other. Either the man alone, or both the man and the woman, may have been suffering from communicable disease at the time they met, and the statement of either party as to the date of possible infection is evidently always to be taken with reserve. Great probability may exist as to the precise nature and order of the events, and yet that degree of certainty may not be present which will enable the medical examiner to speak without reserve in a matter which involves such serious issues.

We have confined our criticism thus far to the purely public health aspect of Regulation 40D. We agree entirely with Mr. MACPHERSON'S recent statement in the House of Commons that the War Office ought to do everything to preserve the health of the troops, but we are not sorry to find wanting as a public health measure a regulation which has aroused such widespread opposition from all who wish to see the law dispensing even-handed justice. Solicitation is difficult enough to define, and should be abolished as a legal offence, unless the attitude of intending to be solicited is recognised as a contributing offence. With regard to the actual duties of the examining doctor, examination of a woman, in her own interest, for the relief of present suffering or future disability, and in order to carry out the treatment found to be necessary—however disagreeable or painful the episode may be to the patient—is not in itself an idea foreign to medicine. But the position is essentially altered when examination is not primarily or necessarily made for the purpose of consequent treatment. We believe that the cause of public health, which the medical profession has increasingly at heart, will not be advanced by any legal measure which does not commend itself to the moral sense of the majority; but whichever way that sense may work in respect of Regulation 40 D, the enactment appears to be condemned by its own futility.

The Medical Side of Chemical Warfare.

A SERIES of reports which demand more than passing comment have just come into our hands. They are issued by the Chemical Warfare Medical Committee, a body appointed last January by the Director-General of the Army Medical Service to advise him on the scientific medical aspects of chemical warfare. The committee as now constituted has Professor LEONARD HILL, F.R.S., as chairman, Dr. J. S. EDKINS as secretary, the other members being Mr. J. BARCROFT, F.R.S., Professor W. M. BAYLISS, F.R.S., Professor A. E. BOYCOTT, F.R.S., Dr. H. H. DALE, F.R.S., Sir WALTER FLETCHER, F.R.S., Dr. J. S. HALDANE, F.R.S., Lieutenant-Colonel J. C. MEAKINS, C.A.M.C., Major H. S. RAPER, R.A.M.C., and Dr. F. SHUFFLEBOTHAM, with corresponding members in France and Italy. The series consists of eight reports issued by this committee during the present year dealing with various phases of the pathology and treatment of gas poisoning—matters which have hitherto been kept secret. A number of the reports are still to

be regarded as confidential, while the remainder may be treated in any way likely to advance the interests of the medical public.

It has long been evident to us that records of this sort were necessary if the medical profession was to be of full service to the country, and the knowledge that official information on the pathology and treatment of gas poisoning is forthcoming, and that there is a definite organisation for dealing with it, will do much to allay anxiety. The subject of gas poisoning, considered as a part of medical knowledge, presents novel features in scientific development. For some decades pathological inquiry in this and other countries had been directed, and with good reason, mainly towards bacteriology and its kindred subjects, such as protozoology. These, together with the always essential studies of morbid anatomy and morbid histology, occupied the minds of our principal pathological workers when, in April, 1915, gas warfare commenced. Casualties of an unconsidered type threatened whole armies and the fate of nations, and to the medical profession the world looked for counsel. At first, gas warfare consisted simply in the use of pulmonary irritants, the treatment of its effects being dependent upon the answers to a few simple questions, such as the following: "How much oxygen does this man need to preserve life; how can this be reduced to a minimum; how much do the pulmonary conditions admit of his obtaining, and for how long?" The whole pathology and treatment of gas poisoning had clearly to be worked out from first principles. In this country happily we are rich at the moment in authorities on the physiology of respiration, and of these experts the Chemical Warfare Medical Committee appears to have made full use.

The novelty of the subject has had a striking effect upon the composition of the Committee itself. It has brought into prominence a school of young clinicians, all of whom had, we believe, published scientific work before the war. Such men as Colonel MEAKINS, Captain G. H. HUNT, and Captain R. A. PETERS had been known to us as producing sound work in our medical centres; it is valuable to have such observers associated with our specialist workers. For it is essential that such a novel subject as the treatment of gas poisoning, and one which is ramifying in so many directions and which has relations with our own production of materials of war, should be in the hands of a young and capable school. Continuing activity is evident from the fact that some of the pamphlets which we have received are already obsolete in parts and undergoing revision. We trust that it may be possible to issue No. 1, dealing with the treatment of gassed cases at the front, to medical officers as soon as it has undergone the necessary revision. For practitioners in England a knowledge of the early pathology and treatment of these cases is eminently desirable, and we are confident, therefore, that as soon as secrecy can be relaxed the committee will make use of their freedom. In the meantime we advise all practitioners who are interested in gassed cases to apply to Dr. EDKINS at the Department of Physiology, Bedford College, London, N.W., for such numbers of the series as may be had.

Annotations.

"Ne quid nimis."

THE BRITISH SCIENTIFIC PRODUCTS EXHIBITION.

IT is early yet to deal in detail with the splendid collection of British scientific products now on view at King's College, since at the informal opening on Monday last the work of arranging the exhibits had not been completed. There was enough, however, already on view to show that the chief purpose of the exhibition promises to be fulfilled in a most gratifying way. The belief is amply justified that such an exhibition at the present time will have a most stimulating influence upon scientific and industrial research and upon manufactures, and that the highest permanent interests of the nation will thus be promoted. The products shown come under three categories, as follows:—(1) Products imported chiefly from enemy countries before the war, but now made in this country; (2) products in the manufacture of which we excelled in this country even before the war and exported to enemy countries; and (3) products in the manufacture of which considerable developments have taken place during the war. A very large number of the exhibits have a direct medical interest, as, for example, the surgical, bacteriological, and pathological appliances, including X ray apparatus in Section 8, the optical apparatus in Section 4, and the pharmaceutical and medicinal preparations, including the organo-metallic preparations shown in Section 1, comprising chemical products and processes. The exhibition was formally opened, after an impressive speech, by Lord Sydenham, President of the British Science Guild, on Wednesday last, when the stalls presented a remarkable object-lesson as to what British scientific workers are capable of doing. With the object of ensuring an intelligent interest in the several exhibits, men well grounded in their subject attend the stalls to give any explanation which is sought, and from time to time short lectures and addresses will be given dealing with the departments and features of the exhibition. By this excellent plan public attention should be effectively directed to the vital necessity of developing our scientific industries and of applying to them the results of scientific research. Altogether the idea is admirably conceived, and the occasion will doubtless lead to results of far-reaching importance to British scientific manufactures. The exhibition will be kept open until Sept. 7th, and thus presents a remarkable opportunity to the public of obtaining ocular demonstration of British scientific capability.

MALARIA IN FRENCH WEST AFRICA.

DAKAR is a very malarious port, numerous infected mosquitoes invading the ships as they enter the inner harbour. Each of three French ships which lay there for four months had about 400 cases on board, and a Senegal regiment had an enormous number, 97 per cent. of its strength, attacked. Another ship which passed there the latter half of two consecutive years had in the first period 169, in the second 473 cases. The worst month in each year was October. Of the first attacks, 35 per cent. were tertian, 33 per cent. remittent, while 24 per cent. had but a single pyrexia, and these last by no means those with the fewest parasites in their blood. The story is told in the *Archives de Médecine Navale* for July by Dr. Rouche of the French Navy, who, being well

acquainted with his shipmates, was able to recognise those of them who, during the fortnight of incubation, while their temperature was still normal, were about to be attacked, for their faces, he says, were drawn, their complexions leaden, and a yellow colour spread over their eyelids and round their eyes, their conjunctivæ, too, being slightly jaundiced. The importance of the disease is obvious, for on one day in October, at sea, they had 112 men in bed with malarial fever, and the work of the ship could hardly go on. Dr. Rouche notes how dangerous it was to lie at Dakar; a single day's visit in October started a malarial epidemic in the ship. For prophylaxis it is proposed not to keep any ship there, but to send them cruising to and from the Canary Islands. Quinine prophylaxis (4 gr. quinine daily) is recommended, but there are many men who will not take it. The treatment laid down is: on the first day, nothing but a purge, next day 10 gr. quinine morning and evening as long as the pyrexia lasts, and daily till the temperature is well down, with ¾ gr. of arrhenol daily for a week. 10 gr. of quinine are given daily during the apyrexia, and 15 gr. the evening before a relapse is due.

IRELAND AND THE MINISTRY OF HEALTH.

THE announcement made recently by Mr. Bonar Law that the Government did not contemplate including Ireland in the proposed Ministry of Health Bill has taken the Irish medical profession by surprise. Ireland is greatly in need of a development of her public medical services, which could best be undertaken by a Ministry of Health. The habit of omitting Ireland from legislation dealing with matters of health is hard either to explain or justify, but it is a fact that Ireland has not shared in the health reforms of the past 20 years. The National Health Insurance Act does not carry medical benefits in Ireland. There is no provision for the medical inspection of schools and school children in Ireland. It is only within the past few months that a Midwives Act has been enacted for Ireland, 16 years later than legislation for England. But it is in the ordinary administration of public health that Ireland lags farthest behind Great Britain. In the whole country there are only two whole-time medical officers of health. In fact, in all matters of health, Ireland is almost an untilled field, or a field only tilled in a few patches. The profession had hoped that with the establishment of a Ministry of Health this backward condition might have received due consideration, and proper schemes of development might have been inaugurated. No doubt there would be differences of opinion as to the best method by which the Ministry of Health should be applied to Ireland, but on the general principle there could hardly have been any difference. The Irish Medical Committee, which represents professional opinion in Ireland, declared itself in favour of the establishment of a Ministry of Health, and the Royal College of Physicians of Ireland has expressed itself in the same sense.

THE PREVENTION OF SIMPLE GOITRE BY ADMINISTRATION OF IODINE.

IN the *Archives of Internal Medicine* for July Dr. O. P. Kimball and Dr. D. Marine have brought forward cogent evidence that "simple goitre is probably the easiest of all known diseases to prevent." Their method is the administration of small doses of iodine. Iodine is, of course, an old and most important remedy in the treatment of goitre, but its prophylactic use seems to be entirely new. A census of the condition of the thyroid gland of all girls from the fifth to the twelfth grades in the schools of Akron, Ohio (evidently a very goitrous district), was made. In April, 1917, 3872 girls were examined, and the condition of the thyroid gland was found to be in percentages as follows: normal, 43·5; slightly enlarged, 49·8; moderately enlarged, 6·3; markedly enlarged, 0·18; adenomas, 1. In May, 2 g. of sodium iodide were given in 0·2 g. doses each school day to a number of pupils in grades from the fifth to the eighth, and 4 g. in 0·4 g. doses to pupils in the higher grades. In November the pupils taking the treatment were re-examined, with the following results. Of 283 normal thyroids on the first examination all had remained normal; 287 small goitres had remained unaltered; 141 small goitres had disappeared; 2 small goitres had increased; 34 large goitres had remained unaltered; and 17 had decreased. On the other hand, in pupils not taking the treatment 637 normal thyroids had remained normal and 259 showed slight goitre; 759 small goitres had remained unaltered, 10 had disappeared, and 103 had increased; 106 large goitres had remained unaltered and 5 had decreased. Thus, not a single pupil with a normal thyroid who took iodine showed an increase, while 26 per cent. of those who did not showed definitely enlarged thyroids—some moderately large goitres. More than prophylactic results were obtained. One-third of the small goitres had disappeared and one-third of the "moderate" showed a decrease of 2 cm. or more. Of 1000 girls who took the treatment only 5 developed any noticeable rash, and this was evanescent. The possibility of producing Graves's disease by the treatment was considered, but no evidence of this was observed. As the results were so definite, when the treatment was repeated in November, 1917, only 2 g. of the iodide were given to the pupils in the higher grades. At the time of making this report it was intended to repeat the treatment in April, 1918.

THE SMALL HEART IN TUBERCULOUS SUBJECTS.

FREQUENT observations on patients sent for radiological examination for the diagnosis of tuberculosis have enabled Dr. Carlo Guarini[1] to collect a large number of cases of the small median heart which is said to be characteristic of tuberculous or pre-tuberculous patients. Rokitanski was one of the first to draw attention to the small size of the heart, which he considered congenital and a sign of infantilism, and Albert-Weil more recently described it as a frequent occurrence in individuals who were tuberculous or predisposed to tuberculosis. Barjon also noticed that the tuberculous were habitually the subjects of a median heart which overlapped only to a small extent, to right and left, the central shadow. According to this observer, the median heart is indicative, if not of tuberculosis, at least of a predisposition to it, while, on the contrary, the existence of a large heart in an individual suspected of pulmonary tubercle is of favourable interpretation. Vaquez and Bordet drew attention to the small narrow heart suspended from a long aorta, the so-called "dropping heart" (*cuore a goccia*), which, however, they regarded as a physiological variety and having no pathological significance, arguing that if it be true that a small vertical heart is often found in tuberculous patients it is

[1] La Riforma Medica, June 22nd, 1918.

due rather to the peculiar formation of their thorax than to the pulmonary tuberculosis itself. Dr. Guarini's observations throw some light on these different views and tend to show that the small heart and the dropping heart are pathological entities in close dependence on the hypo-evolution of the other organs of the individual and on the hypoplasia of its anatomical parts. Of 1300 tuberculous patients subjected to radiological examination he found the small median heart in 68 per cent. of the cases, whereas the dropping heart was only found in 0·13 per cent. He considers that the former is a hypoplasic heart, while the latter, also hypoplasic, is due to an arrest of development of the heart and aorta during extra-uterine life; that both these varieties must be considered pathological entities, having no relation with the atrophic heart found in other morbid conditions, and that their presence is a far more reliable aid than clinical symptoms in the diagnosis and prognosis of tuberculosis. Few practical physicians are likely to take this view. Dr. Guarini has also made observations on the inclination of the heart's axis in the same class of patients. The older anatomists and clinicians fixed this inclination between 55° and 60°; but Moreau, from radiological investigations on 100 normal adolescents and adults, found that in 74 per cent. the inclination varied between 65° and 78°. Dr. Guarini found in 100 patients examined for diseases of the chest the inclination was in 6 per cent. between 20° and 30°, in 37 per cent. between 30° and 40°, in 41 per cent. between 40° and 50°, and in 16 per cent. between 50° and 60°. Thus the angle of inclination varied with the individual, or rather with the morphological constitution of the individual, between 20° and 60°, which may be considered the extreme limits in tuberculous or pre-tuberculous subjects. It should be noted, however, that there may be small hearts whose axis of inclination exceeds the above limits, and these must also be considered pathological, since they represent hearts with incompetent valves or stenotic orifices.

CANADIAN COLLECTION OF MEDICAL WAR SPECIMENS.

FROM 1914 onwards the Canadian Army Medical Service has coöperated with the Army Medical Service in the endeavour to obtain adequate medical records of the world-war. Being, perhaps, familiar with the great collections which the United States possess from their Civil War in the Army Medical Museum at Washington, the C.A.M.C. has steadily been working ahead to obtain material of all sorts which will worthily illustrate the medical aspect of the war. In 1915 the Royal College of Surgeons of England, being the custodian of the Hunterian Museum of the College, which may be described as the National Medical Museum of the Empire, offered its services to collect and prepare the medical material for the whole British Expeditionary Force. In national spirit the College came to the assistance of Canada and the other Dominions, and offered to receive and care for material collected by their medical units—to be, in fact, the clearing-house in which this material could be collected, and later allocated to the rightful possessors. Thus all pathological and other material from Canadian hospitals, whether overseas or in Great Britain, finds its way to Lincoln's Inn Fields, and has been reviewed in Professor Arthur Keith's annual report which has recently appeared. Already a large amount of this material has been sent to Canada, and at the notable medical gathering in May at Hamilton, Ontario, to which we have already called attention (THE LANCET, July 27th, p. 120), when five of the most important medical associations of Canada met together, one of the outstanding features was the exhibition of specimens thus sent over. At the concluding session of the congress one of the main resolutions passed was "that whereas these war specimens have aroused great interest both among military surgeons, civil practitioners, and the general public visiting the Congress, and since their further collection and their adequate preservation and development into a great Canadian War Museum must be of the utmost value in the education of the Canadian Army Medical Corps at the present time, as well as a fitting memorial to future generations of the sacrifices of our troops, be it resolved that a copy of this statement of appreciation be sent to Surgeon-General Fotheringham, D.G.M.S., with the recommendation that it be forwarded to the Minister overseas, as an expression of the warm support which the development of a Canadian Army Medical Corps Museum received from the members of the Canadian Medical Association." Sir Robert Borden's visit to the Royal College of Surgeons of England, on the afternoon of Wednesday, August 14th, was thus an act of appreciation on his part of the services rendered to Canada by the English College, and was the formal opening of the exhibition now being held there. This exhibition is not the sum total of Canadian war specimens, but includes some of the more interesting of the specimens. Among these may be mentioned wax and plaster casts of war injuries, made at Orpington by Major F. Lessore and his staff; bird's-eye views and drawings by Captain Mathews, C.A.M.C., a well-known Canadian artist, of the different buildings in Great Britain and overseas occupied as Canadian war hospitals; pathological specimens, photographs, and X rays of war wounds and diseases. The whole affords a striking idea of the human interest there is in the records of the sufferings undergone by the soldiers, and the endeavours made by the medical services to counteract those sufferings.

IN connexion with the scheme for the employment of officers and men invalided from the Navy and Army it has been suggested that in cases of shell shock, gas poisoning, and general breakdown such men as contemplate life in the Far Eastern Colonies and dependencies would be well advised first of all to submit themselves for examination by some medical expert in tropical disease.

THE King of Italy, on the recommendation of the Italian authorities, has conferred the following Honours on the British members of the Royal Italian Military Medical Commission, in recognition of the voluntary and valuable services which, in conjunction with their Italian colleagues, they have rendered in examining the Italian recruits: T. Vincent Dickinson, M.D., Officer of the Order of the Crown of Italy; James Donelan, M.D., Officer of the Order of the Crown of Italy; Andrew Morton, M.D., Cavalier of the Order of the Crown of Italy; Andrew Currie, M.D., Cavalier of the Order of the Crown of Italy. The Italian authorities take the opportunity of cordially thanking the British and Italian members of the Commission and the President, Dr. Commendatore Melandri, for the care and zeal displayed in the work.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR THE MONTHS ENDING *Dec. 31st, 1917.* *Jan. 31st, 1918.*

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Carbonaceous other than tar	Ash.	Soluble matter. Loss on ignition.	Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
Leicester	21	0·05	1·93	2·34	1·09	2·81	8·23	1·63	0·28	0·10
London—										
Meteorological Office	27	0·10	2·43	3·59	1·42	3·56	11·10	1·27	0·61	0·04
Embankment Gardens*	—	—	—	—	—	—	—	—	—	—
Finsbury Park ...	24	0·20	1·32	5·72	2·97	6·58	16·79	3·85	0·58	0·05
Ravenscourt Park	22	Nil.	0·30	0·47	1·32	2·66	4·75	1·67	0·30	0·09
Southwark Park*	—	—	—	—	—	—	—	—	—	—
Wandsworth Com.*	—	—	—	—	—	—	—	—	—	—
Golden Lane ...	25	0·11	2·70	4·15	1·29	4·37	12·62	1·83	0·96	0·15
Malvern	24	Nil.	0·04	0·10	1·15	2·03	3·34	0·82	0·41	0·01
Manchester—										
Queen's Park ...	55	—	—	1·04	—	—	4·20	—	—	—
School of Technology	30	—	—	1·50	—	—	5·20	—	—	—
Newcastle-on-Tyne	56	0·22	4·34	10·47	2·37	3·39	20·80	1·82	0·88	0·09
Rochdale	—	—	—	—	—	—	35·69	—	—	—
St. Helens	53	0·46	2·85	3·38	2·65	5·82	15·16	3·16	1·80	0·26
SCOTLAND.										
Coatbridge	43	0·10	1·52	4·35	2·98	5·57	14·52	2·75	0·41	0·12
Glasgow—										
Alexandra Park...	53	0·14	2·15	4·28	1·41	3·84	11·82	2·27	0·24	0·13
Bellahouston Park†	67	0·43	2·46	71·48	2·29	3·63	80·29	2·82	0·29	0·06
Blythswood-sq. ...	73	0·11	2·18	4·31	0·29	6·25	13 14	3·35	0·38	0·18
Botanic Gardens	85	0·48	0·35	3·91	2·74	6·93	14·41	4·83	0·23	0·10
Richmond Park...	65	0·49	2·41	5·21	1·56	3·90	13·57	3·04	0·20	0·19
Ruchill Park ...	77	0·30	1·58	3·40	0·77	8·06	14·11	2·76	0·21	0·11
South Side Park.	73	0·14	1·59	3·57	0·65	4·60	10·55	2·25	0·16	0·11
Tollcross Park ...	68	0·08	2·10	5·75	1·72	5·26	14·91	3·55	0·21	0·16
Victoria Park† ...	76	0·02	2·49	17·01	3·04	5·77	28·33	3·23	0·25	0·14

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Carbonaceous other than tar	Ash.	Soluble matter. Loss on ignition.	Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
Leicester...	15	0·52	3·73	6·00	0·74	4·96	15·96	3·04	0·19	0·06
London—										
Meteorological Office...	69	0·27	3·96	6·43	1·16	5·85	17·67	2·19	0·98	0·10
Embankment Gardens	62	0·06	0·76	1·78	6·84	10·30	19·73	5·83	1·07	0·36
Finsbury Park ...	73	0·09	1·52	5·68	2·42	4·45	14·16	3·18	0·65	0·10
Ravenscourt Park	34	0·10	2·04	7·12	1·01	1·52	11·79	1·20	0·26	0·07
Southwark Park...	44	0·06	0 50	2·81	2·64	4·20	10·22	2·65	0·70	0·08
Wandsworth Com.	21	Nil.	0·10	0·31	0·79	1·42	2·61	0·94	0·25	0·03
Golden Lane ...	71	0·19	1·39	7·03	1·70	5·96	16·27	2·39	1·21	0·20
Malvern	69	Nil.	0·05	0·07	0·69	2 06	2·90	0·79	0·28	0 01
Manchester—										
Queen's Park ...	37	—	—	—	—	—	4·90	—	—	—
School of Technology	30	—	—	—	—	—	11·40	—	—	—
Newcastle-on-Tyne	58	0·39	3·26	4·56	2·69	3·62	14·52	1·78	0·83	0·08
Rochdale‡	—	—	—	—	—	—	—	—	—	—
St. Helens	74	0·67	3·37	5·32	2·85	10·47	22·68	5·68	2·29	0·55
SCOTLAND.										
Coatbridge	54	0·12	2·60	5·02	3·87	6·78	18·39	4·06	0·39	0·23
Glasgow—										
Alexandra Park...	86	0·04	3·67	6·06	2·41	5·66	17·84	3·40	0·26	0·25
Bellahouston Park	110	0·05	1·29	2·24	4·85	6·48	14·91	4·71	0·19	0·19
Blythswood-sq.§..	9	0·06	1·59	4·22	0·85	1·23	7·95	0·21	0·03	0·04
Botanic Gardens‖	—	—	—	—	—	—	—	—	—	—
Richmond Park...	111	0·09	4·82	11·56	4·21	8·65	29·33	4·85	0·18	0·55
Ruchill Park‖ ...	—	—	—	—	—	—	—	—	—	—
South Side Park..	119	0·33	5·57	6·00	1·43	6·43	19·76	3·76	0·15	0·23
Tollcross Park‖ ...	—	—	—	—	—	—	—	—	—	—
Victoria Park ...	112	0·02	1·57	3·66	5·66	6·87	17·78	4·52	0·16	0·33

* Bottle broken. † Sand present with suspended solids. ‡ Result lost through accident.
§ Total content of gauge as received in chemical laboratory. ‖ Carboy broken during the month.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) 1 g. per sq. metre; (*d*) 1/1000 mm. of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables. The analyses of the rain and deposit caught in the gauge at the Meteorological Office are made in THE LANCET Laboratory.

REPORT FOR 1917 OF THE COUNTY M.O.H. AND SCHOOL M.O. OF LONDON.

PART II.—EDUCATION.

Medical inspection.—In a previous report Dr. Hamer adduced the improvement then apparent in the results of medical inspection as evidence that the solicitous care for child welfare which had distinguished the history of recent years still remained undiminished by the circumstances of war. This improvement has been maintained ever since. Moreover, a further indication of the favourable economic conditions obtaining in 1917 is afforded by the fact that the number of necessitous children receiving free meals continued to decline below the already remarkably low figures of the preceding year. It is with profound satisfaction that the medical officer records these facts, showing as they do that the horrors of war had to this extent failed to affect injuriously the rising generation. Nevertheless, we learn that certain unfavourable conditions apparently inseparable from warfare still remain unredressed. Prominent among these is the difficulty of obtaining clean and wholesome milk for the feeding of necessitous infants. On analysis half the samples of such milk already examined have been found to contain added water. Apart from a few small and localised outbreaks of dysentery in districts north of the Thames, two occurrences prejudicial to health were reported as directly attributable to the war. In the first place, there was marked increase in the prevalence of scabies, doubtless introduced by soldiers returned from abroad. Secondly, a falling off was noticed in the results of treatment of children's diseases. This was caused partly by the withdrawal of hospital facilities and partly by the failure of arrangements for "following up." In some degree that failure was due to the employment of nursing mothers away from home, but mainly to falling off in the supply of voluntary care workers.

Effects of Economic Conditions.

The annual individual examination of a quarter of a million children in London affords a reliable measure of the social condition of the community, with which there had previously been nothing to compare. In regard to personal cleanliness the maintenance of the *status quo ante* has been fully achieved, but only by constant vigilance on the part of the nurses. This is remarkable, in face of the persistent introduction of parasitic infection and of the increased employment of married women. While the proportion of children ill-fed and insufficiently clothed has remained low, there has been a slight reduction in that of children well dressed and shod, as contrasted with those only fairly well provided for. It would appear that economic considerations have prevailed here, and that parents are now beginning to spend more on actual necessaries and less on finery of apparel than in the earlier years of war. Scrutiny of the figures for nutrition reveals the indirect influence of war conditions on the physical condition of the children. The progressive improvement in their appearance has been maintained throughout the last two years; the number of poorly nourished children having been only half as great as in pre-war times. The returns for the third term of last year were, in this regard, the best hitherto attained. On the other hand, the proportion of children returned as of "good nutrition," as opposed to "only fair nutrition," has shown some diminution. Coöperation has been established with several infant-welfare centres. At six of these arrangements have been made by which the same premises are used for the purposes of school treatment and infant welfare, to the mutual benefit of all concerned.

The open-air schools at Birley House and Shooter's Hill are still continued. The improvement in the mental as well as the physical state of the pupils has been well marked; the benefit to debilitated and anæmic children accruing from open-air education, supplemented by generous feeding,

being especially obvious. The majority of those in attendance are children in whom the onset of tuberculosis was feared, several of them having returned from sanatoriums with the disease in an arrested state. Further coördination of school work with that of the tuberculosis dispensaries has been effected with advantage to the children. The Kensal House School for tuberculous patients has been continued and some of the playground classes have been held in the public parks. The adequacy and quality of the food supplied to the schools has been attended to, the report containing results of the analysis of samples of meals supplied to the pupils. Save as regards milk (as previously mentioned) there has been found no cause for complaint.

Personal hygiene.—There are now 25 cleansing stations in London, at most of which treatment is extended by the inclusion of scabies. More than 30,000 baths were given to 6940 children suffering from scabies. This large increase on previous records was, doubtless, caused by infection introduced into the homes mainly from abroad. During the year 799,000 children were examined by the nurses, and in 19,500 cases verminous conditions were found. 8500 of the children were cleansed by parents and the remainder by the borough councils.

Verminous conditions and infectious disease.—The year under notice was remarkable for the extent to which attack was made on problems arising out of verminous conditions. How great is the improvement in this respect within the last 30 years will be apparent to those having had experience of London school children extending over that period. But unfortunately the campaign against vermin has not until lately excited general enthusiasm, and consequently the Council's nurses who have endeavoured to combat the prevailing indifference respecting cleanliness have had a difficult and sometimes unpopular duty to perform. It is now, however, realised that the banishment of plague in the seventeenth century was probably effected by attacking the prevalence of vermin, and that the practical extinction of typhus and relapsing fevers in this country within the last half-century has been accomplished mainly by improving the conditions of the poor as regards infection with body lice. Of late years study of plague in India and of the part played by insect parasites has greatly emphasised the importance of fleas, and it may well be that it is now necessary to look nearer home. Dr. Hamer refers to the inquiries recently made in London respecting the relationship between the "flea curve" and the curve of scarlet fever; he claims that the case in favour of a flea hypothesis of scarlet fever causation is one that calls for close examination. The amount of misery and discomfort caused by flea-bites among children has incidentally been revealed, but it is not possible to allow the question to rest at this point. The demonstration of the association of vermin with the spread of infectious disease has done more than had ever before been accomplished in arousing serious interest on the subject. The fact that during the past year one London elementary school-girl out of three has been found to have "nits" in her hair is a condition of things for which the medical officer is determined that a remedy must be found. The spread of verminous conditions among soldiers and the dissemination of scabies throughout the country have enforced the moral, and it is to be hoped that the attempt to cope with this national danger will meet with general support.

Among the commoner diseases of school life there was less prevalence than usual. Scarlet fever was reported in 6000 instances and diphtheria in 8000. Measles and German measles occurred among school children in 27,000 instances. Whooping-cough was less prevalent in 1917 than in any year of the preceding five.

THE LATE MR. WILLIAM FINGLAND, L.R.C.P., L.R.C.S. EDIN.—Mr. W. Fingland, honorary consulting anæsthetist to the Liverpool Royal Infirmary, died on August 1st from cardiac failure at his residence, Rodney-street, Liverpool, at the age of 66 years. Educated at Liverpool, he qualified with the licentiateship of the Royal Colleges of Edinburgh in 1891 and settled in practice at Liverpool, where for 25 years he was on the staff of the Royal Infirmary. He was vice-president of the section of anæsthetics when the British Medical Association held its meeting in Liverpool in 1912. Mr. Fingland leaves a widow and a daughter.

Correspondence.

"Audi alteram partem."

NASO-PHARYNGEAL INFECTION AT THE ONSET OF CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—Lieutenant-Colonel M. H. Gordon, R.A.M.C., in his letter to THE LANCET of Nov. 10th, 1917, and in his report to the Medical Research Committee, 1917, states that "every case of cerebro-spinal fever was in reality an instance of a carrier developing the disease," and that the meningococcus was invariably to be found in the naso-pharyngeal secretion at the onset of the disease. I wish to mention the following findings as contravening the above statements, of which findings Colonel Gordon is already aware, both from my reports and from conversations I have had with him, but to which he does not allude either in his letter or in his report.

In the spring of 1916, whilst employed in coördinating the work of investigation and prevention of the outbreak at X Garrison (pages 19 and 70 of above report), I paid particular attention to the question of infection in the naso-pharynx, and excluding some earlier cases, where the results could not be relied upon, a special record was made of the results of swabbing of all patients on admission to hospital. Forty-one cases were examined on admission, and the meningococcus could be demonstrated in 19 only. There was no greater degree of infection in those cases actually diagnosed as cerebro-spinal fever than in a group of other febrile patients suffering from influenzal or other complaints who were being admitted in epidemic numbers at the same time. The symptoms of many of these, however, approached in severity those actually diagnosed as cerebro-spinal fever, and I suggested in my report that they were in many cases really caused by the meningococcus.

The swabs were taken and examined by Captain C. Samut, R.A.M.C., professor of bacteriology, Malta University, and by Captain R. R. Armstrong, R.A.M.C., at that time attached to the Central Cerebro-spinal Laboratory.

I discussed these negative results with Colonel Gordon, who was inclined to query the diagnosis. Captain Samut had, however, demonstrated Gram-negative intracellular diplococci in the spinal fluids of all the diagnosed cases, nearly half of which yielded a successful culture and were agglutinated; and Colonel Gordon had agglutinated to type the meningococcus derived from five patients who failed to show the meningococcus in the naso-pharynx. Captains Trevor Davies and E. G. Pringle, who were in medical charge of the patients, and all of us concerned, were entirely of opinion that these cases were really cerebro-spinal fever. Colonel Gordon had not seen the patients.

In my report of this epidemic I gave further details, pointing to an absence of meningococci from the fauces of patients within a period of a few hours to a few days before the onset of symptoms, as follows:—

3	soldiers	were	negatived	within	24	hours	of onset.
2	,,	,,	,,	,,	2	days	,,
2	,,	,,	,,	,,	3	,,	,,
1	,,	,,	,,	,,	4–7	,,	,,
1	,,	,,	,,	,,	7	,,	,,

These soldiers were swabbed when isolated as contacts immediately after the diagnosis of a case, and they developed cerebro-spinal fever within the period stated. 520 carriers (contacts and non-contacts) were isolated for a long period at X; none of them developed any illness.

In April, 1917, I had an opportunity of confirming the negative findings of the year before whilst on sick leave from abroad, when I was temporarily attached to the Central Cerebro-spinal Laboratory. Captain Glover, R.A.M.C., in charge of investigation of cases in the London area, kindly swabbed for me four definite cases of cerebro-spinal fever which we visited together, and in only one of these could the meningococcus be grown afterwards in the Laboratory, although two of them were tried twice. On mentioning these results to Colonel Gordon, he had a tabular list prepared of the London cases during the previous couple of months. This list comprised 19 cases, 7 of which were negative and 6 positive in the naso-pharynx; the remainder had not apparently been tested, as no results are mentioned on the list. These cases were open to no doubt, and the meningococcus was isolated from the spine in each case.

Other observers have likewise noted the absence of meningococcus from the fauces of patients. In the Advisory Committee's report it is stated that "the meningococcus has

been much less commonly found in the naso-pharynx of actual sufferers than might have been expected." Gaskell states that only 25 per cent. are infected, and mentions Netter and others as finding infection in 60 per cent. of cases of the disease.

Colonel Gordon, however, considers that the meningococcus is always present, so much so that he and other officers working with him in the Central Laboratory regard its presence as practically essential to a diagnosis. He states as follows (Medical Research Committee Report, page 19):—

"The constant presence of the meningococcus in the naso-pharyngeal secretion at the earliest stage of the disease is a point of considerable practical importance, for by the simple procedure of taking a naso-pharyngeal swab and plating the secretion on the spot cases of cerebro-spinal fever can be recognised with practical certainty within 48 hours of being called to see them. The evidence yielded by the naso-pharyngeal swab has been found by Captain Flack to be of cardinal importance in facilitating the diagnosis, particularly in early cases, in cases where the symptoms are atypical, or where the spinal fluid fails to yield a positive culture." (See also Captain Flack's record on diagnosis on page 41 of the report.)

The diagnostic application thus made of the invariable presence of the meningococcus in the naso-pharyngeal secretion of the patient at the onset of cerebro-spinal fever naturally explains why all the cases investigated are reported as harbouring the meningococcus, but this method of diagnosis does not appear logical inasmuch as the symptoms cannot be reasonably described as atypical when the physician in charge has already submitted his patient to lumbar puncture, and also because it is a well-known fact that the meningococcus as often as not fails to grow when cultured; on the other hand, there are not many bacteriologists who would place reliance in diagnosis on the result of plating the secretion from the naso-pharynx alone.

In May, 1916, I presented a report on cerebro-spinal fever based on the epidemics at X and other garrisons. Last year I applied to publish a further report on the same lines dealing with the epidemiology of the disease. I was then ordered on active service, since when I have not heard news of its publication.

In these reports arguments and statistics were brought forward to emphasise the following points:—

1. The existence of many mild and usually unrecognised cases of cerebro-spinal fever.
2. The prime importance of these mild cases on the spread of the infection.
3. The impracticability of controlling the disease by isolation of carriers.
4. The importance of recognition and of isolation of mild and severe cases, and of the provision of free ventilation during the period of seasonal prevalence as the most effective means of prevention.

I am, Sir, yours faithfully,

J. DORGAN,
Major, R.A.M.C.

Feb. 25th, 1918.

Major Dorgan's letter has taken some months to reach THE LANCET, and to avoid further delay we have submitted it to Colonel Gordon, who replies through us as follows:—

SIR,—I would remind Major Dorgan, in the first place, that pathological and bacteriological tests are far more valuable in their positive than in their negative aspect. This is well known in the case of diphtheria and tubercle, where failure to find the specific micro-organism in a single examination of material from a clinically suspicious case is recognised as being by no means conclusive. Still more does it hold with regard to the meningococcus, since the technical difficulty of isolating and identifying this highly delicate micro-organism in the naso-pharyngeal secretion is considerably greater, and success requires special training, experience, and sometimes considerable perseverance as well.

The history of the literature on the subject of the presence of the meningococcus in the naso-pharyngeal secretion of patients suffering from cerebro-spinal fever illustrates this difficulty in a striking manner, notably the experience of v. Lingelsheim, who during the Silesian outbreak at first found the meningococcus in the naso-pharyngeal secretion of only 182 out of 787 cases, or 23 per cent.; but later, when as the result of riper experience he made his cultures at the bedside and incubated them at once, he succeeded in detecting this micro-organism in the naso-pharyngeal secretion of 46 out of 49 patients, or 94 per cent.

An important point to be borne in mind in this relation is the tendency which the meningococcus shows to disappear from the naso-pharyngeal secretion of the patient as the disease progresses.

Lingelsheim's findings were as follows:—

Day of disease.	No. of specimens examined.	No. positive.	Per cent. positive.
First to fifth day	156	104	66·6
Sixth to tenth day	57	14	24·5
Eleventh to twentieth day ...	62	7	11·2
Twenty-first day and after ...	115	5	4·39

Similar results have been reported by Goodwin and v. Sholly and by Netter and Debré. If in addition it is realised that in a proportion of cases of c.s. fever among troops the patient when first seen by the bacteriologist is in a condition of delirium or coma, as the result of which his naso-pharynx is by no means easy to get at, and the secretion there perhaps either dried up or grossly contaminated by other bacteria, failure to demonstrate the meningococcus in this secretion can be readily understood. Nevertheless, the positive findings already referred to, and the observations made by Captain Martin Flack, R.A.M.C., when in charge of the London District C.S. Fever Laboratory, by Major F. W. Andrewes and Dr. R. G. Canti at St. Bartholomew's, and by others, indicate, in my opinion, that the meningococcus is practically always there at the onset, and is to be found if the investigator has the experience and equipment and is able to devote the necessary time to searching for it. In this relation it may be mentioned that Captain Flack found that it is always advisable to take at least two swabs when examining the naso-pharyngeal secretion of a patient for the meningococcus.

With regard to a considerable proportion of the cases of suspected cerebro-spinal fever at X, to which Major Dorgan refers, I must say that, notwithstanding the careful investigations of Captain Samut, the evidence that they were really infected by the meningococcus is far from complete. The mere presence of a very few diplococci found free or lying in, or on, leucocytes in films of the deposit of a clear cerebro-spinal fluid from a case of transient illness can hardly be accepted *per se* as conclusive bacteriological evidence of cerebro-spinal fever. With every care, the chances of introducing a few sterilised diplococci from the skin of the patient's back must be borne in mind. The positive bacteriological evidence necessary to establish Major Dorgan's ingenious hypothesis that these were really cases of c.s. fever has still to be provided, and even if some of them were abortive cases of that disease, the part they play in its spread has still to be proved.

I am, Sir, yours faithfully,

M. H. GORDON,
Lieutenant-Colonel, R.A.M.C.

Central C.S.F. Laboratory, 12, Caxton-street, S.W. 1,
August 9th, 1918.

WAR DEAFNESS.

To the Editor of THE LANCET.

SIR,—No science has learnt more lessons from the war than medicine. Our knowledge of functional nervous disorders has, for example, greatly increased owing to the frequency of these disorders in soldiers. Old methods of diagnosis have had to be revised, and the results of treatment have steadily improved. The danger of relying on pre-war ideas has nowhere been more obvious, and it has already become necessary to discard many of the views which were prevalent early in the war. Thus, if we relied on the papers published since 1915 by Meige and by Oppenheim, distinguished neurologists as they are, we should still regard the tremors which are so common in shell shock as almost incurable, whereas we now know they respond to psychotherapy almost as rapidly as the more obviously hysterical symptoms. In the same way, if we had accepted the views of Babinski and Froment on "reflex" paralysis and spasm, we should have failed to cure the very common paralyses and contractures of the hand and foot, which have been proved by the rapid recovery under psychotherapy to be hysterical and not reflex in origin. Since the translation of their book the views of Babinski and Froment on reflex nervous disorders have unfortunately been widely accepted in England, as, for example, by Major Judson S. Bury in his paper in THE LANCET of July 27th, although Captains J. L. M. Symns, W. R. Reynell, and A. W. Gill, Lieutenant S. H. Wilkinson, and I have not yet failed to cure by psycho-

therapy a single one among a very large number of cases presenting all the signs and symptoms of so-called reflex paralysis or contracture.

It is unfortunate that two distinguished aural surgeons, Dr. P. McBride and Dr. A. Logan Turner, should have been led by their pre-war experience to write such a pessimistic article on "War Deafness" as that which appeared in THE LANCET of July 20th. If we had believed, like them, that the majority of cases of concussion-deafness are organic in origin, and are consequently incurable, or at the best can only improve slightly, we should never have attempted psychotherapy, whereas in our experience many are completely curable by re-education and suggestion, and very few are incapable of some improvement by the methods which have been devised as a result of war experience. Our results are identical with those obtained by Gordon Wilson and Yealland in England and Roussy and Lhermitte in France. My own "opportunities of studying ear diseases" before the war were fortunately nil, and I was therefore able to face the problem of war deafness with an unprejudiced mind. As it is obvious that suggestion cannot prevent the occurrence of nystagmus on testing the vestibular reaction by rotation or cold water, the loss of this reaction after concussion proves that some organic change has occurred in the internal ear, and that any deafness present is likely to be at least in part organic in origin. On the other hand, total deafness caused by concussion, if associated with a normal reaction, is probably hysterical and due to suggestion, as it is very unlikely that the cochlea should be so damaged that complete deafness results without the adjacent semicircular canals being affected. In cases of incomplete deafness the sign is of less value, but we have acted on the principle that whereas *all* cases of deafness following concussion should be treated by psychotherapy—in the hope that it may be at least in part functional, like the frequently associated mutism, blindness, tremor, or paralysis—we expect to obtain the best results; and we persevere with our treatment for a longer period, when the reactions are normal and definite evidence of organic injury is absent. Our results certainly justify our methods, as we have produced more or less improvement in almost every case and have cured men who have been totally deaf for many months, sometimes after they had been told by distinguished aurists that they could never recover from their "nerve deafness." In contrast to this, Dr. McBride and Dr. Logan Turner appear to have only seen improvement in one case, and in that case it appears to have occurred spontaneously, as it is hardly conceivable that any good could have resulted from the use of pilocarpin, which certainly stimulates the secretion of glands, but has never been proved to stimulate the special senses.

Dr. McBride and Dr. Logan Turner believe that "very grave injustice might be done" by regarding deafness as probably hysterical when the vestibular reactions are normal; we, on the contrary, regard it as most unfair to one's soldier patients to be so prejudiced by pre-war experience that the possibility of functional origin is not considered, the patient being consequently deprived of the chance of cure by psychotherapy. I should regard Case 2 in Group C and Case 1 in Group D as almost certainly hysterical, and curable within a few days and possibly within a few minutes, whereas the authors state that because there is a history of head injury they could exclude all question of functional trouble "with reasonable certainty." The patients therefore remained untreated and will doubtless remain deaf for the rest of their lives, as being told by a distinguished specialist that the trouble is incurable, their disability, which was originally caused by auto-suggestion, would become perpetuated by hetero-suggestion, and the chance of cure by psychotherapy would be enormously reduced.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

Seale Hayne Military Hospital, Newton Abbot, July 28th, 1918.

TREATMENT OF WAR NEUROSES.

To the Editor of THE LANCET.

SIR,—Upon the rapidity of their results as to the removal of hysterical symptoms and on the sensible form of suggestion which they have evolved, Major A. F. Hurst and Captain J. L. M. Symns are to be congratulated. It would greatly enhance the value of their contribution to THE LANCET of August 3rd if they could speak with more definition as to the permanence of the "cures" they mention, and would publish statistics as to the state of their patients six months and one year after "cure." The fact that there are many thousands (30 or 40 I believe) of pensioners, many of them drawing full pensions, under the control of the Special Medical Board, accentuates the necessity of not only removing hysterical symptoms, but of also confirming the cure of these men straight away, before any relapse has occurred.

I have suggested to the medical authorities of the Navy and Army that many, if not all, men who have suffered from war neuroses should be sent, after treatment at a neurological centre, but before discharge to the country, under the auspices of the Country Host Institution, so that they may do outdoor work in the fields and gardens, in conditions half-way between the complete control of a hospital and the sentimentality, worry, and responsibility of their own homes. The Director-General of the Medical Department of the Navy at once accepted the suggestion and some 30 undischarged sailors have already been sent off and are making very satisfactory progress; the Director-General, A.M.S., has not yet informed me whether he intends to fall in with my proposal or not.

I rejoice to find that Major Hurst and Captain Symns agree with my very strong conviction that none of these functional nerve cases should be treated in London, subject as it is to air-raids; all hospitals dealing with such cases should at once be transferred to the country.

The ideal treatment for war hysteria is, I hold: (1) removal of symptoms, &c., by such methods as Major Hurst and Captain Symns use; (2) a three months' course of Country Host convalescent treatment to strengthen the men, re-educate them in the habit of work, and thus confirm the cure effected at the neurological centre. Neurasthenic (nervous debility) cases can with advantage be sent direct to the country for convalescence, thus obviating the necessity of their occupying valuable hospital accommodation.

I am, Sir, yours faithfully,

August 3rd, 1918. THOMAS LUMSDEN.

INFANT MORTALITY AND MOTHERCRAFT.

To the Editor of THE LANCET.

SIR,—One would hardly imagine, on reading Dr. W. A. Brend's letter published in your issue of July 27th in reply to my article of July 6th, that the main point at issue between us is (to quote from his own report)—

"That the excess (of infant mortality) in industrial towns, the centres of large cities, and mining areas is due to some factor or factors, of which possibly *the most important is a polluted state of the atmosphere.*"

He says it probably is; I say it is not. Instead of addressing himself to this issue he concludes his letter of the 27th by writing:—

"I am of opinion that the main cause of excessive infant deaths, as of tuberculosis, malnutrition of school children, and other evils, is overcrowding of houses, congestion of streets, and the absence of large and sufficient open spaces."

Cannot Dr. Brend see that these things mean far more than a polluted atmosphere, and that, under such conditions, mothercraft, and all that it implies, becomes of paramount importance?

He is wrong in stating that my main criticisms of his report are two in number—viz., that he has endeavoured to eliminate poverty and under-estimated the value of mothercraft! My article was an attempt to do much more than that; it was an attack all along the line against his method of proof by a process of exclusion—a process which, I hold, was singularly illogical and unconvincing, and in certain directions, to be candid, not quite fair or judicial.

If Dr. Brend will get into contact with the working-class inhabitants of any large town, he will soon find for himself that far the larger amount of the excess infant mortality in that town does occur amongst the children of the unskilled and casual workers and others of the same social station. That they are living under the worst housing conditions I grant, but it is also amongst that class that the worst housewifery and mothercraft exists.

He further says that nowhere has he suggested that maternity and infant welfare centres should be incontinently scrapped. I never said he had; but that would be the

logical outcome of his report, if accepted, and I suggested that that was the question we who are interested in these institutions must put to ourselves.

I am obliged to Dr. Ronald Carter for his support. From his own long and practical experience he appreciates, I know, the real difficulty of compiling thoroughly satisfactory mortality tables for consultation infants. It could be more satisfactorily done by medical officers of health than by medical officers to consultations, most of whom in times past have not been directly connected with Public Health departments, nor, therefore, had the facilities for the extended inquiry which such tables imply.

I hope, however, in due time to be in a position to publish some statistics dealing with this point.

I am, Sir, yours faithfully,

H. W. POOLER, M.B.,
Medical Superintendent, Derbyshire County Infant Welfare Centres.

Stonebroom, Alfreton, August 11th, 1918.

THE LATE MR. W. MORLEY WILLIS, OF NOTTINGHAM.

To the Editor of THE LANCET.

SIR,—We should like to record the loss to British surgery in the death of that brilliant young surgeon, Mr. W. Morley Willis, F.R.C.S. Eng. Clear-headed, indefatigable, and self-confident, he was bound, if he had lived, to take a place in the first rank of his profession; his death seems to have escaped public notice.

He was a native of Bristol and was educated at Taunton Grammar School. A business career had been arranged for him, and for some time to meet the wishes of his relatives he made an effort in this direction, although from boyhood his ambition was to be a surgeon. But with his twenty-first year he brushed aside all other considerations and commenced the study of medicine at University College, Bristol. When he qualified in 1895 he continued his surgical studies at St. Bartholomew's Hospital, London, taking the Fellowship of the Royal College of Surgeons of England in the following year.

Commencing practice in Nottingham in 1897, he joined the surgical staff of the Children's Hospital, and in 1901 he was appointed assistant surgeon to the Nottingham General Hospital. Soon after this he abandoned general practice and confined himself entirely to surgery. In addition to the public work which these appointments entailed, Mr. Willis's heavy duties in connexion with various military hospitals made his life latterly a very full one. Two months ago, while well, cheerful, and full of work and vigour, he was struck down with fatal illness, which he faced with extraordinary courage and pluck. Mr. Willis was not only a brilliant surgeon and skilful diagnostician, but a kindly and courteous colleague, always ready to give help and advice in difficult cases and eager to assist the younger men in any way he could. He has been greatly missed by his colleagues and by his patients, who loved him for his cheery optimism and charming manner. Mr. Willis leaves a widow and two daughters.—We are, Sir, yours faithfully,

JOHN MACKIE, L.R.C.P. Edin.,
H. BELL TAWSE, F.R.C.S. Eng.,
Assistant Surgeon to the Nottingham General Hospital.

August 9th, 1918.

COLONIES IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—I note in your issue for August 3rd two articles on the above subject. To me it appears the eternal mistake of not knowing the beginnings of tuberculosis is being made. In my experience very few early cases of pulmonary tuberculosis require more than three months in a sanatorium, and those that require more would seldom be better for being made to work. Colonies are only suitable for chronic cases—that is, cases which have not been treated properly when exhibiting symptoms of activity. Whether the expense involved in treating cases of this kind for prolonged periods is justified is more than open to doubt. That it is impossible to treat tuberculosis in the early stage at dispensaries would seem obvious to anyone who has had to deal with this disease; some might at great risk to themselves be treated at home, but never by walking about. That early cases require as long as 18 months must also usually be an error, and it seems probable that the truth must lie between these two extremes. I should like to suggest to physicians to take a previous and careful history of the health of all the cases they regard as early, and in the light of the new facts re-grade their cases and try to avoid allowing their future patients to become chronic.

I am, Sir, yours faithfully,

EDWARD E. PREST.

Ayrshire Sanatorium, New Cumnock, August 7th, 1918.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Surgeons (Reserve) to be Staff-Surgeons (Reserve): J. P. Berry, C. F. Bainbridge, S. N. McBean. To be temporary Surgeons: W. E. M. Wardill, V. T. Smith, S. C. Mitchell, S. Acheson.

The following appointments have been made:—Surgeons (temporary): H. Whyte to *Centurion*; B. F. Niblock to Chatham Hospital; J. D. Arthur to Plymouth Hospital; and W. Edgar to Haslar Hospital.

ARMY MEDICAL SERVICE.

The undermentioned temporary appointments are made at the War Office: Dep. Asst. Dir.-Gens.: Capt. E. F. W. Mackenzie, and to be temporary Major whilst so employed; Temp. Major S. Fleming.

ROYAL ARMY MEDICAL CORPS.

T. B. Rhodes, late temp. Major, is granted the honorary rank of Major.

M. A. Collins, late temp. Capt., to be temporary Lieutenant-Colonel whilst serving at the Ewell (County of London) War Hospital.

Temporary Captains relinquishing their commissions and are granted the honorary rank of Captain: J. Glaister, on account of ill-health contracted on active service; L. M. Webber, on account of ill-health caused by wounds.

Temporary Lieutenants to be temporary Captains: R. T. St. J. Brooks, D. G. Halsted, H. E. Gray, J. L. McCann, E. H. R. Harries, W. W. Walker, A. M. Hewat, (Acting Major) D. Burrows, J. A. Loughridge, J. A. Clarke, H. M. Raven, R. M. Menzies, W. A. Mahon, R. McN. Wilson, G. M. Coope, A. F. Sanderson, A. M. Jones, A. Rhodes, M. Hocken, N. K. Foster, J. C. Middleton, A. Allison, C. W. Ewing, R. Wade, E. D. W. Reid, C. R. Wilkins, K. H. Bennett, F. H. Flack, S. S. M. Wood, (Acting Major) R. G. Oram, G. J. Eady, D. Martin, H. Sinson, J. Hunter, A. Brownlie, J. H. Thompson, J. E. R. McDonagh, L. G. Leonard, D. A. Stewart, C. Garner, J. A. Brown, T. N. Wilthew, W. Murray, F. Butler, A. White, J. D. Kenyon, W. J. McFeat, T. D. Graham, H. J. van Praagh, R. N. Berman, A. Bradshaw, A. G. Craib, D. M. McGillivray, A. D. Yule, W. Gorrie, W. Boyd, T. W. Bayne, G. B. Charnock, R. Parry, G. B. Warburton, G. Newstead, W. Angus, J. K. Willis, F. B. O'Dowd, G. H. Mead, R. J. Reynolds, J. H. Sutcliffe, H. H. Jenkins, J. K. Hamilton, G. A. Rorie, A. S. Campbell, A. T. MacKenzie, S. Bree, S. G. Corner, D. A. Dewar, W. J. D. Bromley, A. Davies, R. Davidson, J. W. Simon, K. R. C. Hallowes, F. D. Parbury, S. L. O. Young, N. McC. Hutchison, F. D. Nicholson, W. L. English, E. Banks, A. S. M. Palmer, E. E. Cassady, L. D. Stamp, H. P. Dawson, A. M. Laurie, J. Donaldson, H. M. Reeve, M. F. Emrys-Jones, W. G. Riley, A. Morton, A. Barker, D. Purdie, J. F. Findlay, H. J. Beddow, R. L. Haines, E. F. Thomas, A. D. Crofts, H. J. Rae, G. C. B. Miéville, C. W. Hutt, R. S. Roper, P. W. Stewart, F. F. Laidlaw, A. V. Ledger, N. C. Rogers, H. Snape, K. S. Melvin, J. R. Cameron, T. Miller, A. Robertson, P. E. Carroll, M. T. D. McMurrich, A. Boyle, E. E. Atkin, J. Fletcher.

Temp. Hon. Lieut. A. H. Good to be temporary Honorary Captain.

Temp. Lieut. Michael J. MacCarthy relinquishes his commission.

TERRITORIAL FORCE.

Major (temp. Col.) A. Milne-Thomson relinquishes his temporary rank on vacating appointment as Assistant Director of Medical Services, and is restored to the establishment.

Major (Bt. Lieut.-Col.) T. D. Acland remains seconded whilst holding a temporary commission in the R.A.M.C.

Capt. A. N. McGregor is restored to the establishment.

Capt. J. Allan to be Major.

Capt. A. E. Woodhead is seconded for duty.

Capt. (acting Major) H. Henry relinquishes his acting rank.

Capt. A. McLean is seconded for duty with General Hospital.

R. B. Driscoll and S. Shaw, R.A.M.C., to be Lieutenants.

ROYAL AIR FORCE.

Medical Branch.—A. P. Woolright (late Captain, R.A.M.C.) and W. G. West are granted temporary commissions as Captains.

P. A Dormer, R. W. Stephenson, G. F. H. Bloom, H. B. B. Greene are granted temporary commissions as Lieutenants.

Dental Branch.—W. C. Murray (late Dental Surgeon, R.N.V.R.) is granted a temporary commission as Captain and to be temporary Major whilst specially employed.

DEATH OF MR. B. G. DERRY, L.R.C.P., M.R.C.S.—Mr. Bartholomew Gidley Derry died on August 8th, at his residence at Bodmin, from the effects of a carriage accident. Mr. Derry, who was in his seventy-second year, had practised in Bodmin for 47 years. He had an extensive practice and he was medical officer of health for the Bodmin (Cornwall) urban district, surgeon to the Civil and Naval Prisons at Bodmin, and also held other appointments in which he earned high respect in Bodmin and the district. He leaves two sons and three daughters.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. H. R. Partridge, M.C., R.A.M.C., qualified in London in November, 1914, and was attached to the 1st West Riding Field Ambulance in the early part of the following year. The award of the M.C. was recorded in THE LANCET of Oct. 28th, 1916, p. 770.

Reported Missing, now believed Killed.

Capt. W. H. Lloyd received his medical education at the Middlesex Hospital, and qualified in 1915. He became attached to the 3rd London General Hospital in August, 1915, and had been in France since June, 1916.

Died.

Surg. Prob. A. E. Beckwith, R.N.V.R.
Lieut. D. Taylor, R.A.M.C., qualified at Glasgow in July, 1917, and joined the R.A.M.C. quite recently.

Wounded.

Capt. R. Anderson, R.A.M.C., attached Grenadier Guards.
Capt. W. Baxter, R.A.M.C., attached Gordon Highlanders.
Major G. Stiell, R.A.M.C.
Col. T. W. Gibbard, C.B., K.H.S., R.A.M.C.
Capt. E. M. McCaffrey, Australian A.M.C.
Lieut. J. J. Hughes, R.A.M.C., attached N. Staffs Regt.
Capt. A. W. Ritchie, R.A.M.C.
Lieut. J. J. Pickles, R.A.M.C., attached W. Yorks Regt.

Previously reported Missing, now reported Prisoners in German Hands.

Capt. C. R. Crowther, R.A.M.C.
Capt. W. T. P. Meade-King, R.A.M.C.
Capt. G. F. P. Heathcote, M.C., R.A.M.C., attached East Lancs Regiment.
Capt. F. C. H. Bennett, R.A.M.C., attd. Northumberl'd Fus.
Lieut. A. Boyle, R.A.M.C.
Capt. M. S. Esler, R.A.M.C., attached Middlesex Regiment.
Capt. D. D. Gillespie, R.A.M.C.
Lieut. J. W. Jones, R.A.M.C., attached Rifle Brigade.
Lieut. A. M. McCormick, R.A.M.C., attd. Lincs Regiment.
Capt. C. Witts, M.C., R.A.M.C.

MENTIONED IN DESPATCHES.

The names of the following medical officers are mentioned in a despatch by Lieutenant-General Sir J. L. van Deventer, K.C.B., Commanding-in-Chief, British East Africa Force, for distinguished services during the operations from May 30th to December, 1917 :—

Royal Army Medical Corps.—Lt.-Col. (acting Col.) F. E. Gunter, D.S.O.; Capt. W. Fraser; Capt. J. O. Garland; Temp. Lt. J. I. Greig; Capt. A. Hendry; Capt. H. F. Holmden; Temp. Capt. C. R. Howard; Lt.-Col R. H. Humphrey; Maj. G. J. Keane, D.S.O.; Temp. Capt. A. R. Lindsay; Temp. Capt. L. R. P. Marshall; Temp. Capt. J. Miller; Capt. W. Mitchell; Temp. Capt. M. T. Morgan, M.C.; Temp. Capt. A. Moxon; Temp. Capt. W. A. Ryan; Temp. Lt. R. Semple; Capt. H. A. Sutton, M.C.; Temp. Capt. W. B. Walker; Capt. G. A. Williams.

Royal Army Medical Corps (S.R.).—Capt. H. S. A. Alexander; Lt. J. F. C. Braine; Capt. S. J. V. Furlong; Capt. R. L. Impey, M.C.; Lt. R. Lloyd-Jones; Lt. F. C. Logan; Capt. W. A. McLennan; Capt. G. M. Roberts; Capt. A. R. Ross; Lt.-Col. J. McKie, D.S.O.

Indian Medical Service.—Lt.-Col. (Temp. Col.) W. W. Clemesha; Capt. F. W. Hay, attd. Inf.; Capt. T. A. Hughes; Maj. J. Husband; Capt. H. M. Inman; Capt. M. L. C. Irvine; Capt. G. G. Jolly; Capt. W. M. Lupton; Maj. P. L. O'Neill.

Indian Subordinate Medical Department.—2nd Cl. Asst. Surg. A. Bayley-de-Castro; Asst. Surg. (Hon. Lt.) J. A. F. Harvey; 1st Cl. Asst. Surg. E. D. Shave; 2nd Cl. Sub-Asst. Surg. Bhag Singh; 2nd Cl. Sub-Asst. Surg. Gordhandas Jethabhai Desai; 2nd Cl. Sub-Asst. Surg. Govind Ramchandra Upalekar; 2nd Cl. Sub-Asst. Surg. Hari Singh; 1st Cl. Sub-Asst. Surg. Kashi-Nath Ram-Chandra Kalamkar; 1st Cl. Sub-Asst. Surg. Mihrab Khan; 2nd Cl. Sub Asst. Surg. Muhammad Kusain; 1st Cl. Sub.-Asst. Surg. Muhammad Riazuddin; 3rd Cl. Sub-Asst. Surg. Mukand Ram; 1st Cl. Sub-Asst. Surg. Nand Lal; 1st Cl. Sub-Asst. Surg. Nur Muhammad; 2nd Cl. Sub-Asst. Surg. Shambhu Nath; 1st Cl. Sub-Asst. Surg. Varyam Singh.

South African Medical Corps.—Capt. A. J. Ballantyne; Temp. Capt. C. P. Bligh-Wall; Capt. H. J. Brady; Maj. C. M. Brothers; Capt. R. D. A. Douglas; Maj. (temp. Lt.-Col.) W. V. Field; Maj. (temp. Lt.-Col.) W. Gilbert; Lt.-Col. R. L. Girdwood, D.S.O.; Capt. S. J. O'L. Greensill; Capt. D. Henderson; Capt. J. E. Hurworth; Maj. T. J. W. A. Johnston; Maj. A. Liebaert; Capt. S. MacPherson; Maj. A. D. McKenzie; Capt. H. V. Potter; Capt. W. Shanks; Lt. N. E. Thomson; Capt. G. B. Wilkinson.

East African Medical Service.—Temp. Capt. N. P. Jewell, M.C.; Capt. C. G. Tomblings, African Native Medical Corps; Lt. R. McGeorge; Temp. Capt. J. M Mackinnon attd. K.A.R.

West African Medical Service.—Temp. Capt. B. J. Courtney; Capt. R. F. Williams, M.C., attd. Gold Coast Regt.

Uganda Medical Service.—Temp. Capt. A. H. Owen; Maj. C. A. Wiggins.

Northern Rhodesia Medical Service.—Capt. J. A. Chisholm; Capt. and Temp. Surg. E. G. Storrs, M.C.

Nyasaland Field Force Medical Service.—Temp. Capt. A. G. Eldred; Temp. Capt. W. C. Wigan.

The names of the following medical officers are mentioned in a despatch dealing with the engagement between the torpedo-boat destroyers *Mary Rose* and *Strongbow* and three German light cruisers which attacked a convoy on Oct. 17th, 1917 :—

Surg.-Prob. I. C. C. Barclay, R.N.V.R. (killed in action); Surg. J. P. Shorten, D.S.C., R.N.

OFFICERS OF C.A.M.C. ON H.M.H.S. "LLANDOVERY CASTLE" TORPEDOED.

The following is a brief account of the five officers of the Canadian Army Medical Corps missing, believed drowned, through the torpedoing on June 27th of H.M.H.S. *Llandovery Castle* :—

Lieutenant-Colonel THOMAS HOWARD MACDONALD, who was in command of the ship, was 40 years of age, and a native of Port Mulgrave, Nova Scotia, and graduated at Bellevue Hospital Medical College, N.Y., in 1900. Before the war he was in practice at Port Hawkesbury, N.S., and an active member of the Canadian Militia, in which he held the rank of major. He came overseas in December, 1915, and after various hospital appointments became president of the standing medical board, London area, later serving with a labour battalion in France.

Major GUSTAVUS MITCHELL DAVIS, who was 43 years of age, was a native of York, Ontario, graduating in medicine from the University of Toronto in 1901, and practising at Welland, Ont. He came overseas with the first Canadian contingent in September, 1914. After taking part in the battle of Festubert he was appointed M.O. upon the hospital ship *Letitia*, and when this ship was wrecked on the coast of Nova Scotia in August, 1917, rendered distinguished service in the care and rescue of patients.

Captain ARTHUR VINCENT LEONARD, who was 37 years of age, was a native of Warkmouth, Ontario, graduating in 1911 at the University of Toronto, where he was a prominent athlete. He came overseas in September, 1915, and after serving as M.O. of various units at the front he was appointed to H.M.H.S. *Araguaya*.

Major WILLIAM JAMES ENRIGHT, who was 44 years of age, was a native of Port Daniel, P.Q., graduating in medicine at Laval University in 1897. He served in Canada on the staff of the Quebec Military Hospital before coming overseas. While serving as M.O. in France he was wounded on Sept. 29th, 1915, and evacuated to England, and returned to Canada for three months' sick leave. Later, in charge of embarkation, his name was brought to the notice of the Secretary of State for War. Finally he had been serving as registrar and adjutant of No. 8 Canadian General Hospital.

Captain GEORGE LUTHER SILLS, who was 30 years of age, was a native of Tweed, Ontario. While a student in medicine at Kingston University he joined the C.A.M.C. as a private, serving overseas for a year with the 5th Stationary Hospital. Returning to Canada he graduated in November, 1916.

A QUESTION OF EXEMPTION.

After a conjoined meeting of the Executives of the Edinburgh and Leith Division of the British Medical Association and of the Scottish Medical Guild the following question was sent to Sir Auckland C. Geddes and Sir James Galloway :—

"In the event of a medical man having been granted exemption from ordinary military service on occupational grounds, and called upon to undertake either military or civil work, and he has objections to the work he has been called upon to undertake, will he have the right to appeal to the Medical Tribunal?"

The reply received from Sir James Galloway states that the practitioner has no legal right to a hearing by the Medical Tribunal as such, but that both the Central Professional Committees have arranged that in such circumstances the practitioner would receive a personal hearing, at which his objections to the particular form of service allotted to him would receive every consideration.

THE MEDICAL SERVICE IN THE EAST AFRICAN CAMPAIGN.

—In reply to a question by Commander N. Craig, Mr. Macpherson last week informed the House of Commons that a report by Colonel Pyke and Lieutenant-Colonel Balfour, R.A.M.C., on the Army Medical Service in Africa had been received in May. The report was of a personal and highly confidential nature, and could therefore not be laid upon the table, and effective action had been taken upon it.

OBITUARY OF THE WAR.

FRANCIS METCALFE, M.B., B.S. DURH.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain F. Metcalfe, who died on July 10th, was 26 years of age and a medical graduate of the University of Durham. Qualifying in June, 1914, he joined the 1st Northumberland Field Ambulance in the following August. He went to France with his unit in April, 1915, remaining there until he was invalided home in September, 1916, with myelogenous leukæmia. After treatment in the 1st Northern General Hospital he made a seemingly good recovery, and after several months at Catterick returned, at his own request, to France in August, 1917. He went through the March retreat, with all its attendant physical and mental strain, and the leukæmia regained its hold upon him. This time he did not react to treatment, and death occurred after a period of severe dyspnœa in the Framlingham House Hospital for Officers, Newcastle-upon-Tyne. During his college days Captain Metcalfe was good at all field sports and was the heavy-weight champion boxer. As a student he was conscientious in his work, taking good places in class. Retiring in manner and with no outward display, he was felt by his teachers to have qualities which only required time and opportunity to develop. Captain Metcalfe was an only son.

KEYSER ATKIN, B.A. CAMB., M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain K. Atkin, who died of wounds on June 6th, was only son of Mr. P. W. Atkin, stipendiary magistrate at Salford. He was educated at Mostyn House Preparatory School (where he was head of the school and chief of the cadet corps), at Mill Hill, and Jesus College, Cambridge. On the outbreak of war he applied for a commission, but was told to continue his medical studies and become qualified. This he did in July, 1916, after having acted, when still a student, as house physician at St. Mary's Hospital, and house surgeon at the Royal Infirmary, Manchester. He then at once obtained a commission in the R.A.M.C. attached to the South Staffs Regiment. In September, 1917, when hurrying to the relief of men buried by a shell, he was taken prisoner of war, being released five months later. During his short stay at home he took a special course of dentistry in order to be of greater service to the men on his return to France. While at his dressing-station he received wounds from which he died the same day. Captain Atkin's headmaster writes of him as utterly straight and conscientious, and this reputation remained with him through life. At Mill Hill "he proved himself a boy of great character and stern resolve for right, who made his influence felt for long after he had left." He won distinction as an athlete, rowing in his college boat three times at Henley; rowing was an hereditary accomplishment with him, for his father rowed for Cambridge for three consecutive years. He was also one of the best miniature shots in England, winning the Lord Roberts gold medal; and was second in the Public Schools' boxing competition at Aldershot. At college he was the first man who ever passed the whole of the Second M.B. before taking his B.A. degree, and his teachers predicted for him a splendid future.

JAMES RANDOLPH GYLLENCREUTZ, M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. R. Gyllencreutz, whose death from drowning is now presumed, was in medical command of H.M.H.S. *Salta* mined in the Channel during April of last year. He studied at St. Thomas's Hospital Medical School, taking the conjoint qualification in 1908, and thereafter holding house appointments at the Royal Hospital, Portsmouth, and the Brentford Infirmary. He was then for some years ship surgeon on the Royal Mail line. When war broke out he was senior assistant at the Wandsworth Infirmary. Resigning at once to take a commission in the R. A. M. C., after varied work he went to the Dardanelles in charge of a hospital ship. He went down with his ship, but was picked up by a rescuing vessel which was itself sunk soon after. Captain Gyllencreutz's friends write of his cheerful and breezy disposition. In his own circle he was popular as an amateur actor.

ROBERT NEILSON WALLACE, M.B., CH.B. EDIN.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain R. N. Wallace, who died on July 5th in command of a military hospital, was 35 years old and son of the late Dr. R. S. Wallace, of Edinburgh. Graduating in medicine at the University of his native city, he held resident appointments at the Bradford Infirmary and the Manchester Children's Hospital before settling in Edinburgh, where he became clinical assistant to the Ear and Throat Department of the Royal Infirmary. For many years he held a Territorial commission in the R. A. M. C., being attached to the 6th Battalion of the Royal Scots. When called up for permanent duty he qualified as a gas officer and was put in command of the 50th Stationary Hospital at Colchester. While there he took influenza and succumbed to a secondary pneumonia. Captain Wallace was a tall and striking figure. He was widely travelled and possessed of artistic and literary gifts, which accentuate the loss felt by his many personal friends now he is gone.

THE BELL FUND.—Dr. S. A. Kinnier Wilson asks us to acknowledge donations to the Dr. J. H. Bell Fund from Sir Hugh Rigby (£10 10*s.*), Dr. David Dinwoodie (£1 1*s.*), Lieut.-Colonel E. Farquhar Buzzard (£5 5*s.*), and from Captain Ralph R. Watts, R.A.M.C. (£1 1*s.*). Subscriptions should be sent to Dr. Wilson at 14, Harley-street, London, W. 1.

Medical News.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.—The following awards of scholarships tenable at the Medical School have been made recently:—St. Dunstan's Medical Exhibition: £60 a year for five years, Miss M. E. Reynolds, North London Collegiate School; £40 a year for five years, Miss M. E. Howard, St. Paul's Girls' School. Isabel Thorne Scholarship, £30, Miss E. A. Perrott, Bromley High School. Sir Owen Roberts Memorial Scholarship, £75 a year for four years, Miss L. G. Iliff, London School of Medicine for Women. Mabel Sharman Crawford Scholarship, £20 a year for four years, Miss D. N. L. Leverkus, London School of Medicine for Women. Agnes Guthrie Dental Bursary, £50, Miss Petronelle Jago, Besheben High School, Brondesbury. Ellen Walker Bursary, £25 a year for two years, Miss G. M. Watkinson, London School of Medicine for Women. Fanny Butler Scholarship, £14 10s. a year for four years, Miss A. D. Symons, London School of Medicine for Women.

POST-GRADUATE COLLEGE, WEST LONDON HOSPITAL.—During next week clinics will be held each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.

DEATH OF DR. R. W. SPENCE.—Dr. R. W. Spence, Government medical officer, British East Africa, has died at Nakuru, after an illness extending over ten weeks. Dr. Spence was an active and very capable officer, and was universally trusted in the large district of Nakuru, where he had been stationed since his appointment to the Protectorate Government Medical Service in August, 1913. His death is widely regretted.

LITERARY INTELLIGENCE.—The Oxford University Press announces the forthcoming issue of the first number of "Neurological Studies" from the Seale Hayne Military Hospital, Newton Abbot, edited by Major A. F. Hurst, with the assistance of Captain J. L. M. Symns, Captain W. R. Reynell, and Lieutenant S. H. Wilkinson.

PRESENTATION TO MR. ROBERT BURGESS, L.R.C.P. & S. EDIN., J.P.—Mr. Robert Burgess, who is dispensary medical officer of Coagh Dispensary District, co. Tyrone, and who has been president for a period of 25 years of the Coagh Coöperative Dairy Society, was recently presented with a handsome tea and coffee service by the shareholders of Albany, Coagh, and Curglasson Creameries, and other friends. Mr. Burgess has been largely responsible for the establishment of the creameries in his district of county Tyrone; the Central Coagh Creamery was the first started in the North of Ireland, and did much to re-establish the reputation of Irish butter.

METROPOLITAN HOSPITAL SUNDAY FUND.—At a Council meeting of the Metropolitan Hospital Sunday Fund held at the Mansion House on August 9th, under the presidency of Sir Ernest Tritton, it was announced that the Fund had reached the total of £85,652. The number of participating institutions was 238. The year 1918, said the chairman, was a record one in regard to the amount available for distribution, and this was largely due to a gift of £5000 from the American Red Cross Society. Ministers of religion had carried their appeals into the homes of both rich and poor, either by letters or house-to-house visitation, with very gratifying results, and in one parish £76 had been thus raised in pence alone. Among the largest recipients are the London Hospital £10,217, Guy's Hospital £3467, Middlesex Hospital and Convalescent Home £3730, and St. George's Hospital £3235.

QUEEN'S UNIVERSITY, BELFAST.—At a recent meeting of the Senate it was decided that, for next session, the department of anatomy (vacant through Professor Symington's resignation) should be placed under the direction of Dr. P. T. Crymble, with Dr. R. J. McConnell and Dr. Margaret Purce as demonstrators. It was also arranged to appoint a committee, consisting of the curators and the medical members of the Senate, to confer with the medical faculty in reference to the question of rearranging the work of the Department of Anatomy and to report to the Senate at a later date.—The following have been awarded scholarships in the Faculty of Medicine:—First Medical Examination: W. J. Frackelton, £40; John Beattie, £30; Cecil A. Calvert, £20; and Olive M. Pedlow, £15. Second Medical Examination: S. J. Andrews and J. T. Lewis, £40 each; Eileen M. Hickey, £30; C. H. G. MacAfee, £20; and William S. Gibson, £15. Third Medical Examination: Isaac Eban, Henry Harris, Joseph Meban, and Phillip F. Mooney. Final Medical Examination: William J. Lytle and Henry F. Macauley, medicine, £30 each; Samuel E. Duff and Mary E. Irwin, midwifery, £30 each; Chas. A. Whitfield, surgery, £30; and Charles A. Whitfield, general prize, £20.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Parliamentary Session.

BOTH Houses of Parliament have adjourned until Tuesday, Oct. 15th.

Royal Assent.

Amongst the measures which received the Royal Assent before the adjournment were the Education Act, the Maternity and Child Welfare Act, and the Asylums and Certified Institutions (Officers' Pensions) Act.

Midwives Bill.

Mr. HAYES FISHER, President of the Local Government Board, has presented in the House of Commons a Bill to amend the Midwives Act, 1902. It was read a first time. The intention is to proceed with it when the House resumes after the autumn adjournment. A Midwives Bill passed through the House of Lords this session, but owing to certain technical obstacles relating to privilege it was not found possible to bring it before the House of Commons. Mr. HAYES FISHER has therefore introduced his measure in substitution for it.

HOUSE OF COMMONS.

WEDNESDAY, AUGUST 7TH.

Indian Medical Service and Children's Allowances.

Answering Colonel YATE, Mr. MONTAGU (Secretary for India) said: Proposals for the grant of children's allowances to officers of the Indian Army, Indian Army Reserve, and Indian Medical Service have been received from the Government of India and are under reference to the War Office. I have proposed that the allowances should be granted with retrospective effect to Oct. 1st, 1917, the date of the commencement of the allowance for British service officers.

Promotion of R.A.M.C. Officers (Territorial).

Sir B. FALLE asked the Under Secretary for War whether he could give any date or information when the promotion of the field officers, Royal Army Medical Corps, Territorial and Volunteer, was likely to take place, or as to the retirement of such officers in default of such promotion.—Mr. MACPHERSON replied: I presume my honourable and gallant friend is referring to the promotions in accordance with the instructions issued recently regarding the introduction of a general seniority list for officers of the Royal Army Medical Corps (Territorial Force). The promotion of the officers of the Territorial Force mentioned will take place as soon as possible after the receipt of the recommendations from the various theatres of war in which these officers are serving. Officers not selected for promotion will not be retired on that account.

Sir B. FALLE: Does that apply to those serving at home?—Mr. MACPHERSON: I presume so.

Asylum Treatment of Lunatic Soldiers.

Replying to Sir WATSON RUTHERFORD, Mr. HODGE (Minister of Pensions) wrote: Men of the Army and Navy whose mental condition has become impaired owing to their service, and who are admitted to asylums, are not separately housed, but special arrangements are made for their maintenance. They are not chargeable to the rates and they do not rank as paupers. Evidence as to mental attack anterior to military service is clearly relevant in determining whether or not the disability is due to service. It is not considered that the provision of separate institutions is practicable, nor is it desirable having regard to the expediency of placing the patients near their friends.

URBAN VITAL STATISTICS.

(Week ended August 10th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 10·4, against 13·1 and 12·1 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 10·5, or 0·9 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 4·4 in Hornsey, 5·1 in Southend-on-Sea, and 5·3 in Acton, to 17·9 in Gateshead, 18·5 in Rotherham, and 20·3 in Aberdare. The principal epidemic diseases caused 237 deaths, which corresponded to an annual rate of 0·8 per 1000, and included 97 from infantile diarrhœa, 54 from measles, 39 from whooping-cough, 29 from diphtheria, 13 from scarlet fever, and 5 from enteric fever. The deaths from measles and from whooping-cough were the lowest recorded in any week of the current year. The deaths from infantile diarrhœa, which had risen from 34 to 74 in the four preceding weeks, further rose to 97 last week. The 746 cases of scarlet fever and 904 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 20 and 23 below the respective numbers remaining at the end of the previous week. The 810 deaths from all causes in London included 21 from influenza, against 192, 86, and 38 in the three preceding weeks. The causes of 45 deaths in the 96 towns were uncertified, and included 8 each in Birmingham and in Liverpool, and 6 in Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 11·8, against 14·2 and 13·1 per 1000 in the two preceding weeks. The 265 deaths in Glasgow corresponded to an annual rate of 12·4 per 1000, and included 17 from infantile diarrhœa, 6 from whooping-cough, 4 from measles, 2 from diphtheria, and 1 from enteric fever. The 67 deaths in Edinburgh were equal to an annual rate of 10·5 per 1000, and included 1 each from whooping-cough and from infantile diarrhœa.

Irish Towns.—The 117 deaths in Dublin corresponded to an annual rate of 15·3 per 1000, and included 11 from infantile diarrhœa, 2 from measles, and 2 from whooping-cough. The 102 deaths in Belfast were equal to an annual rate of 13·5 per 1000, and included 9 from infantile diarrhœa, 2 from whooping-cough, and 1 from measles.

Appointments.

ASHER, M., L.R.C.S. Irel., has been appointed Assistant County Medical Officer to the Southampton County Council.

AZIZ, A., M.B., Ch.B. Edin., Assistant School and Tuberculosis Medical Officer for Wigan.

BUTTERFIELD, F., M.B. Lond., Temporary Assistant Tuberculosis Officer to the Manchester Corporation.

HOA HING, MARTHA H., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., House Surgeon at the Alexandra Hospital for Children, Brighton.

PAUL, E. W., M.R.C.S. Eng., Certifying Surgeon under the Factory and Workshop Acts for the East Nottingham District of the county of Nottingham.

TAYLOR, ALICE, L.R.C.P. & S. Irel., L.M., Assistant County Medical Officer to the Southampton County Council.

WILSON, J. M., M.B., Ch.B. Aberd., Certifying Surgeon under the Factory and Workshop Acts for the Aberdare District of the county of Glamorgan.

Vacancies.

For further information refer to the advertisement columns.

Birmingham Education Committee.—Asst. School M.O. £300.
Blackburn County Borough.—Two Asst. M.O.H. £500.
Bramcote Sanatorium, Nuneaton.—Res. M.O. £300.
Bristol Royal Infirmary.—H.P. and H.S. £120
Bristol University.—Demonstrator in Physiology.
Brook War Hospital, Woolwich, S.E.—Res. M.O. £1 per diem.
Carlisle City, Maternity and Child Welfare.—Asst. M.O. £400.
Cheltenham Eye, Ear, and Throat Free Hospital.—Asst. S. £400.
Derbyshire County Council.—Asst. M.O. £400.
Dorset County Council.—Temp. Female Asst. M.O. £350.
Erdington Infirmary and House.—Asst. M.O. £8 8s. per wk.
Glasgow, Govan District Asylum, Cardonald.—Sen. Asst. M.O. 6 or 7 gs. weekly. Also Locum.
Liverpool, Toxteth Park Guardians.—Asst. Res. M.O. £300.
London County Mental Hospital, Bexley, Kent.—Asst. M.O. 7 gs. wk.
Manchester County Asylum, Prestwich.—L.T. £7 7s. per week.
Manchester Royal Eye Hospital.—Sen. H.S. £120.
Middlesex Education Committee.—Asst. School M.O. £400.
Newcastle-upon-Tyne Education Committee.—Asst. School M.O. £350.
Norwich, Norfolk and Norwich Hospital.—H.S. £400.
Nottingham General Hospital.—Two Female H.S. £250.
Notts Education Committee.—Asst. Sch. M.O. £400.
Queen Mary's Hospital, Stratford.—H.S.
Rochdale Infirmary and Dispensary.—Jun. H.S. £150.
Sheffield Royal Infirmary.—Res. S.O. £200. Also H.S. £150.
Stoke-on-Trent County Borough.—Asst. Tuberc. O. £400.
Tottenham Urban District Council.—M.O. for Maternity and Child Welfare Centre.
Walsall General Hospital.—Female H.S. and Anæs. £175.
Westmorland Consumption Sanatorium.—Asst. M.O. £200 to £250.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £150 to £180.

Births, Marriages, and Deaths.

BIRTHS.

BREWERTON.—On August 6th, at Harley-street, the wife of Elmore Brewerton, F.R.C.S., of a son.

HUNT.—On August 10th, at Cahermoyle, South Farnborough, Hants, the wife of Ernest Rivaz Hunt, M.D., M.R.C.P., Temp. Capt., R.A.M.C., of a daughter.

MCKEE.—On July 25th, the wife of Surgeon A. G. McKee, R.N., of a son.

PATTISON.—On August 10th, at Hollow Meadows, Sheffield, Pamela, the wife of C. Lee Pattison, M.B., B.S. Lond., of a son.

RICHARDS.—On August 9th, the wife of Lieutenant J. E. Richards, R.A.M.C., of a daughter.

MARRIAGES.

ADDINSELL—KERRISON.—On August 8th, at St. George's, Hanover-square, Augustus W. Addinsell, M.B., M.R.C.P., to Mrs. Diana Kerrison, of Tattingstone.

DEATHS.

DERRY.—On August 8th, at St. Leonard's House, Bodmin, Bartholomew Gidley Derry, M.R.C.S. Eng., L.R.C.P. Lond., aged 71 years.

LLOYD.—On August 4th, killed in action, Captain W. H. Lloyd, M.B., B.S. Lond., M.R.C.S., L.R.C.P., aged 27.

NIALL.—On August 7th, at Dulwich-road, S.E., Eugene Hayes Niall, L.R.C.P. & S. Edin., aged 76 years.

WALTERS.—While on a visit to Ashbrook Hall, Hollington, Sussex, John Basil Walters, M.R.C.S., L.R.C.P.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.
Aids to Medical Diagnosis. By A. Whiting. 2nd ed. 3s.
Errors of Accommodation and Refraction. By E. Clarke, M.D. 6s.

CHURCHILL, J. AND A., London.
Treatise on Applied Analytical Chemistry. By Prof. V. Villavecchia and Others. Translated by T. H. Pope, B.Sc. Vol. II. 25s.
Short Practice of Midwifery for Nurses. By H. Jellett, M.D. 5th ed. 8s. 6d.

LEWIS, H. K., London.
Statics of the Female Pelvic Viscera. Vol. I. By R. H. Paramore. 18s.
The Twin Ideals: An Educated Commonwealth. By J. W. Barrett, K.B.E., Temp. Lieut.-Col., R.A.M.C. 2 vols. 25s.

LONGMANS, GREEN, & Co., London.
Colour in Relation to Chemical Constitution. By E. R. Watson, D.Sc. 12s. 6d.
Commonwealth Book of Cookery. By Muriel V. Palmer. 2s. 6d.
Modern Treatment of Nervous Disorders. By Bernard Hart, M.D. 1s.
Coal and Its Scientific Uses. By W. A. Bone, D.Sc., F.R.S. 21s.
Elements of the Electromagnetic Theory of Light. By Ludwick Silberstein, Ph.D. 3s. 6d.

MASSON ET CIE., Paris.
Précis de Dermatologie. Par le Dr. Darier. 18 fr.
Études sur le fonctionnement rénal dans les néphrites chroniques. Par le Dr. Pasteur Vallery-Radot. 10 fr.
Commotions et Émotions de Guerre. Par Professeur André Léri, Préface du Professeur Pierre Marie. 4 fr.
La suspension dans le traitement des fractures. Par M. P. Desfosses et le Dr. Charles-Robert. Préface de M. Pierre Duval. 4 fr.

MURRAY, JOHN, London.
Sketches of the East Africa Campaign. By Capt. R. V. Dolbey, R.A.M.C. 6s.

OXFORD PRESS WAREHOUSE, London.
The Hearts of Man. By R. M. Wilson, M.B. 6s.
Gymnastic Treatment for Joint and Muscle Disabilities. By Brevet Col. H. E. Deane, R.A.M.C. With preface by Col. A. Carless, A.M.S., and by Brevet Lieut.-Col. F. W. Mott, F.R.S., R.A.M.C. (T.F.).

SAUNDERS (W. B.) COMPANY, Philadelphia.
Treatise on Clinical Medicine. By W. H. Thomson, M.D. 2nd ed. 24s.
Local and Regional Anæsthesia. By C. W. Allen, M.D. 28s.
Chemical Pathology. By H. G. Wells, M.D. 19s.
Treatment of War Wounds. By W. W. Keen, M.D. 2nd ed. 8s. 6d.

WRIGHT, JOHN, AND SONS, Bristol.
War Wounds of the Lung. By P. Duval. 8s. 6d.

The following journals, magazines, &c., have been received:—Indian Journal of Medical Research, Veterinary Review, Canadian Medical Association Journal, Journal of Hygiene, Journal of State Medicine, National Food Journal, Journal of Comparative Pathology and Therapeutics.

EDITORIAL NOTICE.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

Communications, Letters, &c., to the Editor have been received from—

A.—Major A. Abrahams, R.A.M.C.; *Answers*, Lond., Editor of; Mr. R. J. Albery, Lond.; Miss L. G. Ackroyd, Bramhall.

B.—Miss C. S. Bremner, Crosthwaite; Board of Education, Lond., Sec. of; Capt. W. Langdon Brown, R.A.M.C.(T.); British Science Guild, Lond.; Messrs. Butterworth and Co., Calcutta; Pte. A. G. Bedane; Mr. J. Brindley-James, Lond.; Mr. S. Bhatta; Dr. H. W. Bywaters, Bristol; Major W. Brown, R.A.M.C.

C.—Capt. J. Campbell, R.A.M.C.; Mrs. E. S. Chesser, M.B., Lond; Mr. J. Cabburn, Lond.; Dr. E. L. Collis, Lond.; Dr. W. M. Crofton, Dublin.

D.—Dr. W. R. Dunstan, Lewes; Capt. A. D. Dunne, R.A.M.C.(T.), Capt. S. C. Dyke, R.A.M.C.; Lieut.-Col. A. M. Davies, R.A.M.C.

E.—Major R. Eager, R.A.M.C.(T.), Ex-Officers Employment Bureau, Lond.

F.—Mrs. S. E. Foott, Cork; Capt. C. D. Farquharson, C.A.M.C.

G.—Mr. M. Gault, Limavady; Dr. H. L. Gordon, Lond.; Mr. F. C. Goodall, Lond.

H.—Mr. A. Harden, Lond.; Dr. J. H. Hart, East Molesey; Capt. E. Hindle, R.E.

J.—Dr. G. Jessel, Wigan.

K.—Major M. F. Kelly, R.A.M.C.; Mr. W. H. Kesteven, Kingston Hill; Dr. D. Keilin, Cambridge.

L.—London (Royal Free Hospital) School of Medicine for Women, Warden of; Dr. R. B. Low, Lond.; Dr. T. Lumsden, Lond.; Mr. E. P. Leavy, Innisfail; Messrs. Lea and Febiger, Philadelphia.

M.—Dr. D. L. Mackinnon, Aberdeen; Malay States Information Agency, Lond.; Mr. W. B. McCall, Birmingham; Mr. J. E. R. McDonagh, Lond.; Metropolitan Asylums Board, Lond.; Ministry of Munitions, Director of Special Intelligence, Lond.; Capt. J. C. McWalter, R.A.M.C.

N.—National Physical Laboratory, Teddington.

O.—Dr. H. C. Orrin, Lond.

P.—Dr. H. W. Pooler, Alfreton; Dr. E. E. Prest, New Cumnock.

R.—Dr. H. S. Reynolds, Wisbech; Mr. P. B. Roth, Lond.; Dr. H. Rahmet Bey, Cairo.

S.—Capt. R. Steele, R.A.M.C.; Summer School of Civics and Eugenics, Lond., Sec. of; Dr. H. Sutherland; Dr. G. E. Shuttleworth, Bournemouth; Mr. W. Scott, Bridgwater.

T.—Dr. J. Tatham, Oxted; Capt. W. J. Tulloch, R.A.M.C.; Mr. H. B. Tawse, Nottingham; Capt. A. G. Tressider, I.M.S.

W.—Mrs. M. B. Wilson, Petworth; West Sussex County Asylum, Chichester; Dr. P. L. Watkin, Williams.

Notes, Short Comments, and Answers to Correspondents.

COLONIAL HEALTH REPORTS.

Nyasaland.—A report prepared by Mr. G. B. Anderson, acting Assistant Chief Secretary, dealing with the year ending March 31st, 1917, states that during that period the public health was not as satisfactory as heretofore owing to military requirements for labour having necessitated an abnormally increased movement of natives in all parts of the territory.

"Small-pox," Mr. Anderson records, "was still confined to the Lilongue and Dowa districts, and although labour was recruited from both these areas the precautionary measures which were instituted proved successful in preventing any spread of the disease. Two localised outbreaks which occurred in the Zamba and Upper Shire districts respectively among labourers employed on the military roads were promptly and effectually dealt with. As in the previous year, sleeping sickness investigations were confined to the proclaimed area in the Dowa district, the number of cases reported amounting to 31. In 1915 the figures were 25 from this area, plus 4 from other parts of the Protectorate, making a total of 29. It would be misleading to assume that these figures represent the actual incidence of sleeping sickness in the Protectorate as a whole, for the results of investigations in the past have shown that the portion of the Yarimba district bordering on the lake is as heavily infected as the proclaimed area in the Dowa district. It is much to be regretted that bubonic plague has made its appearance in the Protectorate for the first time. Every effort was made to ascertain the source whence this disease gained entry into the North Nyasa District, and inquiry has shown that there can be little doubt but that it was introduced from German East Africa during the latter part of the year, when there was considerable movement of the native carriers between Karonga and Yuraya. Three cases of bubonic plague were reported in the neighbourhood of Karonga in the month of November, 1916, and ten in December. Further cases occurred during the following months, but at the moment of writing it is satisfactory to record that following the campaign of rat extermination, inoculation, and the adoption of other preventive measures, the outbreak is now well in hand and the disease has not shown any indication of spreading to other parts of the Protectorate. The number of Europeans resident in the Protectorate, including officials and non-officials, was 474 males and 257 females, or a total of 731, as compared with 523 males and 262 females, or a total of 785, in the previous year. The Asiatic population amounted to 391, as against 379 in the preceding year. The native population is estimated at 1,137,266, being approximately 506,785 males and 630,481 females."

British Honduras.—A report furnished to the Colonial Office by Mr. W. L. McKinstry, Acting Colonial Secretary of British Honduras, states that the estimated mean population for the year 1916 was 42,323, consisting of 21,101 males and 21,222 females. The following table shows the number of deaths for every 100 births registered during the years 1911–15 inclusive, according to their race classification, and as compared with 1916:—

Race.	Deaths for every 100 births, 1911–15.	Deaths for every 100 births, 1916.
Indian	80·76	100·5
Carib	52·05	43·79
Negro	53·89	59·51
Other races	63·51	57·99

The birth-rate was 39·056 and the mortality 26·321 per 1000 of the estimated mean population. The number of illegitimate births was 687 out of a total of 1653, or 41·56 per cent. 413 marriages took place during the year, being at the rate of 9·75 per 1000 of the mean population. During 1916 the excess of female over male births was 85; and of male over female deaths 150. The colony suffered sudden and severe losses in the untimely deaths of Lieutenant-Colonel Slack and P. C. Burgess, at the hands of a murderer, and Dr. J. H. H. Harrison, the principal medical officer, at the hands of a lunatic. The deepest sympathy of all classes was extended to the bereaved families. The health of the colony had been on the whole good. Slight epidemics of dengue, measles, influenza, and chicken-pox occurred, but were all of a mild type. Infantile mortality was unfortunately very high in most districts. During the first six months of the year 1916 Dr. Hackett, of the Rockefeller Institute, conducted an inquiry into the prevalence of ankylostomiasis throughout the colony. He found an infection varying from practically nil on the Cayes to nearly 100 per cent. in some of the Indian villages. Determined steps were taken to combat the disease.

Northern Territories of the Gold Coast.—In his latest report on this Protectorate Mr. C. H. Armitage, the Chief Commissioner, states that two deaths occurred among the European officials—one from heart failure in February at Tamale and one from yellow fever at Gambaga in October. The names of 12 officials appeared on the sick list. Among the native officials only 16 entries occurred on the sick report, with one death. The Census, completed in 1911, gave an estimated native population of 361,806 to the Northern Territories, with a computed area of 31,100 square miles, an average of 11·6 persons to the square mile. The Census returns for the Southern and North-Western Provinces were considered to be fairly accurate, but those of the North-Eastern Province fell far short of being correct, and it is estimated that not more than two-thirds of the inhabitants were enumerated. In spite of the heavy infant mortality it is considered that the population at the present day is greatly in excess of that shown in the last Census returns. Except for an outbreak of small-pox at Wa at the end of the year, no epidemic disease was recorded. It is reported that the Walas inoculated their children from the virus obtained from those who contracted small-pox. Two deaths from anthrax occurred at Salaga. Leprosy is not on the increase, and, while uncommon in the Southern and North-Western Provinces, is of more frequent occurrence in the North-Eastern Province. The natives look upon it as "a visitation of Allah," but say that it shows no signs of spreading, and are generally averse to compulsory isolation. In concluding his report, Mr. Armitage remarks that:—

"The climate of the Northern Territories, while similar to that of the Gold Coast and Ashanti, may be said in comparison with them to be more trying in its extremes. It possesses an insidious quality that lowers the vitality of Europeans and renders unduly prolonged residence on their part inadvisable, and it is generally recognised that a period of recuperation in a more bracing and salubrious climate is necessary after a year's stay in the country. Innumerable insects—creeping and flying—are a source of irritation, especially at evening time and after dark."

BORO-CHLORETONE IN THE TREATMENT OF BURNS.

To the Editor of THE LANCET.

SIR,—I should like to draw the attention of those of your readers who have not yet tried it to the value of this powder in the treatment of burns and scalds. I have used it for several years and have found it most efficacious, and its marked success in a recent case of a young girl, whose leg and foot were badly scalded, was most noticeable. I found her screaming with pain. Within five minutes of a copious dusting of the damaged skin with boro-chloretone all pain had disappeared and she was able to sleep the whole night. The next day the circumvesicular erythema had distinctly faded, and healing rapidly ensued. Boro-chloretone not only anæsthetises the skin but diminishes the inflammation, and being in addition an antiseptic fulfils the qualifications of an ideal dressing for burns and scalds.

I am, Sir, yours faithfully,

Watton, Norfolk, August 4th, 1918. H. MALLINS.

MEMORIAL TO THE LATE MR. R. H. GRIMBLY, O.B.E., M.R.C.S., L.S.A.

ON July 11th, at Newton Abbot Ambulance Hall, a memorial tablet was unveiled to the memory of the late Mr. Richard Henry Grimbly, who was the founder of the local corps of the St. John Ambulance Brigade.

EGG "SUBSTITUTES."

AN editorial article in the *Journal of the A.M.A.* for July 13th has some hard things to say about the numerous products at present vaunted in America as efficient substitutes for the hen's egg. At the request of the Pennsylvania State Department of Agriculture, Professor C. H. Lawall has investigated more than 40 of these substitutes, and in the introduction to his report he says:—

One of the most reprehensible ways of making money is to take some common, everyday substance, disguise or alter its appearance in some way, make a lot of exaggerated statements regarding it, and then sell it for about 10 or 15 times its market value, extolling it as an economical substitute for some expensive article. There has been no preparation of this class within recent years that has sprung into prominence with such rapidity as the so-called egg substitutes and with so little merit or legitimate warrant for their manufacture and sale.

Practically all the substitutes have been found to consist chiefly of cornstarch coloured with coal-tar dye. The protein content varied from 0·7 to 35 per cent. Commercially dried egg, which is a legitimate market product, contains about 45 per cent. of protein. Professor Lawall concludes that all so-called egg substitutes afford a ready opportunity for profiteering, combined with the development of the art of camouflage to the point of perfection.

"Their names are deceptive; their composition in no wise resembles that of egg; the presence of colour, in those where it is used, is a fraud, and the claims as to replacing value are either deliberate misstatements or ambiguous phrases. Egg substitutes serve no purpose that cannot be served just as satisfactorily and much more cheaply by articles in daily use in every household."

The egg "substitutes" are probably similar to what are known in Great Britain as custard powders, which are presumed to make "custard without eggs." In this country there is no legal definition laying down a standard, so far as we know, for such powders, although in Pennsylvania such substitutes contravene the State food regulations, and if found for sale are dealt with accordingly. As was shown in a report from THE LANCET Laboratory in 1900 (THE LANCET, May 5th, 1900, p. 1298) the powders consist practically entirely of cornstarch coloured with turmeric or coal-tar dye. They have therefore nothing in common with eggs, and the "custard" made from them is merely a starch emulsion with very small real nutrient value.

SOME MEDICAL NOTES FROM ANCIENT MESOPOTAMIA.

Dr. Paul Haupt, of Johns Hopkins University, has, in the *United States Oriental Research Journal*, been giving a revised translation of the difficult cuneiform text in the Annals of Assurbannipal, king of Assyria, describing the illness of Teumman, king of Elam, with whom the Mesopotamians were at war. This record has been for the last 40 years differently rendered, and was thought to indicate that the disease was rabies, because one sentence is capable of being read as "he behaved like a mad dog"; but Professor Haupt, after an elaborate discussion of the text from our knowledge, now so advanced, of the cuneiform vocabulary, and a comparison of the words with their congeners in other Semitic dialects, shows that the following is the correct translation. "At that time he (Teumman) had an attack, his lip slavered, his eye rolled; wildness was imported to it." This version agrees quite closely with the malady being an epileptic fit, for during an attack of morbus sacer the eyes roll wildly and the sufferer foams at the mouth. The ancients were agreed that such disease was specially inflicted by the gods, and in a further part of the inscription the origin of it is attributed to Assur and Ishtar.

The existence of veterinary surgeons in very early times in Babylonia is disclosed by the ancient law code of King Hammurabi. This is confirmed by a cuneiform tablet, Rm. 362 in the British Museum, which, though much defaced, scholars can detect gave a list of plants useful for treating colic in the horse. One line reads, "Plant for abdominal cutting pain in the horse." Other lines read in Babylonian what is most nearly translated by "Contunde in vino, ungue ad abdomen." This tablet probably presents the earliest known instance of cataplasmata being utilised for treatment of colic of the horse.

Dr. Felix von Oefele, whose residence appears now to be in New York, has been writing in the *Journal of the American Oriental Society* upon a Babylonian statuette of the jerboa, or Egyptian jumping mouse, especially with regard to the accurate representation of zoological details showing careful morphological observation. The double length of the tibia in comparison with the femur is carefully copied. The animal is still to be found in the Western Babylon desert, and doubtless it was there, and not in the Sinai peninsula, that the artist obtained the specimen he copied.

"VITAMOGEN."

To the Editor of THE LANCET.

SIR,—My attention has been called to a leaflet composed of extracts from an article of mine on Vitamines published in *Science Progress*, 1914, followed by references to a food preparation called "Vitamogen" purporting to contain these accessory growth substances.

The publication of my name in connexion with this matter is entirely without my sanction, and should not be taken to imply that I consider that there are any vitamines in the above-mentioned preparation.

I am, Sir, yours faithfully,

Bristol, August 12th, 1918. H. W. BYWATERS, D.Sc.

*** We have also received a communication from Vitamogen, Ltd., in which they enclose a copy of a letter which this company wrote to Dr. Bywaters on his drawing their attention to the matter. The letter is as follows:—

[COPY.]

Professor H. W. Bywaters, July 31st, 1918.
c/o Messrs. Fry and Sons, Ltd., Bristol.

DEAR SIR,—We have yours of the 24th inst. addressed to Mr. Shepperson, and we are very sorry you feel you have cause for grievance against us.

We assure you that we had no intention of doing anything to cause you to feel any disturbance of mind, as we have acted quite innocently in the matter, inasmuch as, after Mr. Shepperson's interview with you at Bristol, on your suggestion he communicated with Mr. Murray regarding the loan of the blocks, and at the same time mentioned that we should like to publish extracts from your paper and his reply was, that "provided the usual acknowledgment is made of the source from whence it is taken." This is from his letter which we have before us at the moment, dated Oct. 29th, 1917, and you will observe we have done this, and a proof of our leaflet was sent to the publishers of *Science Progress* for perusal before we issued it.

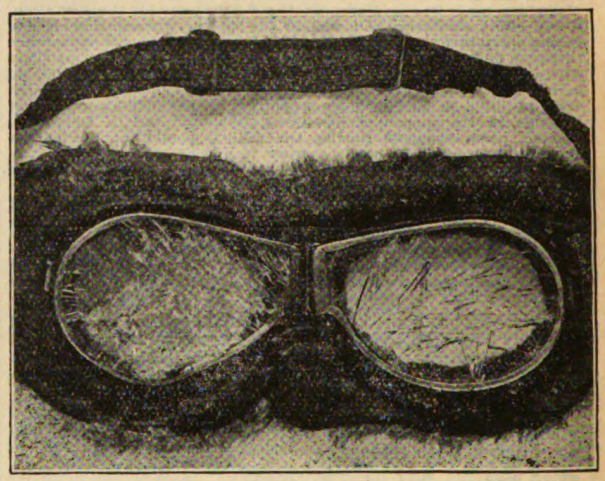
We remain, yours faithfully,
VITAMOGEN, LTD.

HOUSEHOLD ECONOMY.

THREE recently published little books will greatly help towards household economy in regard to the preparation and preservation of food. The first, *The Commonwealth Cookery Book*, by Muriel V. Palmer (London: Longmans, Green, and Co. Price 2*s.* 6*d.*), contains within the compass of 124 pages a large number of recipes, the result of many years of experience, the author being organiser of domestic subjects to the Birmingham Education Committee. This thoroughly practical little book gives instructions for the preparation of every-day dishes, including the requirements of invalids, and for the simple preservation of fruits and vegetables. A recipe supplied by Messrs. Cadbury Bros. for a cocoa-butter emulsion makes for economy in cake and biscuit making.——*Canning and Bottling*, with notes on other simple methods of preserving fruits and vegetables, by Helen P. Goodrich, D.Sc., late technical adviser on canning in the Food Production Department (Same publishers. Pp. 70. Price 2*s.*), deals with the subject in a very simple and thorough manner, the first part presenting all the information necessary for the successful preservation of fruits and vegetables, the last part being devoted to more technical and theoretical matters interesting to those proposing to can on a large scale. The author believes "that the saving of fruit and vegetables may not only be effected during the war, but, through the lessons in economy that we are learning now, a pleasant and financially sound occupation may be fostered as a permanent national village industry, which cannot but make agricultural life more attractive."——An enlarged edition of Miss Helen Wyldon's *Sugarless Jam Making*, published at 10, Glendale-terrace, Bideford, Devon, price 1*s.* 2*d.*, post free, also contains instructions on preserving fruit and vegetables as well as bottling and drying, corn syrup preserving, together with hints for canners. At a time when there is a shortage of sugar this little book, with a score of recipes, should prove useful.

TRIPLEX GLASS.

Mr. Charles Higgens recently called attention in this column to the properties of this glass and the protection which it offers to the eyes of our fighting men. We have received from the Triplex Safety Glass Co., Ltd.



(1, Albemarle-street, W. 1), a photograph, which we reproduce here, of a pair of safety-glass goggles which stood a severe test. A lieutenant in the R.A.F. writes that he was wearing the goggles when he crashed, and that they were the means of saving his eyesight.

MATERNITY FEES IN EAST RIDING.

THE county medical officer has reported to the Health Committee of the East Riding county council that he has been in communication with the acting secretary of the East Riding local medical committee with regard to the fees to be paid by the county council under the maternity and child welfare scheme to practitioners who were summoned in necessitous cases by a midwife employed by the council, and also to practitioners who attended, under arrangements made by the council, necessitous women at confinement. The fees suggested by the local medical committee were as follows:—

1. Where the practitioner is called in by the midwife in a necessitous case, and the distance is within three miles, not exceeding £2 2*s.*; where the distance is more than three miles, not exceeding £3 3*s.* The fee for subsequent visits to be 3*s.* 6*d.*, plus mileage of 1*s.* a mile or part of a mile one way.

2. Where the practitioner undertakes the case by arrangement with the council:—

	£	*s.*	*d.*
Where the distance is a mile or under	1	11	6
" " over one mile and under three miles	2	2	0
" " three miles and over	2	12	6

The committee approved of this scale.

SOMERSET CENTENARIANS.

Mrs. Russell, of Weston-super-Mare, celebrated the 100th anniversary of her birthday on July 19th. Weston-super-Mare has had four centenarians within the past four years.—Mr. F. W. Stabbius, of Worle, was 103 years of age on July 18th.

J. S. McW. has omitted to give the reference for the statement which he quotes.

The Lumleian Lectures
ON
CŒLIAC DISEASE.

BY G. F. STILL, M.A., M.D. CANTAB., F.R.C.P. LOND.,
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LECTURE III.*

MR. PRESIDENT AND FELLOWS,—In this, my third lecture, I propose to consider the treatment of cœliac disease.

This section of my subject I approach with considerable diffidence, for in face of the modern therapeutics which the brilliant investigations of laboratory workers in chemistry and bacteriology have made applicable to many diseases, one feels almost out-of-date in offering suggestions and observations based chiefly on clinical experience.

As, however, I have shown in the previous lecture, it has not been possible to trace cœliac disease to one specific cause. Until this has been done, or until the clinical grouping which has been called by this name is shown to be divisible into several different specific entities, the treatment must necessarily be more or less symptomatic and empirical. In the meantime experience has shown that certain lines of treatment are definitely valuable in many cases included under this heading, and these I shall try to indicate; moreover, as negative observations are sometimes hardly less important than positive, I shall refer also to the failure of various methods which on theoretical grounds have been thought worthy of trial.

DIETETIC TREATMENT.

One of the outstanding features of cœliac disease is failure of fat assimilation.

This failure has not only a negative result in depriving the child of important material for nutrition, but also a positive result in leaving in the food-residue in the bowel an excess of fatty substances which favours putrefactive change, and in this way may lead to local irritation and secondary infections, and more remotely may cause symptoms of toxic absorption. Possibly also the excess of fat remaining unabsorbed may interfere with the digestion of other food by covering it with an oily coating which digestive secretions have difficulty in penetrating. Failure of assimilation of any element of food is liable, in various ways, to have a more profound effect upon nutrition than the mere loss of that particular element would entail, for by its secondary effects in the bowel it may, and evidently does, interfere with the absorption of other food elements.

Reduction of Fresh Cow's Milk.

I suppose this to be the reason of the value of a diet from which fresh cow's milk is altogether excluded. I place this point foremost in the treatment of "cœliac disease," for I know of no other item of equal importance. Experience shows also that it requires emphasis, for the tendency is to put such a case upon milk and more milk, as the one thing needful, whereas nothing is more likely to retard recovery.

Dr. Gee's experience led him to the same conclusion. "Cow's milk," he says, "is the least suited kind of food for them"; but he attributes this intolerance of milk to the curd, not to the fat. "Nothing is more certain," he adds, "than that cœliac children cannot digest the hard curd of ruminants' milk."

I think the balance of evidence is against this explanation of the harmfulness of cow's milk in this disorder. As he himself points out, peptonising milk does not make it any more suitable for these cases, as it should do if the difficulty were chiefly or entirely curd indigestion. I would add that the use of dried milk, the curd from which is much less tough and consequently much more easily digested than that of cow's milk, produces little or no improvement in the stool unless the proportion of fat in the dried milk is much less than that in the fresh milk. The stools show no evidence of curd indigestion, whereas they do show very marked deficiency of fat absorption. Cream, even much diluted, is not tolerated, as it should be if the milk difficulty was due only to the curd.

My own observations, in agreement with those of other clinicians, show that the best results are to be obtained in the dieting of these children by reducing the fats to a minimum, and as the food in which fat is chiefly given at the age when these children come under treatment is cow's milk these observations have applied chiefly to this particular form of fat.

Dried Milk with Reduced Fat.

I have found most successful the replacement of fresh milk altogether by a dried milk containing only a small proportion of milk fat.

The particular brand—"Cow and Gate Half Cream"—which I have used is stated to contain half the proportion of fat present in milk.

Analyses showed that dried milk requires using with special precautions, otherwise the proportion of fat in the food may be very different from that intended. The very light, almost flaky, powder is very easily compressed, so that if on opening a full tin of this half-cream dried milk a fully-heaped, large-sized teaspoonful is taken and added to 1 oz. of water the resulting proportion of fat is no less than 3·1 per cent. (the amount of the powder taken thus was found to be about 75 gr.), whereas if the powder be turned out of the tin or shaken up, as it would be in a partially emptied tin, the same teaspoon heaped fully with the loose powder contains barely 50 gr. and gives with 1 oz. of water only 1·8 per cent. of fat.

Why the small amount of cow's milk fat contained in the dried milk should be better tolerated than the same proportion of fat in fresh cow's milk is not apparent.

Indeed, one would rather have expected the reverse, for the emulsion of the fat in a solution of dried milk is so imperfect that it tends to form into visible droplets on the surface and forms a greasy coating on the vessel in which it is given. Sometimes, indeed, I have wondered whether the loss of a certain amount of fat to the child in this way may not have facilitated the digestion of these preparations.

Human and Other Milk.

It might very reasonably be argued that if the fat is the difficulty then any milk which contains as high a proportion of fat as cow's milk should be equally unsuitable.

This, however, is not so. The difficulty of assimilating the fat of fresh cow's milk seems to be a specialised intolerance, for the fat of human milk, though present in larger proportion than is often found in cow's milk, is seemingly tolerated excellently by these children.

Usually their age makes it difficult to utilise this form of feeding, but in two cases where life seemed to be seriously threatened by cœliac disease, I was able to obtain human milk, which was used in one of them from the age of 2¼ years for nearly a year, and in the other from the age of 20½ months until the child was 2 years and 11 months old.

In both cases the human milk seemed to be the turning point in the illness, and its use was followed by great improvement in the stools and in the child's general condition, so that one case made a complete recovery, though with some stunting of growth, and the other, last seen at 3 years and 10 months, showed no arrest whatever of growth and was able by this time to take both cow's milk and goat's milk.

In connexion with this special value of human milk I would recall a fact which I have already mentioned, that none of my cases of cœliac disease began in an infant who was still at the breast.

One of the most successful substitutes for cow's milk is asses' milk.

This might be expected from the very low proportion of fat which it contains, commonly not more than 1 per cent. Whether this is the whole explanation may, however, be doubted, for cow's milk, even when diluted so as to reduce the proportion of fat to this extent, or when used in the form of whey, which contains usually not more than 1 per cent. of fat, is still much more liable to render the stools loose and offensive.

Apart from the proportion of fat present it is recognised that there are differences in the characters of the fat in the milk of different animals, notably in their melting point, also in the proportion of butyric acid present as well as in other respects, and it may be that these differences determine the digestibility of different kinds of milk fat, and therefore their relative suitability in such a condition as cœliac disease.

Fat Derived from Other Sources.

Fats other than those present in milks have also proved unsuitable.

I have tried the oil obtained from soya bean in the form of an artificial milk, Solac, containing 3·3 per cent. of fat according to one analysis, and 3·75 per cent. according to another, but in spite of good emulsion this was not successful; it aggravated the looseness of the bowels.

Cod-liver oil also is not available to replace the milk fats, for it is usually tolerated badly in this disorder.

Another form of fat which, though tolerated by some of these children in small quantities, increases the symptoms in others, is that present in the yolk of egg.

The evidence of intolerance of these various fats is the increased looseness of the stools and still more their offensive character. The reduction of the proportion of fat in the diet produces not only diminution of looseness but a better colour and less offensive odour of the stools, and therewith a definite improvement in the child's general condition, and particularly in the weight.

Carbohydrates.

The diet, however, must needs consist of something more than a milk very poor in fat if any continuous improvement of nutrition is to be obtained.

There is apparently some difficulty in dealing with starches, though much less than with fats.

Unfortunately, one form of starch which seems particularly liable to aggravate the symptoms is bread. I know of no adequate substitute. Rusks have seemed less harmful than bread, probably owing to the fact that the starch in them is partially dextrinised; they help to satisfy the child's craving for something solid. For this reason, though they contain very little carbohydrate, I have used biscuits made with dried

* Lectures I. and II. were published in THE LANCET of August 10th (p. 165) and 17th (p. 193), 1918.

milk, with just enough wheaten flour to give a crisp consistency; there have been at least two such in the market, "Nurso" and "Malac" biscuits. Sugar is allowable only in small quantity.

A form of carbohydrate which generally suits these cases is "Revalenta," prepared from lentils; this made thin with a solution of the dried milk and sweetened with sugar, though not very palatable, is generally taken well. Rice boiled in water for three or four hours so that it is almost a jelly is another form of carbohydrate which has usually succeeded.

These foods, with the addition of chicken broth or veal broth and sweet jellies, have made up the total dietary, in some cases, for a year or more, and if anyone tries to draw up a menu from this list he will find that it is meagre indeed. If eggs are tolerated it eases the difficulty considerably. Pounded chicken, or fish, or meat, or brains, generally make the looseness of the bowel worse, and are only suitable when the child is already improving.

Apart from the fact that such a diet is unsatisfying to the child, it is definitely scorbutic.

Five of my cases developed scurvy at ages varying from 4½ years to 10½ years. All of these were on dried milk and the diet I have mentioned, a proof incidentally that these dried milks, if they contain vitamines at all, do not contain sufficient to prevent scurvy. Obviously, it is important to give some antiscorbutic, and sometimes there is no difficulty, for grape-juice can be given to some without increasing the looseness of the bowels, but usually fruit juices and green vegetables have to be avoided on this account.

Other Diets.

Various have been the efforts to find a diet upon which these children will do well.

One of the most remarkable is that mentioned by Dr. Gee: "A child who was fed upon a quart of the best Dutch mussels daily throve wonderfully well, but relapsed when the season for mussels was over; next season he could not be prevailed upon to take them. This is an experiment," he says, "which I have not yet been able to repeat."

There may have been more reason in this method of feeding than at first appears, for, like most of the diets which have succeeded, it is one containing a low proportion of fat. Moreover, while containing a high proportion of proteid, it contains, of course, no carbohydrate. The mussel contains 12·5 per cent. of proteid and only 1·6 per cent. of fat.

I have tried in some cases a so-called "fat-free" diet with marked success.

From this even the dried milk and egg are excluded, and the diet consists of rusks, Robb's biscuits, jellies, chicken and veal broth, rice boiled in water, revalenta, mashed potato, pounded chicken or fish, barley water or weak tea with sugar. On this diet there has usually been great improvement and in six cases slow but steady recovery.

In this diet the potato fulfils a double purpose by not only providing a considerable number of calories, but also a most effective antiscorbutic. It has seemed to me to be better tolerated in this fat-free diet than when given in a diet including milk, dried or otherwise. This impression is confirmed by one's experience in some of the commoner digestive disturbances of childhood, where one has often noticed that the combination of oily substances—for instance, butter—with potato seems to render the potato particularly indigestible, possibly for the reason already suggested, that the fatty material forms an envelope around the starch granules preventing the diastasic action of the amylase of the salivary and pancreatic secretions.

Diet with Little or No Fat: Freedom from Rickets.

It might be thought that a diet practically devoid of fat, or even such a régime as that previously mentioned in which the fat is reduced to an extremely small amount without being excluded altogether, would, when continued for months, or, as has been necessary in some cases, for two or three years, produce serious harm; especially when it is used, as it is almost always in this disease, at an age which should be that of rapid development. I have already pointed out that in spite of the deficient fat assimilation caused by the disease rickets is strikingly absent in the large majority of children with cœliac disease; and now I will add that even when fat is eliminated entirely or almost entirely from the diet these children still show a remarkable freedom from rickets.

Other Routes of Introducing Fat: Inunction.

Admitting, however, that in this direction the low proportion of fat in the diet does no harm, it must still be desirable from the point of view of general nutrition to secure the absorption of fat if possible, and the question arises whether for purposes of tissue building fat can be introduced by any other route than the alimentary canal.

There is some evidence not only that it can be absorbed but that it can be used for tissue building when injected into the subcutaneous tissues. Such a mode of administration is obviously undesirable for children, especially as it would have to be repeated many times and for a long period.

Can fat be introduced by inunction?

If so, it would be simple enough to compensate for the deficiency of fat digestion. There is plenty of evidence that various substances applied in oils or ointments are absorbed—e.g., mercury in mercurial ointment or iodoform in oil or in vaseline; but this is no proof that the fat of the oily vehicle is absorbed also.

I have sought in vain for confirmation of statements that cod-liver oil and other fats can be introduced through the skin. The only experimental evidence which I have been able to find was that obtained by Lassar, who smeared the shaven skin of rabbits with rape-seed oil three times a day for two or three days, and found that the liver and kidneys after this short time were full of fat globules. He stated also that olive oil and cod-liver oil passed through the skin into the deep organs.

As far as I know, these experiments have not been confirmed, and it has been pointed out (Reid [13]) that the skin of mammals usually employed for such experiments is thinner than that of man and more vascular, and in the case of the rabbit in particular contains hair follicles with wide mouth, so that the conditions are not strictly comparable.

If fat can be absorbed through the skin it must presumably be without the fat-splitting and subsequent synthesising which are supposed to be necessary to its absorption through the bowel. It is difficult to believe that if with such special adaptation to absorption as is shown in the structure of the intestinal mucosa such an elaborate process is necessary to the absorption of fat it can be absorbed without any preparation at all through such a structure as the skin.

It is much to be desired that careful clinical observations under strict conditions could be made on this particular point.

Most of us have ordered inunctions of oil many times for wasting children, who sometimes have thereupon gained weight and sometimes not, but there are so many possible fallacies, and so few cases offer the exact conditions favourable to any decisive conclusion, that such inunctions are usually rather the therapeutics of hopefulness than the therapeutics of conviction. Personally, I have been under the impression that any good accruing was due rather to the friction and perhaps the warm covering of oil than to any real absorption.

It is important for investigation that the cause of the wasting should be mainly, if not entirely, failure of fat absorption by the bowel. The presence of some other cause of wasting, such as tuberculosis or any general failure of digestion, will make the results of inunction even more doubtful, as any gain from skin absorption may be counterbalanced by loss of nutrition from other causes. In "cœliac disease" we have a condition in which presumably the predominating factor in the failure of nutrition is failure of fat absorption from the bowel, and therefore a state of things particularly suited to this investigation.

Results in Cases Treated by Inunction.

With this point in mind, I tried the effect of inunction with peanut oil (oleum arachis), two drachms being rubbed in twice daily for about 15 minutes.

The patient was a boy aged 7½ years who had been under my care in hospital for five weeks with cœliac disease without gaining weight. On admission he weighed 28 lb.: at the end of five weeks only 25½ lb. At this stage the daily inunction was begun, and the boy's weight steadily rose so that in the next eight weeks he gained 8½ lb., and this in spite of the stool being often very pale and slimy and purpura appearing most of the time.

This observation is certainly suggestive of the possibility of fat absorption through the skin, but I am bound to admit that even with such a favourable opportunity for investigation as cœliac disease my results in other cases have been equivocal.

In one case the inunction, done with cotton-seed oil, and subsequently with peanut oil, produced no definite gain in weight, whereas in another case of cœliac disease in the same ward, where the weight had been stationary for many weeks, the weight began to rise almost steadily, and the child's condition improved enormously without any change in the treatment, and in particular without any inunction.

An unexplained improvement like this has happened in several cases where the disease had already lasted two or three years without any permanent progress. It behoves us, therefore, to be careful in attributing results to our treatment, whether it be fat inunction or any other.

TREATMENT BY DRUGS, ORGANIC EXTRACTS, AND VACCINES.

Another method of overcoming the fat difficulty which has been tried in these cases is the administration of digestive extracts.

In view of the striking results obtained by Dr. Byrom Bramwell in cases of pancreatic infantilism, a condition associated, like that we are considering, with failure of fat assimilation, it seemed possible that pancreatic extracts would be of value in cœliac disease.

I have repeatedly used them, trying in various cases the glycerine extract specially recommended by Dr. Bramwell, also the preparation sold under the name of "holadin," and that sold as "trypsogen," but none of them have appeared to me to have any obvious beneficial effect, a confirmation, incidentally, of the conclusions reached in my previous lecture that the failure of fat assimilation is not due to the failure of the pancreatic secretion.

I have also tried ox-gall on the theory that the biliary secretion was deficient, but without any improvement in the stools or in the child's condition.

Calomel.—Digestive Extracts.

Dr. Cheadle recommended calomel as stimulating hepatic secretion, as well as having some antiseptic value.

So far as my own experience goes, the facts certainly do not fit the theory, for calomel, and even grey powder, seem to aggravate the bowel disturbance and to be particularly unsuitable for these cases.

Dr. Cammidge quotes one observer as having found that calomel, so far from diminishing the number of bacteria in the fæces, may actually cause an increase, presumably by increasing the mucus which serves as a favourable nidus for bacteria. Whatever may be the explanation it certainly does not improve either the stools or the patient in cœliac disease.

The difficulty in digestion of carbohydrates, particularly of starch, which is only less than the fat difficulty, naturally suggests the administration of malt for its diastasic effect. This, however, is also found to be inadmissible in most cases, for it seems rather to promote flatulence and looseness.

It would seem, indeed, so far as any direct influence can be exerted upon the absorption of fats and carbohydrates in cœliac disease, it is rather to be accomplished by rigorous dieting than by any drugs or digestive extracts.

Astringents.

Drugs, however, even if they are of but little assistance in this affection to the digestive processes which prepare the food for absorption, may still be of real value if they can render the intestinal mucosa more healthy, and therefore more capable of absorbing.

Post-mortem examination has shown that, at any rate in a fatal case, there may be definite inflammatory change in the intestine, and the

presence of much mucus in the stools during life, especially when the disease has already been present for a long time, shows that there is at least much intestinal catarrh, and these changes are apparently due, in part at least, to bacterial irritation and partly to the irritating effect of putrefaction.

It might be supposed that this could be diminished in two ways, either by drugs which exert an astringent effect upon the mucosa, or by those which have some antiseptic value and in this way prevent bacterial growth and putrefactive changes.

Most of the astringents, whether vegetable or mineral, have proved useless in my hands; the only one which has an undoubtedly good effect is castor oil.

Given in small doses, three times daily, it usually causes more or less improvement.

A mixture of 5-minim doses of castor oil with salol 2 or 3 gr. in mucilage and water has such a pronounced effect in improving the stools and checking looseness that in several cases the child took it almost continuously for some years, and the parents stated that any attempt to discontinue it was usually followed before long by deterioration in the character of the stools, so that the medicine had to be resumed.

It has always seemed to me difficult to understand how five drops of castor-oil can have any astringent effect on 20 feet of intestine, but however it is to be explained there is no doubt that it has a very definite action in this respect.

Another astringent which, though much less reliable than castor oil, is certainly sometimes useful in cœliac disease is silver nitrate, which in doses of ¼ or ½ gr. ter die seems to reduce the looseness of the stools in some cases.

Bismuth has seemed to me to be usually of little, if any, value in these cases, perhaps because it was used in the traditional doses of 10 gr. or even 5 gr. three or four times a day, whereas the radiographers have taught us that bismuth can be taken by the ounce without ill effect, so that recently infants in my ward sometimes have 30 gr. of bismuth carbonate every three hours, and a child of three as much as 60 or 70 gr. several times a day.

Chromo-santonin.

Having in mind the resemblance in many points between cœliac disease and sprue, I have tried in three cases the chromo-santonin, which Dr. Charles Begg has found to have remarkably beneficial effects in sprue.

It was given, as he directs, in a gelatine capsule. There were no records from which the dosage proper to children of this age and suffering from cœliac disease could be gauged, so I was obliged to feel my way cautiously, beginning with amounts which, no doubt, were too small, and perhaps even finally not reaching a sufficient dose. A child 6½ years old, weighing 21 lb., took 2 grains twice daily without any definite effect.

In one case, the girl aged 17½ years whom I have mentioned before, the administration of the chromo-santonin was followed by immediate improvement of the stools, which became less offensive and less loose, and there was rapid gain in weight.

In another, a girl aged 3¾ years, and weighing 15¼ lb., there was no marked alteration of the stools whilst the chromo-santonin was given—increasing doses up to 1 grain twice daily were used—but just after the course of this drug was stopped there was great improvement in their character; they became firmer and a better colour than they had been for months.

Clearly, further observations are needed on the value of this drug in cœliac disease. In the doses used it produced no ill-effects of any kind; the greenish-yellow discolouration of the urine due to santonin was observed in 15 hours after it was taken, but this is of no importance.

Dr. Begg considers that the chromo-santonin has a bactericidal action.

Intestinal Antisepsis.

Other drugs have been tried in this affection with the idea of intestinal antisepsis.

In one, at the age of about six years, iodoform gr. ½ was given for six months, apparently with markedly beneficial effect.

Salol has also seemed to do good.

Perhaps in the same category should be mentioned ionisation with sodium salicylate at one electrode; this was done in one case under my observation. A 2 per cent. solution of sodium salicylate was used on one pole on the abdomen. During this treatment, which was carried out for many weeks, the child very definitely improved, though she subsequently relapsed and died.

In one case I tried radium water; half a pint was given daily by mouth, without the slightest benefit.

In one of the recorded cases appendicostomy was done with a view to overcoming intestinal infection by irrigation through the appendix. Some improvement of the child's general condition started after this was done. Autopsy, however, showed that there was inflammation involving the whole of the small intestine as well as the large, so that it could hardly be expected that this treatment could do more than palliate symptoms.

Vaccine Therapy.

The discovery that a considerable proportion of the cases examined gave evidence of intestinal infection with a dysentery bacillus, as shown either by the finding of the organism in the stools or in the mucus from the bowel, or by the positive result with the agglutination test, naturally suggested that a vaccine might be of value.

I have used an autogenous vaccine of the dysentery bacillus in two cases where the bacillus had been obtained from the stools and a stock vaccine of dysentery bacillus where, although the organism could not be found in the stools, the agglutination test gave a positive result.

In both the cases where the autogenous vaccine was used there was very definite temporary improvement both of the stools and of the child's nutrition for about a fortnight, after which the condition again deteriorated in spite of continued use of the vaccine. The vaccine was administered in the one case in doses of 5 millions, increased gradually up to 200 millions; in the other the initial dose was 60 millions, increased later up to 150 millions.

In the third case, where only a stock vaccine was available, and was used in doses increasing from 25 millions gradually to 150 millions, no effect whatever was observed.

In one case where the dysentery bacillus was absent, but the stools showed many streptococci and pneumo-bacilli, a vaccine was used of pneumo-bacilli and streptococci in increasing doses up to 100 millions of each; no effect whatever, either for good or ill, was observed.

Internal Secretions.

The striking arrest of growth in these cases has raised a suspicion that one or other of the internal secretions might be deficient.

In three cases under my observation thyroid was given, but without the slightest advantage. It did not seem to promote growth nor to improve the general condition; indeed, one of them seemed rather the worse while taking it. This symptom is one for which treatment is specially sought in the cases which reach convalescence. The child herself is distressed by the difference between herself and those of her own age.

In one such case the administration of polyglandin, a preparation of mixed organic extracts, was followed by an increase of height of ⅜ inch in 14 days and another ¼ inch in the next 12 weeks, but the child at the same time had improved so much in her power of assimilation that she was able to take an ordinary diet in place of the restricted special diet, so that growth might have been due to this rather than to the drug.

If we have no certain means of promoting growth in these cases where it has been arrested by the disease I suspect that we can do something to prevent the stunting by the diet adopted during the earlier and more acute stage of the disease, for I have noticed that cases fed on human milk or on asses' milk have shown much less interference with growth than those in which such feeding was not obtainable.

Anyone who has seen the remarkable stunting of growth which can be produced in rats by regulating the diet so as to exclude some elements will realise that there is no necessity, in children with this disease, to seek for the primary cause of the arrest of growth in any failure of internal secretions. Nevertheless, it is quite conceivable that the general interference with nutrition, caused by the failure of fat absorption, may affect also the internal secretions which are known to play a part in the regulation of growth.

The point is one of practical importance. For if the arrest of growth is due simply to deficiency of calcium absorption, through the loss of calcium in the soaped fat passed in the fæces, one might suppose an increase of the intake of calcium by administration of calcium salts—for instance, the lactate or the chloride—would compensate to some degree for the loss in the fæces, assuming that the wastage in the form of soap remains unaltered.

But I know of no evidence that growth is promoted by the giving of calcium in this way; I am not even satisfied that calcium salts given thus have any effect upon bone formation; certainly one's experience is that, judging from clinical evidence, calcium in the form of lime-water has little, if any, effect in the prevention or in the cure of rickets. Moreover, in some experiments upon the feeding of rats with a diet deficient in fat, the arrest of growth occurred in spite of the administration of calcium in the form of calcium lactate.

IMPORTANCE OF DIET.

To sum up, it would seem that drugs, while not entirely impotent in the treatment of this condition, have a very limited scope, and that chief reliance is to be placed upon scrupulous care in dieting. The element in the food which requires most consideration is the fat, and the form of fat which seems most obnoxious to children affected with cœliac disease is the fat of cow's milk. If this be borne in mind it is nearly always possible to obtain marked improvement in these cases, and a large proportion of them can be coaxed back after many months or years of patient perseverance with a very restricted diet, to health and even to an average power of assimilation.

CONCLUSION.

In conclusion, Gentlemen, I can only regret that I have not been able to throw more light upon the obscure problems raised by this group of cases, and that the working hypothesis with which I started, that it can be pigeon-holed as one specific morbid entity, cœliac disease or intestinal infantilism, name it what you will, remains still nothing more than a working hypothesis.

I have raised many questions, I have answered few, and if any apology is needed, I would say, in the words of Heraclitus, *χρυσόν οἱ διζήμενοι γῆν πολλὴν ὀρύσσουσι καὶ εὑρίσκουσιν ὀλίγον.*

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THE TREATMENT OF WOUNDS.

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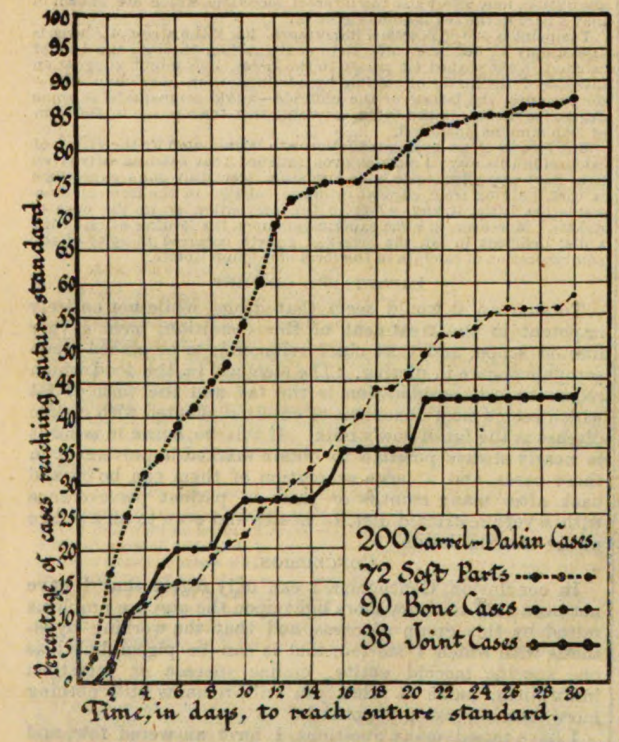
I.—THE CARREL-DAKIN TREATMENT OF WOUNDS: REVIEW OF 200 CASES.

DURING 1916 and 1917 a large number of cases were treated by the Carrel-Dakin method; detailed notes were kept, but for months at a time this was out of the question and no more than 200 form the basis of this paper. The first 100 were cases treated in a base hospital in the wards devoted to the most serious cases; the second 100 in the surgical observation hut attached to a general hospital. These last consist of severely wounded men, moribund cases being excluded. The following indicates the type of wounds dealt with:—

Wounds of soft parts, 37 per cent.
Compound fractures, 46 per cent.: Humerus, 9 per cent.; ulna and radius, 4·5 per cent.; femur, 6·5 per cent.; tibia and fibula, 11 per cent.; other bones, 15 per cent.
Wounds of joints, 17 per cent.: Shoulder, 4 per cent.; elbow, 2 per cent.; wrist, 2 per cent.; knee, 6·5 per cent.; ankle, 2·5 per cent.

Results vary greatly according to whether preliminary surgical treatment is undertaken in the pre-inflammatory period or after sepsis is established. The cases have therefore



been divided into (A) those operated on within 24 hours, and (B) those without preliminary operative cleansing, or in which this was not done till at least 24 hours had elapsed. More scientific classification is impossible; cases falling into Class B are becoming fewer and fewer.

Results.

The combination of mechanical cleansing with progressive sterilisation by means of a chemical agent has brought about an extraordinary advance in wound treatment, and evidence will be put forward which cannot fail to convince any who have had to deal with wounds since the earlier stages of the war. The evidence consists of a careful record of 200 cases typical of the ordinary severe injuries passing through any base hospital in France. The accompanying table shows the main results:—

	A, 114 cases.	B, 86 cases.
Temp. normal ...	in 95·9% after 9·7 days* ...	in 86·3%, after 8·2 days.
Suture standard reached in ...	,, 82·5% ,, 12 ,,	,, 67·4% ,, 15·5 ,,
Suture performed	,, 77·5% ,, 13·6 days ...	,, 53·5% ,, 17 ,,
Healed before evacuation...	... 67·5% of cases ...	44·2% of cases.
Average duration of treatment before healing ...	... 28·2 days	33·6 days.

Case mortality, 3%. Secondary hæmorrhage, 3%. Secondary amputation, 3%.

* In each case after treatment for number of days indicated.

The accompanying chart is instructive inasmuch as it shows the relative speed at which wounds of soft parts, bones, and joints attained suture standard.

Such facts speak for themselves and there is no doubt that similar results can be obtained by any who are familiar with the technique and apply it faithfully.

Treatment.

Treatment has followed closely on the lines laid down by Carrel. It has been possible to treat patients from the commencement in only a few instances and accordingly reliance had to be made for the early treatment on some unknown member of the profession working in an unknown casualty clearing station. This opportunity may be taken of saying how efficient that treatment is becoming in the great bulk of cases. In a series of close on 300 over 10 per cent. reached the base in a condition enabling suture précoce to be practised at once.

The main outlines of the Carrel treatment are now well known to surgeons in France; one or two points, however, must be alluded to.

Attempts at excising a wound in which the infecting organisms have already invaded the tissues do not hasten recovery, and at the same time materially increase the risk of septicæmia. In these cases operations should be limited to such incisions as are necessary to expose freely the furthest recesses of the wound, and the removal of such tissue only as is obviously necrotic.

In the pre-inflammatory stage, however, a radical operation secures the best results. Long incisions give a better chance of seeing and removing all contaminated tissues, and when it comes to closing the wound long incisions are just as easy to suture; they should always be planned, of course, to facilitate secondary closure. Partial closure of wounds at the primary operation almost always postpones the date of complete healing.

When a case treated by the Carrel-Dakin method arrives at the base the injection of the tubes is carried on until the patient is seen by the surgeon.

If the patient is comfortable and the pulse and temperature satisfactory, we are in no hurry to change the dressings. After 48 hours at the most, however, the bandages are removed and the superficial dressing at least changed. The skin is gently cleaned with neutral sodium oleate soap solution to which 2 per cent. chloramine-T is added and then covered with strips of bandage impregnated with sterile vaseline. If at this stage the general condition is good and the wound is free from pus and sloughs visible to the naked eye, smears and cultures are made from the parts most likely to give trouble, such as bone, fascia, tendon sheaths, or deep pockets. If the smears are satisfactory—i.e., not more than one organism per field, or one diplococcus in three—the wound is sutured next morning. If, however, the wound is not up to suture standard the Carrel-Dakin treatment is continued.* The essence of this treatment is to supply to every portion of the wound surface hypochlorite solution at stated intervals and to keep the solution as long as possible in contact with the surface. In order that every portion may be reached each wound must be studied separately and the tubes chosen must be suitably perforated. Individual recesses, if important, must each have a tube, or, if unimportant, a wick of gauze or lint. The influence of gravity must be taken into account in disposal of tubes. The original petticoated tube has been almost entirely given up. Lint is used in the dressing to a large extent instead of gauze.

Operative measures are undertaken only in response to some urgent indications during the first ten days.

* The results obtained by the surgeons in Depage's clinique go to show that in the presence of streptococci early suture—suture précoce—is not justifiable. A large number of observations have been made along these lines, but they are not yet sufficiently far advanced to show just what organism it is dangerous to leave in a sutured wound; even the streptococci are not uniformly pathogenic.

Removal of foreign bodies not giving rise to acute symptoms, of small pieces of badly infected bone, and secondary operations of all kinds are done, if possible, only when local reaction is well established and, as far as may be, after the general wound surface has reached suture standard. When infected bone is not essential to the ultimate usefulness of the part a portion is freely resected, but function is never sacrificed to secure early asepsis. Of the fractures of long bones included in this series which were retained for five weeks or more 82·5 per cent. were already consolidated. After eight weeks only 5 per cent. remained ununited.

Fifty consecutive cases were treated with eusol. Two-thirds of these were A cases and one-third B cases. The results were as follows:—

Temperature normal after treatment for 10·9 days in 92 per cent.
Suture standard reached after treatment for 15·9 days in 78·1 per cent.
Suture performed after treatment for 17 days in 70·9 per cent.
Healed before evacuation, 70·9 per cent.
Average duration of treatment before healing, 30·9 days.

Injection of Solution.

The solution has been prepared according to Daufresne's modified formula and carefully standardised. It has been injected into the tubes every two hours, either by a hand syringe or from an ampoule. The hand syringe is the only method at present in use which ensures that each tube gets its full dose every time. Nevertheless, the labour saved by the ampoule is very great, and the distribution of fluid is fairly uniform if the following points are attended to:—

1. Ampoule should be suspended as vertically as possible above wound.
2. The use of Y-shaped glass junctions is preferable.
3. The main tube of a three- or four-way glass connexion should be kept as horizontal as possible. This can often be secured by safety-pin attaching it to bandage.
4. The tubes should be inspected at intervals to make certain that none are kinked.

If the solution be injected into each individual tube by a syringe the free ends of the tubes should be gathered together and closed with a clamp after injection. Two squirts and two vessels containing Dakin's solution are all that are needed. While one is being used to inject the tubes of the first patient the other stands full of solution in the second vessel, and is thus sterilised ready for next patient.

The question of heating the hypochlorite solution has always been a vexed one. Observations show that the deterioration, judged by chemical standard, is inappreciable after addition of an equal volume of hot water at 90° C. to Dakin solution 1·043 per cent. In cold weather there has never been any hesitation in using this solution warmed to body temperature by diluting, as above.

The amount of fluid used varies according to the wound and number of tubes, but an average of 10 c.cm. per tube every two hours does not lead to overflow into bed. There should be a square of mackintosh under wounded part. A useful precaution also is to have a sphagnum-moss pad applied to dependent part of wounded area outside all the bandages.

Two hours has been chosen as the routine interval between injections, and experiments undertaken confirmed this practice. However, where pus is present the renewal of the fluid every hour is advisable.

Comparison with Other Methods.

The results recorded speak for themselves, but many of the cases which on paper look like failures really represent limbs saved and function preserved. The proportion of really successful cases (that is, where secondary suture in the first 10 to 12 days permits practically of a return to normal) is higher far than that attained under any other treatment thus far tested. Definite figures can only be quoted for cases treated by hypertonic saline, flavine, and dichloramine-T in eucalyptol. These figures should be contrasted with those under the heading Carrel-Dakin B for the reason that though given surgical treatment at the front they did not receive the special treatment till after arrival at the base.

Carrel-Dakin, A	77·5%	closed by suture.
,, ,, B	53·5%	,, ,,
Dichloramine-T (in eucalyptol) ...	43·0%	,, ,,
Flavine	22%	,, ,,
Hypertonic saline	12%	,, ,,

The only other method giving results at all comparable is that of early operation and primary suture with or without the use of brilliant green, bipp, flavine, soap, or other fashionable adjuvants.

[The disadvantages were here considered.] Most of the criticisms involve no insuperable difficulty. They are questions of management, possibly self-sacrifice. The plea that the method has difficulties should not weigh for a moment when the safeguarding of life, limb, and a man's future happiness and usefulness are considered. It is not too much to say that the very least which we can do for the wounded man is nothing short of our very best.

II.—A STUDY OF 50 CASES TREATED BY DICHLORAMINE-T IN EUCALYPTOL.

Dichloramine-T (or toluene-para-sulphondichloramide) (Dakin [5]), a substance closely related to chloramine-T and very like it in its antiseptic properties, is, however, very sparingly soluble in water and freely soluble in various oils. Thus it was hoped by means of an oily solution to provide a reservoir from which the antiseptic in the watery fluids of the wound could be maintained at an adequate concentration from one dressing till the next. Dichloramine-T, though resembling the hypochlorites in its germicidal action, differs in many other respects. Dakin showed that the chloramines have very little disintegrating effect on necrotic tissues. Further, dichloramine-T is a powerful coagulator of albumin, and even in a strength of 1–5000 precipitates some of the albumin present in serum. It was with the object of determining the value of the dichloramine-T in wound treatment that the following clinical study was undertaken.

Results of Investigation.

Persistence of the antiseptic action.—That the antiseptic passes slowly from the oily medium on to the wound surface can readily be demonstrated by the starch iodide test. A bacteriological method was also employed to throw light on this point.

Dichloramine-T 2 per cent. dressing, even if not still detectable by the available chemical tests, at least made its influence felt for about 12 hours in a lightly infected wound. Experiments on more heavily infected wounds showed less satisfactory results. In some cases the growth was quite as heavy within four hours as it had been before the application of the dressing. Nevertheless, the facts suggest that dichloramine-T in oily solution is a step in the right direction in so far as prolonged antiseptic activity on a wound surface is regarded as desirable.

In order to compare the dichloramine-T oil method with others in the actual treatment of wounds 50 consecutive cases arriving at the base with infected wounds were put under this treatment.

They were cases of gunshot wounds of varying severity; about half had bone injury. They were very closely comparable to the series of cases treated by flavine recently reported by us,[6] the results of which are here repeated for comparison, as also are those for a similar series of cases treated by the Carrel-Dakin method. It must be stated that practically every case in the flavine and dichloramine-T groups had had the benefit of early operation, followed by one or other established method of treatment—mostly bipp or Carrel-Dakin. Treatment by dichloramine-T was not started, however, till arrival at the base, anything from two to six days from infliction of wound.

Technique.—As a routine the 2 per cent. solution of dichloramine-T, as originally recommended by Dakin, was employed in this series. A stock of 12 per cent. in chlorinated eucalyptol was kept, and each day a sufficient quantity was diluted down with chlorinated paraffin. The stronger concentrations were not used, partly because it was found that the duration of the antiseptic action was not thereby materially increased, but chiefly on account of their deleterious effects as described later. The wounds were dressed daily with loose packs of lint wrung lightly out of the dichloramine-T oil, every effort being made to reach all parts of the wound surface. Where necessary the wound was further opened up to make this possible; otherwise surgical interference was restricted to a minimum, especially during the first ten days. In certain cases where there was much purulent discharge a piece of tubing was employed to renew the solution in the deepest part of the wounds every 8 or 12 hours.

Clinical results.—When judged from the standpoint of ordinary clinical experience the wounds as a whole could be described as doing well, passing fairly quickly through the usual stages. Sloughs separated and granulation of a moderately bright red colour soon appeared. Pus formation as a rule was comparatively small, and spread of infection to surrounding parts was not common. Epithelial growth at the skin margins was somewhat slow. Despite the good appearance of the wounds it was observed that many did not attain the bacteriological suture standard. In a few cases these were closed, with, however, no greater percentage of successes than is usual when wounds are closed upon clinical grounds without reference to the bacteriological control.

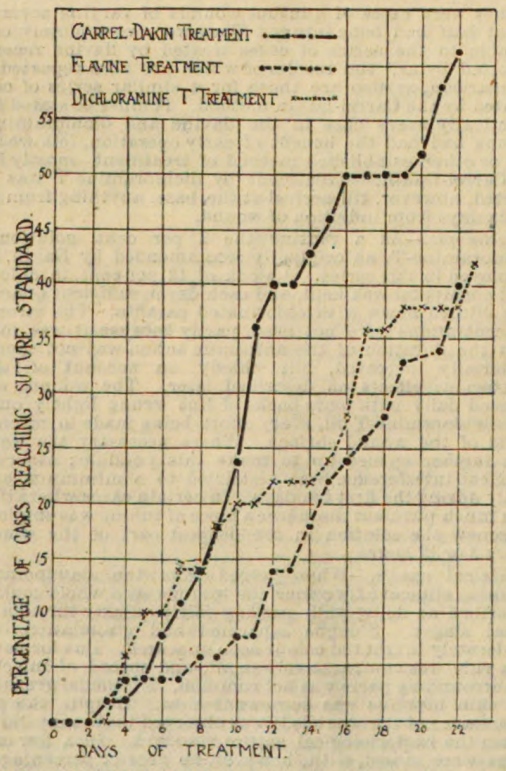
A troublesome complication which occurred very frequently was the skin irritation around the wound. In 24·5 per cent. of the cases there were œdema, redness, formation of papules, and sometimes blistering and excoriation, while in 10 per cent. the treatment had actually to be abandoned on that account. The irritation could only be controlled by diminishing the quantity used, and to a less extent by protecting the skin around by strips of bandage cloth permeated with vaseline. The authors have met certain surgeons who declare they have had little or no skin irritation from the use of dichloramine-T. These surgeons, however, have been found to use only minimal amounts of the solution, either with a spray or by dressings wrung dry before application. Experiment goes to prove that such small quantities of this antiseptic are very evanescent in their action. It has been stated lately that by the use of a chlorinated paraffin wax (chlorcosane) as a solvent for the dichloramine-T the skin irritation is greatly diminished, but as to that we have no experience.

Results Obtained by Dichloramine-T Oil, Flavine, and Carrel-Dakin Methods.

—	Dichloramine-T.	Flavine.	Carrel-Dakin.
Total	53	50	50
T. normal in...	94% after 6·4 dys.	86% after 8·8 dys.	94% after 11·7 dys.
Suture standard reached in ...	48% after 16 dys.	38% after 15·6 dys.	68% after 12·5 dys.
Sutured	44·2% after 17·2 days.	34% after 17 dys.	54% after 14·9 dys
Healed	38% after 32·4 dys.	22% after 26·5 dys.	56% after 28·6 dys.
Mortality... ...	Nil.	Nil.	Nil.
Secondary amputations ...	2%	2%	4%
Secondary hæmorrhage..	Nil.	4%	Nil.

The results obtained by dichloramine-T, though better than those in the flavine group, fell behind those in the Carrel-Dakin series. The average date at which the temperature became normal was earlier in the dichloramine-T series, but the cases in the Carrel-Dakin series, as a whole, were more serious. Several cases considered too serious for the trial of a new method were added to the Carrel-Dakin series. Yet the Carrel-Dakin series shows 20 per cent. more cases sutured and 32 per cent. more healed before evacuation than in the dichloramine-T oil series.

The relative speed at which the wounds in the various series reached suture standard will be best appreciated by the following Chart:—



Graph showing relative rapidity with which septic wounds treated by various methods reached suture standard.

Histology.—Portions of granulation tissue with the adjoining skin edge have been excised from the series both of cases that came up to suture standard rapidly and in which this was delayed or not reached. They were excised at intervals varying from 3 to 30 days, and after treatment with the different concentrations. Dichloramine-T dissolved in chlorinated paraffin eucalyptol in a concentration of 2 per cent. induces an evident reaction both on the skin and granulation tissue, which can, however, only be recognised as certainly deleterious after prolonged application. This is due either to the action of the free chlorine given off or the essential oil or to both, and occurs more rapidly and is more marked with higher concentrations. It ultimately leads to delay in the processes of healing, the ingrowth of skin epithelium becoming aborted and the formation of scar tissue irregular and imperfect. With higher concentrations these changes are exaggerated.

Conclusions.

The dichloramine-T oil method of wound treatment is simple of application, and the claim that the action of a single application is prolonged is substantiated. The results, even when judged by modern standards, are not to be disregarded.

Dichloramine-T oil is not indifferent to granulation tissue or to the skin edges of wounds, but has, especially if used for a long time, a deleterious action on both. The ingrowth of skin is retarded, and the natural tendency for granulation tissue to disorganisation is aggravated.

The use of an oily menstruum does not altogether prevent the adhesion of dressings to the surface or obviate the repeated, if minute, insult to the tissues inseparable from each dressing.

Though an improvement on some other methods in vogue, dichloramine-T oil has not yielded the improvement on Dakin's solution that was anticipated, perhaps because it is neither innocuous to healthy granulation tissue, nor a solvent of dead tissue, perhaps, possibly, because an oily application is not so efficacious as a watery solution in the treatment of wounds.

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POST-DIPHTHERITIC PARALYSIS.

NOTE ON A FORM FOLLOWING CUTANEOUS DIPHTHERIA.

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Introduction.

THE nervous sequelæ of diphtheria constitute a very characteristic symptom-complex. The initial palatal paralysis and the striking symptoms it occasions, the affection of accommodation, and the frequent polyneuritis are familiar to all clinical observers.

The mode of development and the topography of this condition are commonly regarded as dependent on a selective action of the diphtheria toxin on certain cranial nerves and their nuclei; that is, on a selective hæmatogenous toxæmia of the nervous system.

However, when experimentally produced in animals diphtheritic paralysis is not characterised by the cranial nerve involvement so typical of the condition in man, and this fact has led certain observers (C. Bolton, Crocq) to postulate specific differences in the action of the toxin in man and in animals respectively. Thus, Bolton [1] concludes—

"That in the higher mammals the poison especially attacks the medullary centres and the cranial nerves, and in the lower mammals the spinal centres and spinal nerves."

In a comparative analysis [4] of the factors concerned in the production of diphtheritic paralysis in man and animals I have sought to show that a simple physical factor—namely, the seat of toxin formation—is an adequate explanation of these apparently specific differences. For it is noteworthy that in man the structures initially, and frequently alone, paralysed are closely related anatomically to the infective focus in faucial diphtheria, not only in the matter of actual proximity, but, and as Orr and Rows [2] have shown this is far more significant, in that of innervation. For the afferent innervation of tonsils and fauces and the motor nerve-supply of the palatal muscles are both part of the glossopharyngeal-vagus-accessorius nuclear system and its peripheral nerves.

In animals a similar anatomical correspondence between the evolution of the paralysis and the site of the experimental infective lesion is seen.

Aubertin, Babonneix, and Guillain and Laroche have all drawn attention to this significant relationship between primary lesion and initial paralysis. On the other hand, several observers (Remak, Oppenheim, Bolton, and Brewer) record the absence of palatal involvement in certain cases of paralysis following extra-faucial diphtheria.

These exceptional instances, however, do not appear to have determined any change in the current view that the underlying process is a selective blood-borne intoxication of the nervous system. If this hypothesis be correct, the syndrome of diphtheritic paralysis should be independent of the site of the infective focus and relatively constant in type. If, on the other hand, as Guillain and Laroche have suggested, we are dealing with an ascending neuritic process comparable with that occurring in tetanus, the study of the nervous sequelæ of extra-faucial (wound and cutaneous) infections should reveal the anatomical relationships mentioned above, and at the same time help to elucidate the pathogenesis of diphtheritic paralysis. To an adequate appreciation of the problem a consideration of the work of Orr and Rows [2] on "lymphogenous toxi-infections of the nervous system" and that of Meyer and Ransom [3] on tetanus is an essential preliminary.

Clinical.

During the past 15 months (1917–18) there has been an unusually favourable opportunity for the clinical study of this question. A form of localised superficial cutaneous ulceration on hands, forearms, and other exposed parts known as "septic sores" has been extremely prevalent among troops in this field of operations (E.E.F.). Occurring simultaneously has been an outbreak of faucial diphtheria of a relatively mild type, but associated for reasons inseparable from active service conditions with a large proportion of nervous sequelæ of the usual character.

In these circumstances a large number of cases of polyneuritis were observed, not associated with any previous illness, and under conditions in which beri-beri, arsenic, alcohol, and other causal factors could be excluded, but definitely connected with "septic sores," infected cuts and wounds. They gave no history of sore-throat.

An analysis of a series of these cases revealed three constituent elements in the fully developed symptom-complex; a local paresis related to the infective focus, when this was not multiple, a paralysis of accommodation like that seen after faucial diphtheria, and a polyneuritis. Of these three elements, the local paralysis occurred in 27 per cent. (8) of a series of 30, the paralysis of accommodation in 33 per cent. (10), while the polyneuritis was constant.

The local phenomena were associated in 6 cases with a single infective focus, the remaining 24 of the total showed multiple "septic sores."

In the majority of the observed cases the cutaneous lesions were healed when nervous symptoms appeared, but in 6 bacteriological examination revealed in pure culture an organism morphologically and culturally indistinguishable from the Klebs-Löffler bacillus.

In one of these the source of infection was a fatal case of laryngeal diphtheria. A résumé of this particular case will stand as a fair example of the series, though in it there was no ocular defect and constitutional symptoms were unusually severe.

A medical officer in performing tracheotomy on a case of laryngeal diphtheria scratched his right thumb; a small ulcer appeared from which the diphtheria bacillus was grown. During convalescence numbness and paræsthesiæ of the right thumb, weakness and clumsiness of hand movements, and cramp in hand and forearm muscles developed, and preceded a typical polyneuritis of moderate severity. At no time were any palatal symptoms noted.

The local onset related to the infective focus was an early and prominent feature of this case.

In considering the much greater frequency of a local onset in faucial diphtheria, there must be borne in mind the much shorter course of the peripheral nerves in this instance, a factor which, as Orr and Rows have shown, largely determines the intensity of the central nervous lesion. Yet even after faucial diphtheria a certain proportion of cases of polyneuritis are seen preceded by no local phenomena.

In all over 50 cases of this type were observed, and for the following reasons, it was concluded, might confidently be regarded as post-diphtheritic:—

1. Their association as to time and place with the occurrence of faucial diphtheria.

2. The isolation with considerable frequency, by pathologists in the field and at base laboratories, of organisms morphologically and culturally indistinguishable from the Klebs-Löffler bacillus, from the type of cutaneous lesion with which these cases were unquestionably associated. In addition, their isolation in six observed cases of polyneuritis.

3. The occurrence of paralysis of accommodation as a symptom—this being peculiar to post-diphtheritic paralysis.

4. There was evidence of a time relationship between development of primary lesion and neuritis; the latter appearing from the fourth to the sixth weeks of infection in such cases as afforded indications of onset of infection.

5. The absence of any other known causal agent.

The Pathogenesis of Diphtheritic Paralysis: A Comparison with Tetanus.

The resemblances between this symptom-complex, with its three elements, and the modern conception of tetanus we owe to Meyer and Ransom will be at once apparent. The local, specific, and generalised forms of tetanus may be compared with the local, ocular, and generalised phenomena seen in these cases.

While the theory of a selective hæmatogenous intoxication may account for both generalised and ocular (specific) symptoms in post-diphtheritic paralysis, it is inadequate to explain the local phenomena with their varying incidence in faucial and extra-faucial diphtheria. The following hypothesis may therefore be put forward to account for the processes underlying the genesis of diphtheritic paralysis. This has been more fully discussed elsewhere,[5] but may be briefly resumed thus:—

The initial local paralysis is the result of a "lymphogenous" intoxication (Orr and Rows) of the nervous system, the toxin being carried from the infective focus along the perineural lymphatics to the corresponding cranial or spinal centres. In the case of faucial diphtheria the palatal musculature being innervated from the cranial nerve concerned is earliest affected.

The specific (ocular) and generalised (polyneuritic) symptoms cannot be accounted for thus, but must be due to the toxin circulating in the blood stream and thus reaching the whole nervous system, central and peripheral, simultaneously. Accommodation paralysis may be regarded as the manifestation of a selective affinity of the diphtheria toxin for certain elements of the nervous system, while the polyneuritis is the expression of the general toxæmia of the nervous system.

The analogy with tetanus does not extend to the underlying pathological processes; diphtheria toxin is not so specific in its action as is tetanus toxin, and the ascending lymphogenous process suggested here is not peculiar to diphtheria, but occurs with numerous other toxins and organisms (Homéo, Guillain, &c.).

Viewed in the light of this hypothesis, the obscurity surrounding the question of the essential nervous lesion in diphtheria largely vanishes. A pathological and experimental confirmation of this clinical hypothesis on the lines indicated in the work of Orr and Rows is clearly needed. The inconclusive results of past investigations of this nature may be traced to the absence of any clear or guiding conception of the nature of the processes involved in the production of diphtheritic paralysis.

Appendix.—At the Neurological Section of the Royal Society of Medicine on Feb. 21st, 1918, Dr. Henry Head showed a case of "toxic polyneuritis of the trenches." This man, it is recorded, was "treated for boils" at or about the onset of his nervous symptoms. It is worthy of consideration from the point of view now presented.

References.—1. C. Bolton and Bown: Brain, 1907, xxx., 365. 2. Orr and Rows: Brain, 1913–14, xxxvi., 271. 3. Ransom: THE LANCET, 1917, ii., 928. 4. Walshe: Quarterly Journ. Medicine, 1918, xi., 222. 5. Idem: Ibid., not yet published.

ROYAL FREE HOSPITAL.—A grant of £10,000 has been made to the Royal Free Hospital by the American Red Cross Commission for Great Britain for an extension of the maternity department, and it has been decided to take over and extend the maternity hospital hitherto entirely supported by the Duchess of Marlborough which at present provides for the treatment of 20 patients. It is intended, as soon as the necessary arrangements can be carried through, to provide 50 beds for maternity cases. It is also intended to extend at this centre maternity training for the nursing staff of the Royal Free Hospital and other pupils. The spirit which has animated the representatives of the American Red Cross Society in making this grant is keenly appreciated by English medicine.

THE TREATMENT OF STAPHYLOCOCCAL INFECTIONS BY STANNOXYL:

"MIXED INFECTION" OF PULMONARY TUBERCULOSIS.

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IN a previous communication [1] I gave an account of the first cases in this country of furunculosis and acne treated by the new drug stannoxyl, recently put forward by Frouin and Grégoire,[2] as a specific for staphylococcal infections. So far the employment of stannoxyl with successful results in staphylococcal infections has been recorded only for furunculosis (Frouin and Grégoire,[2] Hudelo,[3] Compton [1]), acne (Frouin,[4] Compton [1]), chronic suppuration of bone (Grégoire and Frouin [5]), traumatic osteomyelitis (Phocas [6]), suppuration in gunshot wounds (Phocas [6]).

In view of the fact that the staphylococcus is more or less constantly met with in the microbial flora constituting the "mixed infection" of pulmonary tuberculosis, it has occurred to me to test the influence of stannoxyl on this condition. The present paper deals with three clinically definite cases of phthisis so treated, a short preliminary account of which has already appeared elsewhere.[7] The stannoxyl for the investigation was kindly placed at my disposition by M. Frouin.

Broncho-pneumonia (? Tuberculous).

CASE 1.—Pte. L., aged 23, half-caste Australian aboriginal. Sent back from France on Feb. 17th, 1917, suffering from pleurisy; left side affected. Admitted to hospital at Norwich, where he stayed five weeks, from which he was sent to Dartford, where he remained eight weeks. Arrived eventually at Weymouth in May, 1917, feeling pretty well. Next comes a history of three or four days' pain in chest on right side; cough, with frothy expectoration (no blood), and a difficulty in keeping his food down. Readmitted to hospital May 29th, with the provisional diagnosis of tuberculous broncho-pneumonia. Moist sounds scattered throughout the chest, with harsh breathing at both apices. Following admission, morning temperature was 100–101° F., evening temperature 102–103°; pulse 100–140 per minute; respiration 32–40 per minute. Tepid sponging was practised throughout June to control the temperature.

First seen by me about July 10th, when, with the idea of clearing up the "mixed infection"—on the assumption that the case was tubercular, which it was clinically—and, thereby, bringing down the temperature, stannoxyl treatment was begun. Frequent examinations of sputum for T.B. were carried out over the period May 30th to August 16th; but T.B. were never found; the pneumococcus was constantly found. The bacteriological findings in regard to a specimen of sputum of July 2nd, examined by culture on serum-agar for the presence of staphylococci, were as follows: No staphylococci isolated; but colonies of three sorts of Gram-negative bacilli, one being Friedländer; also a Gram-negative diplococcus. Another specimen of sputum was examined from this point of view on August 7th, when *Staphylococcus albus* was found to be present.

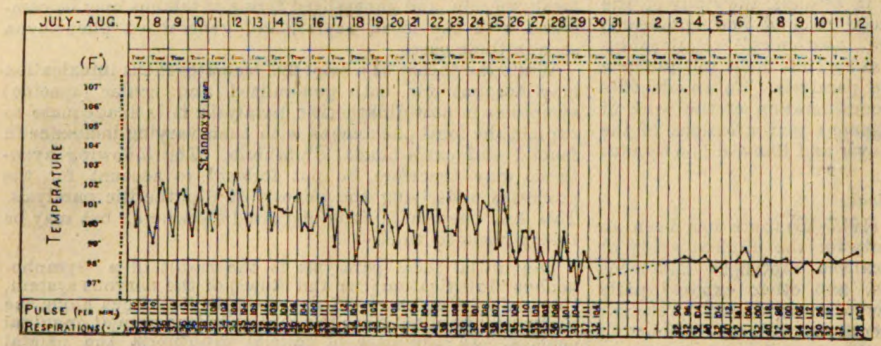
Chart 1 indicates the progress of the case from the time stannoxyl treatment began, or just a little previous to this, until the temperature became normal and remained thereafter at or about the normal level. The dotted portion of the chart between July 30th and August 3rd corresponds to a missing temperature chart, unfortunately lost during a change of hospital.

Only four stannoxyl tablets (about 1 g.) were taken per day at the commencement of treatment, and sometimes even less, as the patient was so ill, and one was uncertain what the effect of the stannoxyl might be. Indeed, on July 19th, his condition was so bad that an injection of pituitrin had to be resorted to.

Seventeen days after treatment with stannoxyl had begun the temperature fell sharply to or about normal, and remained so until his discharge from hospital on Sept. 7th to return to Australia. Although still in a weak condition at the time of his discharge his temperature, with the exception of evening rises to 100·8° recorded on three occasions, had only oscillated 0·5° on either side of the normal all through August; his pulse-rate had become on the average 94, his respirations 26; the amount of sputum expectorated had greatly diminished; his appetite had become good, and his general condition had altogether improved, the patient being able to get up and move about his ward a few hours daily.

Before his departure he was taking regularly eight tablets of stannoxyl per day.

CHART I.



Pulmonary Tuberculosis.

CASE 2.—Private W., aged 19. Joined the Army in January, 1917. He caught a cold in February during his training in a camp at Ripon; when he had a cough and frequently spat up blood; but he did not report sick to his medical officer. The cough eventually passed off, and he arrived in France in June, 1917. He was wounded at Ypres on August 15th by a bullet in the left forearm, which necessitated amputation of the arm. He was sent to Boulogne, where he remained in hospital a few days, and was eventually transferred to Weymouth, arriving here on August 28th. He then had a cough and complained of always sweating (chiefly in the daytime). His physical signs at this time (examination Sept. 4th) were: Right lung, in front, dullness and bronchial breathing at the apex; behind, crepitations scattered all over the lung. Left lung, in front, breathing good at the apex, dullness and crepitations over lower lobe; behind, dullness, especially at the base, bronchial breathing at the level of the spine of the scapula, and coarse crepitations at the base. A specimen of sputum examined on Sept. 6th revealed the presence of T.B.

Stannoxyl treatment was begun on Sept. 8th, 4 tablets (1 g.) being taken the first day, 6 the second, and 8 per day ever since. Chart 2 gives a graphic representation of the progress of the case, showing the response to treatment.

Systematic examinations of sputa were carried out during the course of treatment, to ascertain the effect in vivo of stannoxyl on the microbial flora constituting the "mixed infection." Table I. resumes the findings.

TABLE I.

Date.	Films stained by—		Culture.
	Ziehl.	Gram.	
6/9/17	T.B.	—	—
10/9/17	,,	G. + and G. − diplococci, G. − diplobacillus.	*Staph. aureus*, streptococcus, pneumococcus, meningococcus, *M. tetragenus*.
15/9/17	—	—	Streptococcus, pneumococcus, meningococcus, *M. tetragenus*.
21/9/17	T.B.	—	Streptococcus, meningococcus, *D. flavus*, G. − cocco-bacillus.
27/9/17	,,	G. − diplococcus.	*Staph. aureus*, pneumococcus, *D. flavus*, yeast cells.
1/10/17	,,	G. + and G. − diplococci.	Streptococcus, pneumococcus, meningococcus, *D. flavus*.
5/10/17	No T.B.	Streptococcus, G. − diplococcus.	*Staph. albus*, pneumococcus, streptococcus, *D. flavus*.
7/10/17	T.B.	G. − diplococcus.	*Staph. albus*, pneumococcus, *D. flavus*, B. diphtheroid, two kinds of G. − bacilli.*
12/10/17	,,	G. + and G. − diplococci.	*Staph. albus*, streptococcus, pneumococcus, *D. flavus*, a long curved G. − bacillus.*
19/10/17	No T.B.	G. + diplococcus, pneumococcus.	Streptococcus, pneumococcus, meningococcus, *M. tetragenus*, G. − bacillus.*
25/10/17	T.B.	Pneumococcus.	*Staph. albus*, streptococcus, pneumococcus, *D. flavus*, and G. − bacillus.*
31/10/17	No T.B.	G. + diplococcus.	Streptococcus, pneumococcus, *M. tetragenus*, *D. flavus*.
12/11/17	,,	G. + and G. − diplococci.	Streptococcus, pneumococcus, *D. flavus*, *B. Friedländer*.

T.B. = T.B. found. * Not identified.
G. + = Gram-positive. G. − = Gram-negative.

During the fourth week of treatment, as Chart 2 indicates, the temperature fell to normal, and after oscillating for a fortnight more or less widely about the normal eventually ran a subnormal course for three weeks before settling down about Nov. 7th to oscillate less than 0·5° on either side of the normal. At the same time the pulse- and respiration-rates improved, the quantity of sputum became less, the appetite became very good, and the patient visibly put on flesh. The physical signs also showed improvement, as the following examination of Nov. 9th shows: Right lung, at the apex, dullness, prolonged expiration but no crepitations in front; behind, dullness, prolonged expiration, and some crepitations on deep inspiration; lower lobe, breath sounds not very clear, but no crepitations. Left lung, breathing normal.

Since Sept. 29th the patient began to get up, and that no doubt is the explanation of the rise of temperature of that date. Since Oct. 6th he has been going out every day for a short walk.

CASE 3.—Private D., aged 19. Joined the Army in November, 1916. Admitted to hospital on August 30th, 1917, complaining of "tightness in the chest and cough." For the few days following admission his morning temperature was 100–101° F., and that of the evening 102–103°; pulse-rate 88–110, and respiration-rate 22–24. Physical examination on Sept. 7th revealed marked dullness at the right base, diminished fremitus and vocal sounds, with deficient air entry. A sputum examination of Sept. 9th showed the presence of a few tubercle bacilli, while this was confirmed in a second specimen of Sept. 13th, in which more bacilli were found. On Sept. 24th there was marked dullness in the right axillary space extending from the fifth to the eighth ribs, vocal resonance and tactile fremitus were diminished, and the breath sounds were distant; the patient had profuse night-sweats.

Stannoxyl treatment, as indicated on Chart 3, was begun on Oct. 2nd, and throughout the treatment numerous bacteriological examinations of the patient's sputum were carried out to ascertain the effect of the treatment on the flora constituting his "mixed infection." Table II. indicates the findings.

Two weeks after his having been put on stannoxyl we find the temperature reduced to normal, or rather subnormal, in which region it remained more or less until his discharge from hospital on Oct. 30th. He was discharged on this date to proceed to a sanatorium, since when he has been lost to view.

In addition to the patient's temperature becoming normal under the influence of the treatment, his general condition showed almost daily improvement. His night-sweats disappeared, his sputum became markedly less, his pulse- and respiration-rates became more nearly normal, and he was rapidly putting on flesh, having gained 8 lb., as indicated on Chart 3, between Oct. 11th and 25th. He had been getting up ten days and had been taking walks outside five days previous to his discharge from hospital.

Remarks.

These three cases—one of broncho-pneumonia (? tubercular) and the other two of pulmonary tuberculosis—are of particular interest. As cases they constitute a record of the first attempt, so far as I am aware, to combat by means of stannoxyl the "mixed infection" of pulmonary tuberculosis—infection long recognised as the agent responsible for the temperature and which really kills and carries off the patient in phthisis.

In all three cases under the influence of stannoxyl treatment the temperature sooner or later fell to the region of normal; in three weeks for the first, in four weeks for the second, and in two weeks for the third. At the same time, a corresponding improvement occurred in the general condition; the pulse and respiration rates became more nearly normal, the sputum expectorated steadily became less, the appetite improved, and the patients put on flesh.

Considering, therefore, the results achieved in the above three cases, out of five which I had at my disposition for the investigation, the publication of their notes to-day seems justifiable. The other two cases, in a dying condition when first seen by me and put on stannoxyl, did not survive long enough to permit of the drug having a fair trial, their disease carrying them off within a week of the commencement of treatment. Case 1 has for the time being been lost sight of, owing to his discharge from the army and return to Australia; as also Case 3, having been discharged to a sanatorium. Case 2 is still under observation and treatment.

These therapeutic studies, and those already published on furunculosis,[1] constitute a complete confirmation of Frouin and Grégoire's original in vitro observations.[2] The more the conditions of culture in the body are anaerobic, the more the stannoxyl would appear to act by rendering the soil unfit for staphylococci to live and survive in. That is the condition met with more particularly in furunculosis. On the other hand, in the "mixed infection" of pulmonary tuberculosis the conditions of life for the staphylococci and associated microbes approach more and more aerobic conditions. At any rate, that would afford an explanation of the bacteriological findings recorded in Tables I. and II., where, although quantitative diminution in the amount of sputum occurred under the treatment, yet qualitatively the "mixed infection" remained more or less constant throughout. This is suggestive that the curative action of the stannoxyl may have been in attenuating the virulence of the microbes present.

How stannoxyl in the soil may bring about the attenuation of virulence is unknown; but certain experiments of Frouin as bearing on the question may be quoted. When metallic tin is incorporated in a nutritive medium containing alcohol, which is then inoculated with *Mycoderma aceti*, the production of acetic acid in the medium is diminished or totally hindered, although the growth of the microbe is not interfered with.[4] Also metallic vanadium or a salt of vanadium, when added to a nutritive medium inoculated

TABLE II.

Date.	Films stained by—		Culture.
	Ziehl.	Gram.	
9/9/17	T.B.	—	—
13/9/17	,,	—	—
6/10/17	,,	Pneumococcus, G. – and G. + diplococci.	*Staph. albus*, streptococcus, pneumococcus, *B. proteus*, B. diphtheroid, G. – coccobacillus.
7/10/17	,,	Pneumococcus, G. + diplococcus.	*Staph. albus*, streptococcus, pneumococcus, G. – bacillus producing a pink-brown pigment.
10/10/17	,,	Pneumococcus, G. – diplococcus, G. – coccobacillus.	—
18/10/17	No T.B.	—	Pneumococcus, B. diphtheroid and G. – bacillus producing a pink-brown pigment.
26/10/17	,,	Pneumococcus, G. + diplococcus.	*Staph. albus*, streptococcus, pneumococcus, *M. tetragenus*, and G. – bacillus producing a pink-brown pigment.

CHART 2.

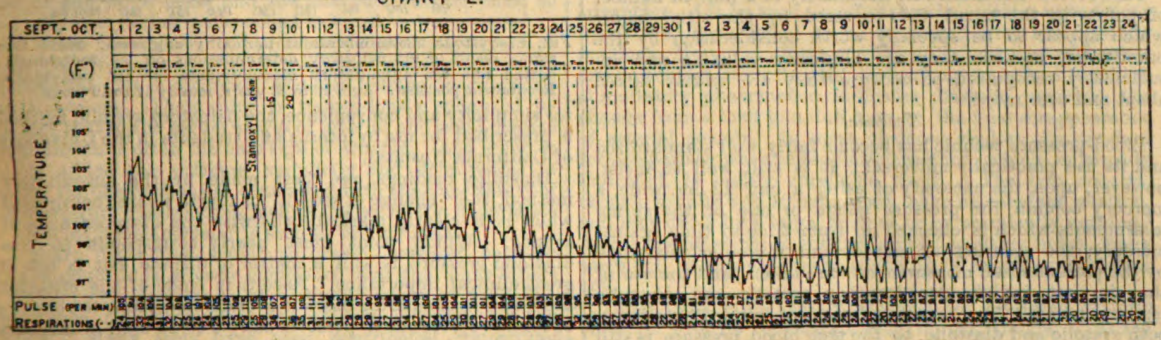
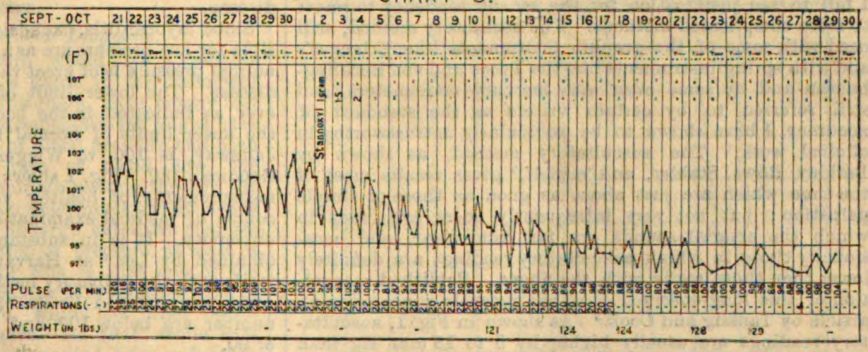


CHART 3.



[1] Compton, *Lancet*, 1918, i., 5.
[2] Frouin and Grégoire, *Comptes rendus de la Soc. de Biologie*, 1917, lxxx., 1.
[4] Frouin, *Comptes rendus de la Soc. de Biologie*, 1917, lxxx., 1.

with *B. pyocyaneus*, favours the development of the microbe while hindering the production of pigment.[8] These experiments permit one to suppose that the attenuation of virulence is possibly due to some reaction akin to that which electrolytes play generally in activating and in inactivating enzymic activities.[9] The question is both an interesting and important one, opening up, as it does, new vistas of research.

I wish to express my thanks to Lieutenant-Colonel E. Carroll, I.M.S., Captain K. B. Clarke, R.A.M.C. (T.), Dr. James Miller, and Dr. S. Penny Snook for kindly placing the above patients at my disposal for the purpose of this investigation.

References.—1. Arthur Compton: THE LANCET, Jan. 19th, 1918 pp. 99-100. 2. Albert Frouin and R. Grégoire: Comptes Rendus, 1917, clxiv., 794. 3. Hudelo: Soc. Méd. des Hôp., May 18th, 1917, p. 795. 4. Albert Frouin: La Presse Médicale, July 12th, 1917, p. 403. 5. Raymond Grégoire and Albert Frouin: Bull. Acad. de Méd., May 20th, 1917. 6. Phocas: Soc. de Chir., July 3rd, 1917, p. 1458. 7. Arthur Compton: Bull. Acad. de Méd., Nov. 27th, 1917, lxxviii., 622. 8. Albert Frouin and Mlle. Ledebt: C. R. Soc. de Biologie, 1912, lxxii., 381. 9. Albert Frouin and Arthur Compton: Comptes Rendus, 1911, cliii, 1032; Arthur Compton: Proc. Roy. Soc., 1915, B., lxxxviii., 408-417.

BLOOD-PRESSURE MEASUREMENTS:

USES AND LIMITATIONS IN MODERN MEDICINE.*

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THIS review confines itself necessarily to a limited number of points in the broad field covered by the title—points which appear to be specially worth consideration by the practitioner because they are clinically valuable and insufficiently recognised or because they are widely talked about and over-rated.

Technic.

Blood-pressure technic has become fairly well standardised and its use practically universal. It is still well to insist, however, upon the necessity of using a cuff 12 cm. wide, a mercury column for pressure gauge or one of the spring instruments which is checked up from time to time against mercury, the securing of mental and muscular relaxation by the patient when measurements are taken, and the use of the simplest indices for locating systolic and diastolic reading points. The exact relation of clinical readings, both systolic and diastolic, to the true blood pressure is still a matter of academic interest and discussion, but the important thing clinically is very simple—merely the establishing of definite normal standards and the interpretation of figures within or without these limits accordingly. So long as our technic gives results with a fairly uniform relation to the true pressure clinical demands are met, and the test of a good index is its ability to give constant results.

Normal standards for systolic pressure have long been established according to the simple palpatory technic, and I fail to see justification for the recent tendency to resort to more complicated methods. The oscillatory method, still used with some of the graphic instruments like Erlanger's and with spring instruments like the Tycos and von Recklinghausen and by some even with mercury manometers, and still referred to by certain writers as the standard of accuracy, I have shown to be particularly untrustworthy in clinical work.[1] The auscultatory method, as shown by Berkley, Rowe, Stabler, and myself,[2] gives results most of the time which are just about as good as those of simple palpation; but not very infrequently there are cases in which the arterial sounds are far from clear, and occasionally those in which auscultatory readings are definitely lower than those made with the finger. Published recognition of this long-observed fact has recently appeared in an article by Taussig and Cook.[3] As shown in Fig. 1, auscultatory readings are usually higher by 5 to 15 mm. Hg than palpatory readings, and for this reason the feeling has gained ground that auscultatory readings are nearer the true blood pressure. As already indicated, however, it is not the absolute truth of the readings which is of clinical value but only definiteness and constancy in the relation of the readings to the true pressure; so that even if the supposition about increased absolute accuracy of the auscultatory readings were true, it would not mean that they are superior for clinical use. As a matter of fact, however, it is probable that the auscultatory readings are actually farther from the truth than the palpatory readings, since in the reported experiments in which palpatory readings were compared with actual intra-arterial pressure in human subjects the former were found to be too high ([4] [5]). For this reason, as well as for simplicity and convenience, the palpatory systolic method is prescribed for use by interns and students in the University of California Hospital.

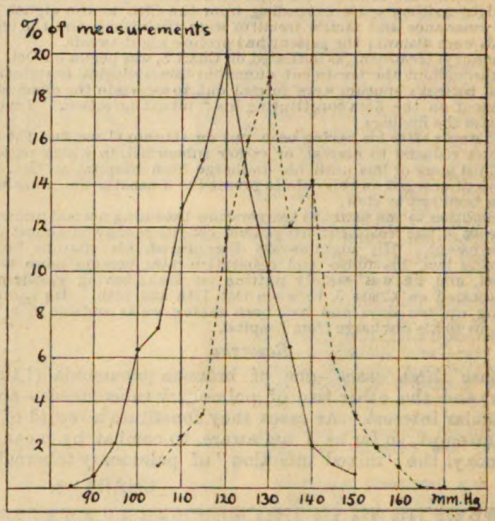

FIG. 1.—Systolic measurements of normal young men. Solid line shows result of 915 palpatory determinations on 314 individuals; dotted line 908 auscultatory measurements on 186 individuals. Recumbent position. Ages 16 to 36 years, mostly 17 to 19 years.

Diastolic readings are best made by the auscultatory method, the "change of sound," or fourth phase, being used when it is clearly marked, otherwise the disappearance of sounds. Which point most nearly corresponds to true diastolic pressure is still a matter of dispute, but is not of great clinical importance. Record is made of the criterion used, and in comparing cases it is understood that the change of sound represents a point usually 5 to 10 mm. of mercury higher in relation to the diastolic pressure than the disappearance of sounds.

Practical Applications.

The practical applications of blood-pressure measurements are few in comparison with the number and size of the volumes written on the subject. Certain associations are of the greatest importance, particularly that of high pressure with nephritis, pregnancy toxæmias, and acute cerebral pressure; and abnormally low pressure with Addison's disease.

Since myocarditis, cachexia, and other conditions responsible for low pressure are as a rule outspoken, a decidedly subnormal pressure is of great value in the diagnosis of Addison's disease. The lower limit of normal systolic pressure, however, as indicated in the books, is as a rule too high. Thus the lower limits of normal for young adults, according to Janeway, is 100, to Wiggers 100, to Norris 103, and to Goodman 120. Fig. 1 shows the results of systolic pressure measurements of healthy young adults taken during the course of medical examinations for admission to the State university. It is in substantial agreement with the results obtained by Lee[6] at Harvard University, and shows that while with the palpatory method the majority are within the commonly assigned limits of normal, a not inconsiderable number are below 100, and an occasional one as low as 85 or 90.

The upper limit of normal systolic pressure also needs a little more elasticity than is usually given to it in the books, especially if the auscultatory method is used. Fig. 1 shows that in a considerable proportion of healthy young men under the conditions of a first examination, at least, the auscultatory systolic pressure is above 140 and occasionally considerably higher. By the palpatory method only 2 per cent. are as high as 145 to 150. It should be stated that the men who showed these high figures were followed until we

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were satisfied that they were normal; and the extreme figures shown in Fig. 1 would not appear if first measurements were excluded.

Even after ruling out high figures due to excitement, &c., the diagnostic significance of hypertension is frequently in doubt between nephritis, arterio-sclerosis, and so-called "idiopathic hypertension." The diagnosis "idiopathic hypertension" or "hyperpiesis" will have at times to be made; but if the pressure is sustained at a high level—180 mm. of mercury and over—the chances are great that kidney lesions are present. Almost all autopsies of individuals who have carried habitually a pressure of 200 mm. Hg or over show renal changes (Lee[7]), though at times it is problematic how far these changes are chargeable as causes. Many are undoubtedly minor incidents in widespread arterial disease. The importance of blood pressure to the obstetrician and the brain surgeon is well recognised and need not be discussed here.

The peculiar increase of leg over arm[8] systolic measurements when the patient is horizontal and the increase in pulse pressure are at times of considerable value as confirmatory evidence in the diagnosis of doubtful cases of aortic insufficiency. They are also useful in estimating the extent of aortic valve damage.

A valuable and little known[9] use of the blood-pressure apparatus is found in the recognition of pulsus alternans, which for prognosis is the most important and, at the same time, the most easily overlooked form of cardiac irregularity. In such cases, at times even those difficult to recognise by other means, it is simple to adjust the cuff pressure between that of the large beats and the alternate smaller ones, so that only every other pulse sound is heard.

In these instances blood-pressure determinations are of great positive value in clinical medicine, playing as they do an essential part in diagnosis, and also helping in prognosis and treatment. Their value is tremendously enhanced by the fact that in the earlier stages of arterial and renal disease hypertension is often the only sign of trouble. And when to this is added the extreme simplicity and definiteness in making the observations as contrasted with the uncertainty of blood-pressure guesses from feeling the pulse, the importance of the sphygmomanometer is seen to be very great.

A sharp distinction should be drawn, however, between the few conditions already mentioned and the many others in which blood pressure is of distinctly minor or negligible importance, notwithstanding the amount of writing on the subject. Many facts have been contributed concerning blood pressure in a large number of conditions—tuberculosis and many other fevers, ductless gland disorders, nervous and mental diseases; blood-pressure in high altitudes, in the tropics, in various races, &c.; but while many of these researches have academic interest, little of positive clinical value has come from them. Blood-pressure findings which have been supposed to be characteristic of this or that disease have too many exceptions or tend to show the characteristic changes only in the advanced cases when other clinical features are distinctive.

Blood Pressure in Functional Diagnosis.

The hopes that blood pressure would be a reliable functional index, and therefore a guide in the treatment of febrile and other circulatory disorders, have mostly met with disappointment. And the disappointment might have been predicted if the significance of blood pressure had been more clearly recognised. The rate of blood flow, the number of cubic centimetres per minute passing through the capillary system, is the thing which determines the efficiency of the circulation, and this may undergo extensive changes without any corresponding alteration of pressure, at least of systolic pressure. The reason for this is that one of the factors (increased heart output) making for increased rate of flow also elevates the pressure, while the other (vasodilatation) tends to lower pressure. So that, while it is often true that heart failure is accompanied by a reduction of blood pressure from a previously normal or elevated level, it also frequently happens that, together with a weak heart contraction and small output, there is enough peripheral obstruction to keep the pressure high. It is not unusual even to see moderately high pressure, when a patient enters the hospital with cardiac decompensation, changed to normal pressure with improvement of the circulation.

In fevers, particularly typhoid fever and pneumonia, little practical value has resulted from the many efforts to interpret the condition of the circulation from blood-pressure readings. For several years at the University Hospital we have undertaken a continuous study of these cases, systolic and diastolic-pressure readings being made every four hours, the same as the pulse and temperature records, but so far it is not possible to say that these pressure determinations have proved of much value in the conduct of the cases. Gibson's rule[10] in the prognosis of pneumonia has attracted much attention, and several investigators have confirmed Gibson's statement that "a pressure appreciably below the normal in pneumonia is invariably of evil omen, and any considerable fall bodes disaster. When the arterial pressure, expressed in mm. Hg, does not fall below the pulse rate expressed in beats per minute, the fact may be taken as of excellent augury, while the converse is equally true." Our experience, however, is that, while Gibson's rule may be true in many desperate cases, where the prognosis would be very guarded anyway, in the more doubtful cases it is of no particular value, as the unfavourable picture, according to Gibson, will not develop until an hour or so before death. Newburgh and Minot[11] recently have come to similar conclusions.

Diastolic Pressure.

My remarks so far have related mainly to systolic pressure. Increasing interest in the last few years has been taken in diastolic and pulse pressures. Some have thought diastolic pressure a better index than systolic pressure of what is normal or abnormal, for the reason that it is nearer the mean pressure and in a given case is usually more stable and less affected by excitement or other accidental disturbing influences. To my mind, however, this advantage, if it be such, is offset by the greater uncertainty which we[2] have found to be connected with the diastolic readings. Moreover, after a considerable number of researches on the subject there is still lack of agreement as to which auscultatory phenomenon indicates diastolic pressure, the change from a loud to a dull tone or the final disappearance of arterial sounds. In most of these studies the standard for comparison was the oscillatory method, which, as already indicated, is highly unreliable itself. The two criteria, though usually 5 to 10 mm. apart, have no constant relation, and may differ by a large amount or by practically nothing.[2] And if one attempts to confine himself to either index, many cases will be encountered in which it is anything but clear cut.

These facts argue rather strongly for retaining systolic pressure, with its long-established normal standards, as the most important blood-pressure determination. The diastolic

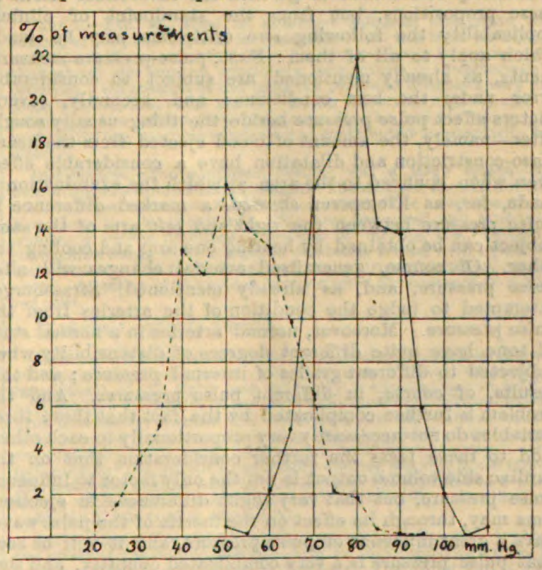

FIG. 2.—Diastolic and pulse pressure measurements of normal young men. Solid line shows results of 542 diastolic determinations (change of sound criterion) on 183 individuals; dotted line 720 measurements of pulse pressure on 177 individuals (difference between auscultatory systolic readings and "change of sound" diastolic readings). Recumbent position. Ages 16 to 36 years, mostly 17 to 19 years.

pressure as found in a series of normal young men entering college is shown in Fig. 2. It will be seen that the absolute range of variation among these measurements is practically

as great as among the systolic measurements shown in Fig. 1, so that relatively the dispersion among the diastolic measurements is greater.

Pulse Pressure.

The same considerations naturally speak for conservatism in the use of pulse pressure; for, being the difference between systolic and diastolic pressures, its error is a composite of the errors from both of these readings. So that before making any attempt to interpret pulse pressure, in the absence of a large series of concordant readings, we should discount deviations probably up to at least 10 or 15 mm. of mercury.

But even after liberal allowances for observational errors the field is by no means clear for making pulse pressure the basis for unrestricted deductions about the behaviour of the circulatory organs. The temptation to use pulse pressure in this way is natural enough and has often been yielded to. Indeed, on theoretic grounds such attempts are quite justifiable. Thus, many years ago Strassburger[12] claimed that the quotient of pulse pressure divided by systolic pressure was of value in showing the part played by cardiac work and also vascular resistance. According to him, if the quotient remains unchanged increase in systolic pressure means increased heart work, and vice versa; while increase in systolic pressure with an approximately equal fall in the quotient means increased vaso-motor tonus. In a similar way Fuerst and Soetbeer[12] suggest the use of a modified Strassburger formula, viz.:—

$$\frac{\text{pulse pressure}}{\text{diastolic pressure} + 1/3 \text{ pulse pressure}}.$$

In 1904 Erlanger and Hooker,[13] and in 1906 von Recklinghausen,[14] proposed the product of pulse pressure multiplied by pulse rate as an index of the rate of blood flow, and hence of heart activity. Three years ago Barach[15] suggested the use of a so-called "energy index" to indicate the expense of cardio-vascular energy. He multiplies the pulse rate by the systolic pressure and by the diastolic pressure, and adds the products to obtain the index (S.D.R. index). Stone[16] excited considerable interest in this country by proposing to use the quotient of pulse pressure divided by diastolic pressure as an index of so-called "heart load." Later he modified his claims for this formula.[17]

It is impossible here to go into the theoretical merits of these propositions, but from the standpoint of clinical applicability the following two criticisms may be made which apply to all of them: First, pulse-pressure measurements, as already mentioned, are subject to considerable error under the best conditions; and, secondly, several factors affect pulse pressure beside the thing usually sought after—namely, the amount of blood ejected from the heart. Vaso-constriction and dilatation have a considerable effect even when confined to the area at which the examination is made, for, as Klemperer showed, a marked difference in pulse pressure between the right and left arm of the same subject can be obtained by heating one arm and cooling the other. Of course, generalised arterial changes will alter pulse pressure, and, as already mentioned, Strassburger attempted to judge the condition of the arteries from the pulse pressure. Moreover, normal arteries in a normal state of tone have quite different degrees of distensibility when subjected to different grades of internal pressure; and this results, of course, in different pulse pressures. And the problem is further complicated by the fact that these three variables do not necessarily vary proportionally to each other. Add to these facts the further consideration that on the cardiac side volume output is not the only factor to influence pulse pressure, but that very slight differences in ejection-time may, through its effect on the inertia of the pulse wave, have a great influence on pulse pressure, and it will be seen that pulse pressure is a very complicated quantity, and that its exact interpretation would be difficult even if its determination were a matter of great accuracy. Fig. 2 shows the wide range of pulse pressures obtained in the examination of healthy young men. In Fig. 3 is shown the distribution of the same measurements after each pulse pressure is divided by the corresponding diastolic pressure—i.e., this figure represents the variations among normals of "heart load" according to Stone's formula. The dispersion is still great. The various other relations of pulse pressure to systolic and diastolic pressures have not been worked out in these cases; but it is evident that any set of ratios constructed from these figures would show great variation.

It appears justifiable, therefore, to regard with scepticism any formula which proposes in terms of any moderate alterations of pulse pressure to classify clinical cases as normal or abnormal. And even in following the progress in a given case, as, for example, a case of internal concealed hæmorrhage (Wiggers[18]), much caution must be exercised.

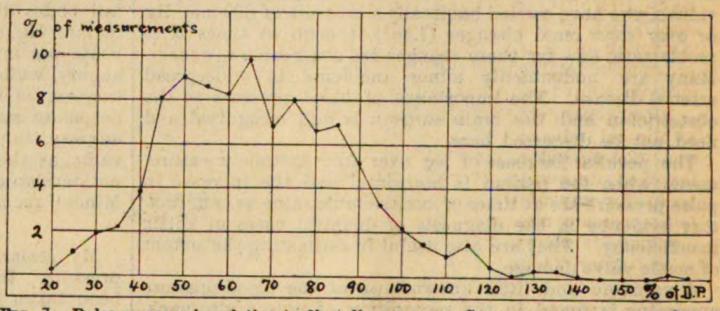

FIG. 3.—Pulse pressure in relation to diastolic pressure. Same measurements as shown in Fig. 2, but here in each case the pulse pressure is expressed as a percentage of the corresponding diastolic determination (change of sound).

Another attempt to gauge heart efficiency with the blood-pressure apparatus was the method described in 1910 by Goodman and Howell.[19] With falling cuff pressure the so-called "tone phases" were auscultated below the cuff, and the second and third phases (the murmur and the following clear sound) were considered to be related to heart strength, and the first and fourth phases to heart weakness. Normally they considered that the sum of second and third phases should be about 75 per cent. of the total pulse pressure. Fig. 4 shows large variations above and below this amount obtained in observations on normal young men.

In addition to these attempts to utilise blood-pressure readings in functional diagnosis several functional heart tests have been proposed which involve, among other observations, measurements of blood-pressure responses to exercise or other manœuvres. It is impossible here to discuss these tests further than to suggest that their failure to come into more general use will probably be found to be due to the fact

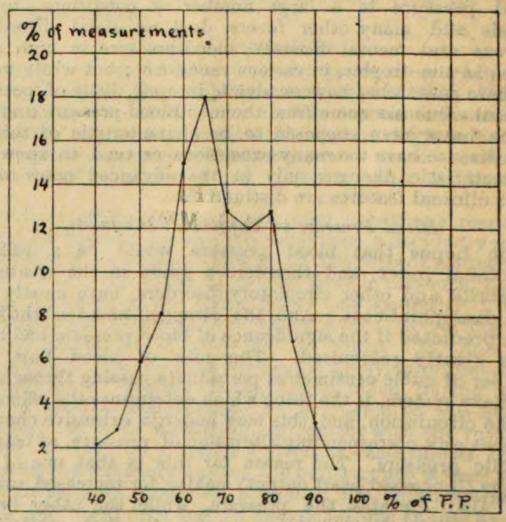

FIG. 4.—"Tone phases." In each case the sum of second and third auscultatory "tone phases" is divided by the pulse pressure, and these quotients are charted as percentages of the pulse pressure. Based on 221 observations on 104 normal young men from 16 to 36 years of age. Subjects recumbent.

that the responses of normal subjects vary considerably and overlap the results which are supposed to indicate heart weakness. And it is doubtful if such tests of the circulation will ever compare in value with a careful history and physical examination, including due consideration of the patient's own sensations after exercise.

Summary.

Experience has shown great practical clinical value of blood-pressure measurements in connexion with a limited number of conditions—namely, arterial and renal diseases, cerebral pressure, pregnancy toxæmias, Addison's disease, and, to less extent, aortic insufficiency. Before attributing pathological significance to the measurements, however, wider normal limits (both systolic and diastolic) should be recognised than those generally indicated in the books. Figures from normal young adults are presented in substantiation of this statement. An important and little-known application of the blood-pressure apparatus is its use in the detection of pulsus alternans. It is urged that systolic pressure be retained as the most important measurement, and that the simple palpatory technic be used.

Blood-pressure determinations in general have fallen short as clinical indicators of circulatory function. Pulse pressure, and consequently the various formulas in which it is involved, depends upon too many factors to be a very useful index for any of them. Great variation is shown among pulse-pressure measurements of normal persons. The same criticism is shown to be applicable in the case of the auscultatory "tone phases."

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FIVE CASES OF RAPID DECEASE IN YOUNG MEN.

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THE five cases described below appear of sufficient interest to publish, partly because of the clinical and pathological details which they individually supply, and partly because of certain accidental features which, notwithstanding essential differences, justify their collection in a group. Their occurrence in comparatively young men in rapid succession—they were admitted to the Connaught Hospital, Aldershot, within one week—is also of interest.

CASE 1.—Pte. F. R., aged 26, was admitted as a case of bronchitis on account of "dyspnœa." No history was forthcoming save that he was said to have been ill for several days. Interrogation was impossible owing to the patient's extreme deafness; he was a sufferer from chronic otitis media. The "dyspnœa" in question was soon recognised to be air hunger, and a provisional diagnosis of uræmia was made, partly upon this feature and partly upon the condition of a heart clearly hypertrophied to the left without showing cardiac disease of any kind. No urine was obtained. The blood pressure was not taken. The patient suddenly and unexpectedly collapsed and died within two hours of admission.

Post-mortem.—The kidneys exhibited very little renal substance and were obviously in a state of chronic interstitial nephritis, the weight of the pair being 4¾ oz. The heart weighed 18½ oz., and except for great hypertrophy of the left ventricle was normal.

No history of antecedent renal disease was ever obtainable, but the presence of a chronic otitis media suggested the possibility of scarlet fever in childhood.

CASE 2.—Pte. S., aged 30, was admitted the following day, very livid and in a condition of extreme respiratory distress. The dyspnœa being identified as "air hunger" by the medical officer who had been in charge of the previous case, a diagnosis of uræmia was made (with precocious confidence), more especially as the left ventricle was much hypertrophied and the maximum systolic blood pressure was 180 mm. Again no urine was forthcoming, and the patient was far too exhausted to give the history of this or any previous illness. It was, however, noted that the temperature was 103° and that a distinct cardiac diastolic murmur was present. Owing to the patient's intense distress careful examination was impossible. Venesection was at once performed. Death occurred just 35 minutes after admission.

Post-mortem.—The kidneys were found healthy in size and structure. The heart was much hypertrophied, especially the left ventricle; weight 18 oz. The free edges of the aortic cusps were greatly thickened but not ulcerated; the mitral valve showed an extreme degree of button-hole stenosis. The lungs exhibited an early stage of red hepatisation.

This pair of cases seem to us to be an excellent example of two familiar fallacies. The first is the traditional expectation of encountering a second example of some relatively rare condition very shortly after one has appeared. The second is that of diagnosing a case on a general superficial resemblance to something one has recently seen. No amount of persuasion to the contrary will destroy the inclination to rely on a supposed tendency of rarities to run in couples and trios; and although teachers of medicine are perpetually pointing out the folly embodied in the second fallacy, no amount of experience appears to render one immune thereto.

CASE 3.—Pte. K., a German prisoner, aged 32, admitted intensely cyanosed and dyspnœic. T. 104°. There was a history of a recent illness of a few days' duration. Very few signs were present in the chest. Venesection was performed. Death occurred within 12 hours of admission.

Post-mortem.—The lungs showed acute general bronchitis and congestion. The other viscera were congested, but exhibited no obvious morbid change, save that scattered areas of early necrosis in the liver were visible. A pure culture of a streptococcus was obtained from the lung; culture from the spleen was negative.

Death in this case appeared to be due to a primary streptococcal toxæmia or septicæmia.

CASE 4.—Pte. M., aged 29, admitted collapsed and pallid with a history of frequent copious hæmatemeses. At the time no history of antecedent illness was obtainable, but subsequently it was ascertained that about six months previously hæmoptysis (? hæmatemesis) had occurred. On account of the patient's profound collapse a very incomplete examination was made. Death occurred eight hours after admission, the patient developing coma for the last six hours. In all probability the morphia administered contributed substantially to this state.

Post-mortem.—The dominant feature was a large spleen—30 oz., exhibiting subcapsular hæmorrhages. The stomach showed submucous hæmorrhages, mainly on the lesser curvature. The intestines contained blood from the ileum onwards. The liver was small and studded with numerous yellow umbilicated nodules of varying size. These were shown afterwards to be composed of fibrous tissue, with a peri-lobular distribution. The blood (examined post mortem) contained no myelocytes. A section of the spleen demonstrated the presence of nucleated red cells.

Diagnosis, splenic anæmia.

CASE 5.—Corporal H., admitted as influenza among a large number of apparently similar cases. Routine examination discovered great impairment of the right base, evidently due to presence of fluid. On exploration a syringeful of perfectly clear *colourless* fluid was extracted. This peculiarity, coupled with the feature that the patient was a New Zealander, led to an immediate diagnosis of hydatid of the lung. On examination of this fluid, however, no hooklets were found. On the following day the patient's respiratory distress was very much increased. The heart was pushed over to the left and the presence of a pneumothorax with most typical signs was unmistakable. Death occurred suddenly 24 hours after admission.

Post-mortem.—The right lung was found to be collapsed. On incision the whole of the middle lobe was seen to be occupied by a cyst, which on removal left a cavity 7 cm. in diameter. The lining wall of the cyst was extracted intact without difficulty. The cyst had pointed on the anterior surface, where pulmonary tissue was represented by nothing more than the external wall of the cyst. There was no evidence of daughter cysts. The lining membrane on incision was found to be a uniocular cyst containing some slightly stained turbid fluid. The wall was everywhere covered with granular bodies, shown microscopically to be scolices of *Tænia echinococcus*, both invaginated and extruded. The liver was carefully examined, but there was no evidence of other cysts either in this viscus or elsewhere.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF HYPOADRENIA SIMULATING INTESTINAL OBSTRUCTION.

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THE difficulties of diagnosis of adrenal disease without the characteristic Addisonian syndrome are well recognised, and a typical case having come under our care it has been thought worth while to record it.

A soldier, aged 19, first came under the care of one of us in August, 1915, with a typical attack of acute appendicitis; appendix with gangrenous tip removed; uninterrupted recovery. Patient was re-admitted to hospital on Nov. 29th, 1917, and stated that on rejoining his unit after his last illness he had an attack of faintness on a march and was again in hospital for six weeks. Since then he had been subject to periodic attacks of abdominal pain and vomiting, accompanied by constipation. Pain usually was in epigastric region; occasionally radiated into right iliac fossa. The attacks had necessitated his being invalided from the service.

His illness when seen for the second time had started seven hours previously. On admission pale and collapsed; epigastric pain. Vomiting was present, at first bilious, later developing a somewhat fæcal odour. Constipation extending over previous day or two was also admitted by patient. T. 95° F., P. 110. Palpation of abdomen elicited tenderness in epigastrium and in right iliac fossa radiating from old operation scar downwards and inwards. A provisional diagnosis of intestinal obstruction due to adhesions from former attack of appendicitis was made.

The collapse was treated by rest, warmth, and stimulants. An enema gave a good though constipated result, and the general condition greatly improved. Vomiting ceased, though local pain and tenderness remained. The pulse also became less rapid and stronger, but still did not become quite normal in force.

In a day or two patient felt quite well except for feeling of fatigue on exertion. He was allowed up for a little each day and seemed to suffer no inconvenience, but retained to some extent a pinched and cold appearance. The bowels were kept moved regularly by administration of liquid paraffin each evening. Beyond slight diminution of percussion note and few fine crepitations at apices of lungs in front a general physical examination revealed no signs of organic disease. Examination of sputum for tubercle bacillus negative.

On Dec. 6th, another attack of abdominal pain with repetition of previous vomiting occurred. At this time it was noticed that deep palpation over abdominal scar produced a feeling of nausea. Same treatment as during previous attack; recovery equally rapid and marked. It was then decided to explore the abdomen, but it was not until the end of December, when the general condition had improved, that this procedure was considered advisable.

On Jan. 5th, two days before date of proposed operation, a third attack developed. The abdominal pain recurred; vomiting not so prominent as previously. Marked syncopal symptoms with great dilatation of pupils were also present. Patient's general condition became worse; death occurred same evening.

On account of our inability to understand the sudden termination of the case, permission was obtained for a partial post-mortem examination.

The abnormal findings in a routine examination of the abdominal and thoracic viscera were as follows:—

Pleura.—A few fibrous adhesions at right apex. *Lungs.*—In right apex a small fibro-caseous patch with some calcification about size of two-shilling piece. *Heart.*—Free margin of mitral valve showed fringe of organised granulations; valve appeared healthy.

Stomach.—Somewhat dilated; musculature thinned. *Large intestine.*—Few adhesions between lower end of cæcum and parietal peritoneum; not such as could cause any obstruction. A small healed dimple marked site of appendix. *Mesentery.*—Glands throughout palpable.

Kidneys and suprarenals.—Considerable fibrosis of perirenal structures, particularly in upper part; careful dissection was necessary to separate suprarenals from surrounding tissues. The adrenals were not altered in shape or increased in size. On section both were found to be the seat of caseous degeneration with a few scattered calcareous particles.

The mesenteric glands and adrenals were sectioned. Microscopic examination of glands showed only small round-celled infiltration. Sections of suprarenal bodies showed that for the most part the glandular cells had been replaced by degenerated caseous masses, but outside these giant-cell systems could be clearly distinguished. In a few places the cells composing cortex of glands could still be defined, but even these for the most part showed cloudy swelling and irregular staining.

Langlois, Gourfein, and others have demonstrated by animal experiments that ten-elevenths of the suprarenal bodies can be destroyed without the general body metabolism being so disorganised as to cause death. In the case here noted the adrenal destruction seems to have reached a very considerable degree before the final issue occurred. Lewin points out from an analysis of published cases that in 28 per cent. no pigmentation occurred. At the present time the exact cause of the pigmentary changes in Addison's disease does not seem to have been ascertained with any degree of certainty. In this case we suggest that it may possibly be due to the fact that not sufficient time elapsed between onset of disease and patient's death to allow it to occur.

Ebstein and Zaudy have recorded the occurrence of cases of suprarenal disease with predominant abdominal symptoms, but we have not be able to ascertain the frequency with which they occur. Owing to the previous abdominal history and the symptoms of partial obstruction which responded to the usual methods of treatment the probabilities seemed to point to the clinical diagnosis made. It was not until the post-mortem examination revealed disease of the suprarenal capsules that the symptoms here recorded were viewed in their proper perspective and recognised as another clinical entity—namely, hypoadrenia.

A DEVICE FOR PREVENTION AND TREATMENT OF ADENOIDS.

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WHEN in 1914 a non-operative method of treating adenoids, discovered by Mrs. E. Handcock, was brought under my notice, I was not merely sceptical, but openly scoffed at the idea. I was bound to admit, however, that after two years' residence in a children's hospital and three years' medical inspection of school children I was not satisfied with the results of the usual operative treatment; as such a large percentage of cases remained mouth-breathers and continued to suffer from nasal catarrh. In many cases also the growth returned.

Description of Method.

This new treatment consists in the production of a sneeze by lightly touching the nasal septum near the tip of the nose with a slightly irritant adhesive powder, made from powdered iris root and soap. The powder is not sniffed up into the nose.

The effect of the sneeze is to expel the catarrh or muco-pus from the nose and the adjacent sinuses. This stimulation should be repeated till a "dry" sneeze results. The free flow of lymph which accompanies the sneeze acts as a most efficient washout, and no doubt acts, too, as a natural protective fluid against the bacterial invasion present in adenoids.

The children who are old enough to blow their noses are then taught a handkerchief drill. They stand in line, and at the word of command they grasp the bridge of the nose and raise the elbow to the height of the shoulder, and then blow forcibly. The position of the elbow automatically expands the lungs and ensures a strong current of air being forced through the nose, which is held at the bridge to prevent pinching of the nostrils.

Results.

Under the supervision of Dr. Octavia Lewin an experimental clinic of this nature has been in existence for six months at the Roll of Honour Hospital for Children, Harrow-road. The committee is so satisfied with the results that it is to be continued as part of the hospital routine.

I have been observing this simple method of treatment for the past four years and have found the results most gratifying. The first marked improvement is curiously enough in the digestive system. The dyspepsia and constipation, which are so common an accompaniment of adenoids, are the first symptoms to disappear. Perhaps some student of reflex action could explain this. We know that the nose is an early indicator of indigestion, alcoholism, and gout; so perhaps it is not surprising if the digestive system can be reflexly affected by a nasal stimulus.

Deafness due to the blocking of the Eustachian tube also disappears quickly.

The time taken for the shrinkage of the growth varies. Generally speaking, the younger the child the quicker the results. A great deal depends on the intelligence of the mother, as the treatment must be carried out every day. In older children and adults with nasal obstruction a certain amount of manipulation of the head and neck is necessary to stimulate the lymphatic circulation.

One of the chief advantages of this form of treatment is that large numbers of school children should be treated simultaneously at little cost. School nurses could be quickly trained to carry out the treatment under the supervision of the medical inspectors of schools. At the present, when, owing to the shortage of staff, the out-patients' departments of the various hospitals find it impossible to cope with the number of cases from the board schools, it seems the ideal moment to introduce the system into our schools.

A clinic has lately been started at the Westminster Health Association, Greek-street, Soho, where the enthusiasm of the mothers over the improvement in their children is most encouraging.

Illustrative Cases.

The following are notes referring to a few of the cases treated:—

CASE 1.—Male aged 3½. Seen April, 1913. Difficulty in breathing; slept with mouth open; slightly deaf; one eye squinted slightly; frequently constipated; distended abdomen. Out-patient for two years at Royal Free Hospital and afterwards at Great Ormond-street. In April was taken to Central London Nose, Throat, and Ear Hospital, where operation for adenoids was advised. He was then treated by the above method for three months, and treatment was kept up for another three months by the mother at home. In August, 1913, the father wrote as follows: "Our boy is in splendid health. Eyes are straight; deafness gone. Sleeps well with closed mouth, and has grown considerably in height and increased in weight."

CASE 2.—Male aged 10. Suffering from asthma and adenoids. This boy was in such a generally weakened state that the medical man under whom he was placed for the treatment of asthma advised his mother to try the Handcock treatment for adenoids before resorting to operation. Was treated from June 18th to July 27th, having as a rule three treatments each week, which were afterwards carried on by his mother at home. In November the mother wrote as follows: "I feel sure it will interest you to know that I took M—— the other day to see the doctor who had examined him before, and found adenoids and advised operation. He was delighted with his improved appearance, and said the adenoids had totally disappeared, and that he was better and stronger in every way."

CASE 3.—Male aged 42. Passed on to me by oculist. Complained chiefly of headaches, which lasted from 8 to 12 hours daily. The condition had existed 15 years and was not relieved by spectacles. On examination patient found to have nasal obstruction due to a deflected septum and thickened mucous membrane. He also had a calcareous ridge round the occipital region and calcareous nodules in tissues of back of neck. These were broken up by manipulation and patient made to sneeze daily. At the end of a fortnight he had two days' complete freedom from headaches. The treatment was continued for another three weeks, during which time he rarely had a headache which lasted more than an hour. I then gave patient instructions how to carry on the treatment and have not heard from him since.

Reviews and Notices of Books.

Diseases of the Nervous System: A Text-book of Neurology and Psychiatry. By SMITH ELY JELLIFFE, M.D., Ph.D., Adjunct Professor of Diseases of the Mind and Nervous System, New York Post-graduate Medical School and Hospital; and WILLIAM A. WHITE, M.D., Professor of Nervous and Mental Diseases, Georgetown University, &c. Second edition, revised, rewritten and enlarged, with 424 engravings and 11 plates. Philadelphia and New York: Lea and Febiger. 1918. Pp. 938. Price $7.00.

APART from the larger and more ambitious systems and encyclopædias of neurology, this is one of the first text-books of one volume, we believe, to embrace the whole of neurology from diseases of the sympathetic system to insanity. The authors are surely justified in their contention that all mental disease is nervous disease and that the distinction between the two is artificial. Further, they have in downright fashion refused to admit the claims of certain internists to filch from neurology the diseases of the ductless glands, maintaining rather that the "endocrinopathies" are but a part of vegetative or visceral neurology, as indeed they are. The scheme of this stimulating volume accordingly follows a division of the nervous system into three levels of functional activity, the vegetative, the sensorimotor, and the psychic.

The first is a study in itself, of ever-widening importance; within its limits is found an immense variety of disturbances of visceral mechanisms as yet far from being adequately differentiated into recognisable syndromes. Impairment of function of glandular, gastro-intestinal, genito-urinary, vascular, respiratory, cutaneous, bony, and other systems on their nervous side has been sadly neglected as a subject of clinical study, but a glance at the hundred pages allotted to this in the text-book will serve to demonstrate the richness of the symptomatology that is growing up round these topics and at the same time reveal the serious gaps in our present knowledge. We notice that the authors place the muscular dystrophies or myopathies under the endocrinopathies, in our view, somewhat prematurely; even where there is more justification, as, for instance, in the case of myasthenia gravis and possibly myotonia congenita, the origin of the disease in a defect of endocrine glands cannot be said to be clearly established.

Sensorimotor neurology, the ordinary organic neurology of the schools, is, of course, much better systematised and more thoroughly investigated. The authors have succeeded in compressing a remarkable amount of information into the 450 pages of this section, and, on the whole, the material is well apportioned. The relative meagreness of certain paragraphs may, no doubt, be set down to the desirability of conciseness. More attention, we think rightly, has been given to the exposition of group syndromes than to particularities of individual diseases, a method which avoids much overlapping.

As for the third section, the "psychical or symbolic systems," comprising some 200 pages, it is also remarkably complete within its limits. The authors are frankly Freudian in their outlook, attributing neurasthenia, e.g., "in most instances," to "excessive masturbation or frequent pollutions"—a point of view which has little to commend it, and appears to us unworthy of the critical spirit the authors elsewhere evince. This slavish following of a "master" does not appeal to English neurology.

The volume is nothing if not up to date. All the newest work in neurology and psychiatry is at least touched on, and the student will find paragraphs on dystonia musculorum deformans, dyssynergia cerebellaris progressiva, apraxia, cyclothymia, Alzheimer's disease, and so on, which are not to be found in many other text-books. The illustrations are many and valuable, especially the diagrams. In this connexion the authors appear to have borrowed far more illustrations than are original; in fact, they seem to have been able to obtain from other sources the pick of neurological drawings. The charts that are the conspicuous feature of Dejerine's "Semiology" are all here also. The printing is clear and the index is good. As a compendium of our knowledge in neurology and psychiatry the book is unusually satisfactory and reflects credit on the industry and wide reading and research of its compilers.

Locomotor Ataxia: An Introduction to the Study and Treatment of Nervous Diseases. By WILLIAM J. M. A. MALONEY, M.D. Edin., Neurologist to the Central and Neurological Hospital, New York, &c. Illustrated. London and New York: D. Appleton and Co. 1918. Pp. 299. Price 15*s.* net.

THE avowed plan of this book is somewhat out of the common. Tabes dorsalis is taken as the "text," so to speak, from which to give an exposition of a great deal of clinical anatomy and physiology which may be subsequently applied to other diseases of the nervous system. Thus there are long chapters on disturbances of reflex motor function, sensory function, attitude and movement, of the vegetative nervous system—all as exemplified by tabes, and no doubt of value to the student. The book in its first part really constitutes a kind of introduction to the study of the nervous system, and as such is worthy of note.

The second part is devoted to an elaborate description of the treatment of tabes and of its symptoms, mainly ataxia, by the author's methods, which are modified from, and it may be an improvement on, those of Frenkel, of Heiden. In a word, the keynote of the method is the removal of competing visual images by blindfolding the ataxic patient, thereby ensuring his dependence on such postural images as he retains and facilitating their re-establishment. Apparently the author has had encouraging results.

Where there is so much attention given to the minutiæ of one disease we should have liked to see an attempt to explain the mechanism of the Argyll Robertson pupil. No reference is made to the experimental work of Karplus and Economo in this connexion. Among the visceral crises nasal and uterine varieties are not given a place. Gowers's work

on the auditory atrophy of tabes is omitted. The expectation of life of the tabetic is given as "at least two-thirds that of the average healthy man." Marie and Mocquot have shown that it is even higher than that. There are a fair bibliography and a number of good illustrations.

Diseases of Occupation and Vocational Hygiene. Edited by GEORGE M. KOBER, M.D., LL.D., and WILLIAM C. HANSON. London: Wm. Heinemann (Medical Books), Limited. 1918. Price 32*s.* net.

THE present war has brought home to nations as never before their dependence upon industry to supply them with material for offence and defence, and just now, when in this country the profession is looking forward to a Ministry of Health, attention is being specially directed to the effect of industrial occupation upon health and upon the production of disease. A new branch of preventive medicine is rapidly coming into being, a branch concerned with the environment of the workshop in contrast to the public health of the past concerned with the environment of the home. Development on these lines is needed to meet the altered conditions of the working classes; it is needed, and indeed is overdue, for industrial medicine has not kept pace with the advance in industry which took place in the last century. Those who recognise the need are looking for some standard source of information containing knowledge on the subject as it stands to-day, and the publication from America of the volume under review is opportune. Probably there will be few examining its contents who will not be astounded at the size of this new field of medical science, astounded at the advances made, astounded that they have practised among an industrial population in entire ignorance of it all. The day is past when a doctor can be content to treat his patients, the majority of whom are industrially employed, with no knowledge of how they spend their lives or of the influences injurious to health to which they are daily exposed. Industry and industrial processes are ever altering and expanding without consideration for the health of the workers. The living organism reacts to these influences in new and unexpected ways, which may even be associated with injury to limb and danger to life. "At hercule homini plurima ex homine sunt mala." The practitioner of the future must acquaint himself with what goes on within the factories in his district as well as within the homes.

This volume is undoubtedly of great value and will remain as a book of reference; but the editors set themselves a hard task by seeking contributions from among authorities living in different countries. Each author appears to be a law unto himself unchecked by the editors; considerable overlapping has occurred; divergence of opinion may be detected, and omissions are noticeable. Such matters, however, may be rectified in a subsequent edition and may only be taken as indications of the rapid increase of knowledge on the subjects discussed. Although English writers contribute we note that no reference is made to the following: Professor A. E. Boycott's work on ankylostomiasis among Cornish miners; the report of the Home Office Committee on the use of lead compounds in the painting of buildings; the report of the Royal Commission on Metalliferous Mines and Quarries (with its important conclusions on fibroid phthisis, which have justified the Act just passed giving compensation for silicosis of the lungs); the report of the Home Office Pottery Committee (the basis of the splendid code of regulations now controlling that industry); the work of H. C. Ross on pitch cancer; the report of the Compensation Committee on Dupuytren's contraction; Prosser White's book on Occupational Dermatitis.

Probably, although this book was only published this year, it was too late to contain more than a passing reference to the recent work put out by the Health of Munition Workers Committee. This is especially unfortunate, as the section devoted to industrial fatigue is somewhat inadequate to the importance of the subject. The food question also and the industrial canteen have received more attention in this country recently (particularly from Major Greenwood and Leonard Hill) than is indicated. The same reason may account for the omission of the whole question of toxic jaundice and aplastic anæmia due to tetrachlorethane and the nitro-derivatives of benzine—e.g., T.N.T., which has been so carefully worked out in England.

A general criticism may be made that the space devoted to descriptions of processes and industries is too great for those ignorant of the trades to whom descriptions without personal inspection are of little value and too small to be useful to those already acquainted with them. This fault is, however, one common to most treatises on occupational hygiene. The editors have aimed high, and if their aspirations have not been entirely fulfilled, nevertheless they are to be congratulated in getting together much useful knowledge on a subject of rapidly increasing interest and importance, and they should be rewarded by an early call for a second edition. Should this happily occur, the suggestion is worth making that the volume should be divided into two separate works—one dealing with the hygiene of industry and the means which it affords for healthy life to the community, and a second dealing with occupational disease and the way in which industry falls short of its high calling.

Hysterical Disorders of Warfare. By LEWIS R. YEALLAND, M.D., Resident Medical Officer, National Hospital, Queen-square, London. With Preface by E. FARQUHAR BUZZARD, M.D., F.R.C.P., Lieutenant-Colonel, R.A.M.C. London: Macmillan and Co. 1918. Pp. 252. Price 7*s.* 6*d.* net.

Dr. Yealland's readable volume on the hysterical disorders of warfare appears at a time when it is likely to prove of immediate and practical usefulness to the medical profession. Considerable numbers of cases of hysteria are being dealt with in special and in general military hospitals, large and small, and by boards, pension committees, and individual medical men. Such cases cannot be satisfactorily handled for therapeutic purposes except by active, intelligent, immediate, persuasive tactics on the part of the individual who will devote himself to each particular case. Treatment cannot be allowed to devolve on deputies if successful results are to accrue; the problem is that of one mind *versus* another, and its solution demands unremitting application on the part of the therapeutist. The reward is worth the mental labour, however, for in this field, above all others, nothing succeeds like success, and each cure is not merely an incentive for further triumphs, but is a potent factor in the establishment of that easy and reliable self-confidence the possession of which is half the battle.

Various methods of psychotherapy are in vogue at present for the treatment of hysteria. The exponent of hypnotism, or psycho-analysis, or of suggestion without apparatus may obtain results satisfying to himself and pleasing to his own views of the nature of hysteria; others, less concerned with psychological theories, may give the patient a whiff of ether and obtain just as good and as lasting effects. Dr. Yealland is an accomplished exponent of treatment by means of a combination of electricity and mental persuasiveness, which in his hands, judging by his records, has proved literally irresistible. Apparently he has not had one single failure out of hundreds of cases, for which he deserves cordial congratulations. Every variety of hysterical phenomenon has been met and successfully combated; not merely the simple case of flaccid palsy of short duration, already half-cured by auto-suggestion ere the seance begins, but the complex and difficult case of functional spasm of accommodation, which has required many hours of continuous treatment for its exorcism. Dr. Yealland enters into the minutest details of his particular technique, and a perusual of his selected cases will provide adequate information for all who desire to learn and practise this particular method. Incidentally, the author unconsciously reveals the secrets of his unfailing success—ingenuity of application of the method, nimbleness of mind in the presence of unforeseen hitches, imperturbability of temper, patience and persistence which have gone to almost incredible lengths, enthusiasm, above all, an insight into the mind of the sufferer without which no amount of electricity would effect a cure.

If there is no special analytical investigation of the phenomena from a psychological standpoint, the value of the method is not thereby lessened. Dr. Yealland shows how potent is the fact of relief of symptoms in itself re-enforcing and consolidating the therapeutic gain, so that instances of relapse are few and far between. The book is written in an easy, colloquial style, and, apart from the details of the method in a large variety of cases, also contains useful diagnostic criteria between organic and functional nervous disease.

THE LANCET.

LONDON: SATURDAY, AUGUST 24, 1918.

The Drug-supply after Four Years of War.

THIS country has depended upon overseas sources for its supply of most of the important vegetable drugs before the war; and before the war the whole world drew practically all it needed in the way of the so-called "newer remedies" from Germany. But when need drives we can do without Germany. It is true that all drugs are relatively scarce and many of them very costly at the present time, but among the thousand and one materials inside and outside the Pharmacopœia those which are absolutely unprocurable can be counted on the fingers of one hand, while it is perhaps safe to say that not a single essential drug has entirely vanished from the shelves of our chemists' shops—a tribute to the power of our Navy. When the market sections of the drug papers speak of a drug as being scarce it must not necessarily be inferred that the drug is being produced only in small quantities; the accurate inference is that the quantity available for distribution through the druggists to the civil population is greatly reduced, for we must remember that the demand for drugs from the medical services of our own and our Allies' Armies has to be met first. This is a not unimportant point, and we draw attention to it in order to emphasise the fact that when a drug is reported to be scarce it does not mean that sick and wounded soldiers lack the proper remedial agents. Then, again, it is common knowledge that glycerin is difficult to obtain and that castor oil of the best quality cannot be bought in the open market. But there is no intrinsic scarcity of either of these substances; they are being produced in quantities far exceeding the pre-war output, but the whole of the production is required for purposes other than those medicinal. Thus, taking a broad view, we have much to be thankful for. Notwithstanding the U boats, trading vessels are bringing to port those vegetable drugs that cannot be produced in our soil and climate, and though freights are amazingly high, cargoes much reduced in weight, and ships less frequent and longer in passage, the storehouse is never empty. If there is no Turkish opium to be had there is a sufficiency of Persian; if we do not import quinine from Germany we can secure a goodly proportion of the product of the Dutch factories, or we can make quinine here from the cinchona bark of Java.

The keeping up of a regular supply of synthetic products presents a wholly different problem. Germany had, as everybody knows, secured a practical monopoly of the dye industry, and the synthetic production of drugs was an offshoot of that industry. When war broke out nobody foresaw how long it would last, and nobody appears to have begun at once to make preparations to produce synthetic drugs on a scale adequate to supply the country's needs in the event of a long war. The American chemists were not hampered like our own manufacturers were, and they got to work before us. But the necessity of establishing a fine chemical industry in this country was recognised in due course, and, after the initial problems had been solved, our chemists were able to produce some of the more commonly prescribed compounds in commercial quantities. In France, Spain, Holland, Japan, and especially in Switzerland, and even in some of our own overseas dominions, the drug industry has now been established. The result is that the world has been able to make itself independent of Germany; and if it can do this in war-time we may be sure that it will be able to do it when labour becomes plentiful and the scarcity of raw materials is no longer a factor to be reckoned with. In his altogether admirable address at the Fifty-Fifth Annual Meeting of the British Pharmaceutical Conference, Mr. C. A. HILL, the President, mentioned salicylic acid, aspirin, phenacetin, hexamine, and saccharin as substances which are being produced here on a regular scale. He did not extend the list further, but he did something more reassuring; for he said flatly, that "whenever a particular substance has been required for a particular purpose, British chemical science *plus* British chemical industry have not failed to produce it in requisite amount and of requisite purity within a reasonable time." Now all this is true enough, but it is important, in view of the future, to add Mr. HILL'S proviso that, "questions of cost apart, the thing can be done." Lord BALFOUR'S Committee on Trade After the War recommended that during a specified period British manufacturing chemists should be given very generous protection, so as to encourage them to establish here the synthetic drug industry on a large and permanent basis. We hope that the "questions of cost" will not be too far "apart." This class of drug can and should be produced here at a price which will allow of the products being sold for sums approximating to those which they would fetch if imported from abroad.

We have sufficient confidence in the chemical skill and commercial acumen of our manufacturers to believe that the public would not suffer unduly as a result of the protection recommended. The President of the British Pharmaceutical Conference in his address did not make the mistake of leading us to think that we had made any remarkable progress in the synthetic drug industry. We have made a good beginning, it is true, but the manufacture of some of the drugs mentioned has been, as he told the Conference, an industry *ad hoc*. Obviously this will not meet after-war conditions, for the production of synthetic drugs on an economical scale must necessarily be part and parcel of a large and general scheme. It is in the imaginative lay mind that the danger lies, and it is to be hoped that the Exhibition of British Scientific Products now being held at King's College

will not have the effect of impressing the public with the belief that so far as the production of drugs is concerned our difficulties are over. Those behind the scenes will tell us that we are only at the beginning. Nevertheless, as an account of this exhibition in another column shows, a good beginning has been made, and there is no reason why progress should not go on provided that the movement receives the whole-hearted support of the public and the assistance of the Government when the strife is at an end. It is clearly demonstrated that British manufacturers are thoroughly capable of supplying us with products of a quality as good as, if not better than, those hitherto supplied from foreign sources. Their patriotic enterprise deserves all the encouragement it is possible to give. Medical practitioners need not be reminded how intimate is the relationship of the manufacture of dye for stuffs to the production of these drugs; and it is to the great dye factories, rather than to the druggists, that we must look for the development of the industry. Before the war we visited some of the most important of the German dyestuffs factories; the visit impressed upon us the fact that a successful synthetic drug industry depends upon a successful dyestuffs industry.

Industry and Medical Service.

FUTURE students of the social revolution of the nineteenth century, the result of sudden and unprecedented industrial development, will wonder at the blindness of the medical profession to the altering conditions around them; they will wonder that, even in the twentieth century, medical men continued to work on the plan handed down to them by their seventeenth- or eighteenth-century forbears, who practised among a clientèle busied with agriculture or home industries, and who were closely acquainted with the daily life of their patients, and thus able to dispense general advice as well as drugs and professional counsel. One definite opening occurred to keep the profession in touch with industrial patients, an opening of which but little advantage has been taken—doctors, when the Factory Act of 1833 fixed a limit of age to juvenile employment, at a time when birth certificates were unknown, were called upon to certify the age of children presenting themselves for employment, and were allowed to charge the child a fee of 6*d*. With the introduction of birth certificates the *raison d'être* of the work was changed, and the certifying surgeons were asked, in addition to inspecting the birth certificate, to certify the fitness of the child or young person for the proposed employment. The fee has remained the same, although in 1878 the employer was called upon to pay half of it, and since 1891 the whole. Controversy has centred round the place of examination, whether it should be at the surgeon's rooms or at the factory; but the controversy has been suspiciously associated with the fact that a visit to the factory is remunerated at 2*s*. 6*d*. for certifying five or less youngsters. Here the position stands to-day, and since the ridiculously low fee of 6*d*. produces the value of 6*d*., it has been aptly said that the certifying surgeon is paid either too much or too little. Too much for what he does, or too little for what he ought to do—certainly too little if the instructions now issued by the Home Office relating to the examinations are observed.

The truth is the medical profession has not seized the chance to make its weight felt when visiting industrial establishments, by examining the processes carried on and the places where they are carried on, and by advising on factory hygiene. Exceptions there have been, especially in recent years; and factory managers are here and there learning to appreciate the value of a doctor in connexion with employment. The services he can render are becoming obvious in these days of compensation for accident and disease, and of scientific management and standards of efficiency which call more and more for the alertness of health. And, as we have said elsewhere this week, in reviewing a valuable treatise upon occupational hygiene and pathology, the present war has brought home to all nations their utter dependence upon industry, while it is essential that this country, the mother of inventions and modern trade, should not fall behind in any organised plans for benefiting the medical conditions of the workers. Our feeling is that the certifying surgeon should examine not merely juveniles, but adults on engagement, organise first-aid treatment, point out unhygienic conditions of work—poor lighting and bad ventilation—advise on unhealthy posture and excessive weight-lifting and on hours of work in relation to rest, pauses, and meal-times. More should be given to the certifying surgeon to do, and the emoluments should rise accordingly.

At the present moment we should prefer to see development on these lines rather than some soothing of the ruffled feelings of certifying surgeons by granting them an increase of fees, up to possibly 1*s*. a head of those examined, a suggestion which, we understand, is being put forward. That the present fees are inadequate is obvious, but it is the work of the certifying surgeon which is to-day wrong, and is especially in need of being recast now that the whole system of medical practice is awaiting reorganisation. Good work never exists long without recognition, and we hope, even if the present grievances remain unremedied until the Ministry of Health is established, that ere long the medical profession will be brought closely in touch with industry, and that every factory will have its medical adviser, not merely certifying youngsters on engagement, but following them up by periodical examination and studying the effect of particular employment upon their physique and health—carrying on, indeed, the work of the school medical officer, with whose records the certifying surgeon should be acquainted. Here is a new field of medical activity the importance of which is already being tested and proved by the Ministry of Munitions with its whole-time medical services in certain factories; and it is a field which must be cultivated if health, which is the basic wealth of a nation, is to be raised to a level where industrial efficiency is given its best opportunities.

Annotations.

"Ne quid nimis."

THE CASE-MORTALITY OF INFECTIOUS DISEASES.

THE annual report of the Metropolitan Asylums Board for 1917 appears in the abbreviated form to which the exigencies of war have accustomed us. But the absence of charts and tables does not do much to diminish the interest excited by the changing values of the case-mortality for the various common infectious ailments. In the case of scarlet fever and diphtheria the death-rate has not altered materially. Together these two infections account for more than three-quarters of the total admissions to the hospitals of the Board, and the death-rate is therefore built on large numbers. The figures for 1917 were 1·9 and 6·7 respectively, being only a single point different from the 1916 figures, plus in the case of scarlet fever, minus in the case of diphtheria. It is apt to be forgotten that while in the last decade of the nineteenth century the case-mortality of diphtheria rapidly fell, as a result of antitoxic treatment, from over 30 to its present figure, the case-mortality of scarlet fever has fallen in about the same proportion, but more gradually, from year to year since the earlier "seventies," when it was above 12, to its present value below 2. In the case of the four other acute infectious fevers with which the Board has dealt during the year the death-rate shows in each case a rise of roughly one-quarter on the 1916 figure. Fortunately in the case of enteric and cerebro-spinal fevers the total number of admissions is but small—enteric, 172; cerebro-spinal, 101—but none the less the death-rate of 17·3 in the former and 53·7 in the latter is worthy of serious thought. Progress in regard to both has been on the side of prevention rather than of treatment. The total deaths are such as to warrant more continuous effort than has yet been given to improvement in the clinical treatment of these diseases. The numerical aspect is quite otherwise in the two remaining infectious fevers of uncertain etiology. 2951 cases of measles were admitted during 1917 to the hospitals of the Board, and of these 11·7 per cent. died; 391 cases of whooping-cough, and of these 13·4 per cent. died. The death-rate in the case of whooping-cough is the highest on record, in the case of measles higher than any figure since 1911. In neither instance, of course, does the death-rate of patients in the Board's hospitals give any clue to the average case-mortality outside, because it is only the cases with serious complications, for the most part broncho-pneumonia, which are admitted. But making all allowance for this circumstance, the figures in the 1917 report reveal measles and whooping-cough once again as the dangerous plagues which they are to the town child under present social and hygienic conditions, and justify any possible speeding-up of the scheme for home nursing which the Local Government Board has set in action and subsidised by grants-in-aid.

DRIED VERSUS CONDENSED MILK.

THE official résumé (THE LANCET, July 13th, p. 55) of Dr. F. J. H. Coutts's report to the Local Government Board on the rôle of dried milk in infant feeding has brought us an eloquent plea from across the channel for the claims of sweetened condensed milk for hand-fed babies, and at the same time for an international solution of such a many-sided problem as the artificial feeding of infants. Our correspondent, Dr. P. Lassablière, is chef de laboratoire to the Faculty of Medicine in Paris, and speaks on the basis of an experience of several years with more than a thousand hand-fed babies, of whom some hundreds were brought up exclusively on condensed milk. The passage in the Local Government Board's résumé on which he bases his remarks is as follows:—

> Sweetened condensed milk is often used for baby feeding. Dried milk has the advantage, when made up with the proper proportion of water, of containing the essential food elements in a proportion more suitable for the baby than when full-cream sweetened condensed milk is used. The latter, if made up so as to give the right proportion of fat, has a very excessive amount of sugar. This is not good for the baby, who usually becomes fat and flabby, and is liable to suffer from diseases such as rickets, &c.

Dr. Lassablière states that all the babies under his care brought up on condensed milk showed a normal growth and no signs of scurvy or rickets after 14–18 months or more of its use. More than this, in a number of babies whose growth had been retarded by digestive troubles, a change to condensed milk was accompanied by a return of digestive power and of normal development. He has seen no harm follow the excess of saccharose in the milk mixture, and agrees with Dr. J. I. Fanz, of Jefferson Medical College, in believing[1] that even in young babies saccharose is hydrolysed by the enzyme "invertine" to an extent not generally admitted. Dr. Lassablière finds in the laxative action of the saccharose a definite point of value for the hand-fed infant, which would justify the excretion of a certain quantity unchanged, if this is in fact what takes place. He quotes with approval Professor Lo Monaco's recent observations on the influence of saccharose on the digestive glands. Finally, he explains the divergent experience of medical men in regard to the effect of condensed milk on babies by the different dilutions adopted, and to some extent by the differing quality of the brands of milk on the market. Unsweetened condensed milk he considers positively dangerous. Dr. Lassablière concludes his letter with an excursus on fashions in medical theories and opinions, and asks to have condensed milk judged by the test of controlled clinical observation. In this country at the moment the shortage of sugar might stand in the way of such a test.

NASAL BREATHING IN THE TOWN CHILD.

To snivel or to snuffle is such a familiar habit of the small child in poorer town areas that it excites no interest and barely any annoyance in the family circle, the mother or elder sister being content to wipe away with any old rag the mucus or muco-pus actually visible outside the nose. But it is the secretion within the nasal cavities which alone is of importance, and its accumulation effectually prevents the free nasal breathing which is as important to healthy development as free nutrition and excretion. Some relation between adenoid vegetations in the naso-pharynx and chronic nasal catarrh is generally recognised, although doubt may arise as to which is cause and which is effect. In a clinical note which we publish this week Dr. Isabel Ormiston deals with a method of treating adenoids by means of a nasal drill designed to keep the

[1] New York Medical Journal, 1915, i., 253.

breathing passages free from obstruction by secretion. Older children are taught regularly to blow their noses without constricting the orifice in a way which expands the chest at the same time. In children too young to do this the same result is obtained by the application of an iris-root snuff to produce sneezing. Dr. Ormiston admits that she was sceptical of the method when it was brought to her notice by its inventor, but after trying it herself for four years and in an experimental clinic for six months with Dr. Octavia Lewin, she has become convinced of its value. In children with adenoids she finds the first improvement in the digestive system, followed by relief of deafness and by a steady shrinkage in the adenoid growths. Both the cases which Dr. Ormiston cites were found to be better in the summer, the usual history with such children, and it may be contended that the method is only likely to be successful in cases where ordinary systematic breathing exercises would also have succeeded. But there is no doubt that the drill is an effective way of performing the very necessary nasal toilet, and results on a larger scale will be looked for with interest.

SPIROCHÆTAL BRONCHITIS.

MORE than ten years ago Castellani discovered in Ceylon a form of bronchitis due to a microbe which he termed *Spirochæta bronchialis*. Since that time cases have been described in various parts of the world. At a recent meeting of the Académie de Médecine of Paris Dr. H. Violle reported what appear to be the first cases of this curious affection observed in France. During three months he has seen 30 cases in the naval hospital of Saint-Mandrier, Toulon. The sputum is bloody, viscid, and of a uniform rose tint resembling gooseberry juice. The colour is not observed in any other affection, and hence is diagnostic. Dr. Violle therefore proposes the title "bloody bronchitis." Some of the patients were admitted with the diagnosis of phthisis, but repeated examinations of the sputum failed to reveal the tubercle bacillus. On the contrary, smears stained with nitrate of silver showed spirochætes, sometimes innumerable, of all forms and dimensions, some long and fine, others thick and squat, with various undulations. Often these organisms were almost in a state of purity, sometimes they were associated with other microbes. Blood examination revealed slight anæmia, probably due to the repeated hæmoptysis. The affection is relatively benign; the onset is insidious, the general condition is good, there is no fever, but headache occurs. The pulmonary signs are slight and sometimes are absent. Often they are those of ordinary bronchitis, sometimes of apical bronchitis, or of congestion of the bases. Cough is frequent and may be painful. The sputum sometimes is abundant and may regularly be hæmorrhagic or muco-hæmorrhagic alternating with muco-purulent. Relapses are frequent. It is important to recognise the affection, as it is very contagious. It appears to have been introduced into France by Asiatic troops or workers, or by troops which had been in the Levant. The disease has become acclimatised in France—in the south, at any rate. A quarter of the patients were Frenchmen. The affection may be complicated by graver affections, such as tuberculosis, pneumonia, or broncho-pneumonia, the germs of which evidently enter the lung through the breaches made by the spirochætes. A look-out should be kept for the carriers.

THE REAL BOTULISM.

THE most recent monograph (No. 8, July 31st, 1918) of the Rockefeller Institute for Medical Research is devoted to a clinical and experimental study of botulism by Dr. Ernest C. Dickson, from the Stanford University Medical School at San Francisco. Dr. Dickson's interest in the subject dates from an outbreak which occurred in December, 1913, after a banquet in a students' club house, when the only article of food taken by all the 12 students attacked was a salad of string beans (presumably the equivalent expression for our runner beans) prepared at the home of one of the members of the club. The *B. botulinus* was not recovered from the organs of the one student who died, and all the salad had been eaten, leaving none to examine; but the clinical picture was typical of botulism, and the peculiar type of thrombosis in the blood-vessels of meninges and brain, since shown experimentally to be characteristics of botulism, was first demonstrated in the fatal case by Professor W. Ophüls, pathologist of Stanford University. Since this time Dr. Dickson has investigated a number of outbreaks on the Pacific coast of America, and has succeeded in isolating three strains of the infecting organism, twice from the crops or gizzards of chickens which had died after eating string beans or discarded maize, and the third time from a can of string beans, fellow to one which caused poisoning among a party of 15 at an hotel dinner at Escondido, California, in January, 1917. In this as in other outbreaks the most striking symptom was progressive muscular weakness, especially marked in the muscles of the head and neck and called by the expressive name "limber-neck" when it occurs in domestic fowls. In one outbreak the condition is described thus:—

> "There was extreme flaccidity of the muscles of the neck, allowing the chin to rest upon the chest or the head to fall backward if not supported when the patient was elevated. It was a common occurrence to see a patient move her head with her hands, and one girl who had long braids used them, with the head of the iron bed as a pulley, to swing her head into position when she wished to move. The head could be rotated and held from falling to either side, but the anterior and posterior supports were lacking."

The monograph will be read with keen interest by all those who found a close resemblance to the symptoms of botulism in the epidemic encephalitis of a few months ago. Dr. Dickson's monograph is of special value because it shows that botulism, while endemic in the United States and comparatively common on the Pacific coast, is not essentially a meat poison, but may also occur in canned vegetables and fruits. He advocates a campaign of education to inform those who can fruits and vegetables of the danger of infection with *B. botulinus*.

Colonel William R. Smith, M.D. Aberd., D.Sc., F.R.S. Edin., Sheriff of the City of London, professor of forensic medicine in King's College, London, and Principal of the Royal Institute of Public Health, is a candidate for the Parliamentary representation of the Universities of Scotland.

THE identity of Mr. A. Stanford Morton may not have been generally recognisable under his official description as Dr. Andrew Morton in the list of honours conferred by the King of Italy (THE LANCET, August 17th, p. 215).

BY an Order in Council, dated August 14th, the provisions of the Parliament and Local Elections Act, 1918, have been extended to the election of Members of the General Medical Council by registered practitioners resident in the United Kingdom, the effect of which is to extend the term of office of the existing Direct Representatives until Dec. 31st, 1919.

THE BRITISH SCIENTIFIC PRODUCTS EXHIBITION.

AN inspection of this interesting exhibition showed that there were in all 14 sections distributed amongst the class-rooms, theatres, hall, and corridors of King's College. Many sections related to great industrial processes, as those concerned in the production of textile fabrics, paper, ferrous and non-ferrous metals, glass, refractory materials (firebricks, carborundum). We confine ourselves, however, to brief notices of those products which have an important bearing on the position of medical science. These sections all told the same story; they served to illustrate our dependence for supplies in the past on enemy countries and our independence for these supplies in the future. It is obvious that the exhibits could not complete the tale of our scientific indolence in the past, since many products have been obtained which it would not be in the public interest to exhibit. The sections of direct interest to medical men were three in number: Section I., Chemical Products and Processes; Section IV., Optical Apparatus; and Section VIII., Surgical, Bacteriological, and Pathological Appliances.

SECTION I.—CHEMICAL PRODUCTS AND PROCESSES.

This section was perhaps more eloquent than any other of the resources of British science, particularly in the direction of building up synthetics. The Gas Light and Coke Co., of Beckton, E. 16, for instance, exhibited a most interesting series of chemical substances chiefly the products of coal tar, the parents of so many synthetic drugs, amongst which may be mentioned beta-naphthol, salicylic acid, acetyl salicylic acid (the aspirin of German manufacture), ammonium salts, and cyanogen products. In addition, there were fine specimens of carbolic acid in both glacial and detached form. Messrs. Evans, Son, Lescher and Webb, Ltd., of 56, Hanover-street, Liverpool, showed an attractive series of drugs, all evidencing careful scientific preparation. Amongst these were atropine and hyoscyamine, bismuth tribromophenol (hitherto familiarly known as xeroform), chlorophyl, hexamine, lanoline, salvarsan and sodium sozoiodolate, and thymol, formerly imported from Germany, but now obtained from raw material grown in India. Messrs. Evans, Gadd, and Co., of 100, Fore-street, Exeter, exhibited fine examples of lysol. The exhibit of the British Drug Houses, Ltd., of 22-30, Graham-street, City-road, N. 1, comprised some 80 samples of chemical preparations representative of the extension in the domain of fine chemical manufacture which this company has made during the war to meet the demand for products hitherto obtained from Germany. These included bismuth, tribromophenate of bismuth (German xeroform), thymol iodide (German aristol), iodatol (German iodopin). Similarly were shown microscopic reagents and dyes and standard analytical reagents, all formerly supplied from Germany. Altogether this exhibit was a quite impressive one, having regard to the object of demonstrating that what the Germans could do the British could do. Messrs. Boots Pure Drug Co., Ltd., of Nottingham, presented an interesting series of fine pharmaceutical products; amongst these were acriflavine, acetanilide, aspirin, atropine and its salts, butyl chloral hydrate, cantharadin, chloramine, and di-chloramine T, digitalin, halozone, hexamine, homatropine and its salts, hyoscyamine, phenetidin, proflavine, saccharin, salicylic acid, soluble aspirin, theobromine salicylate, and tropine. Amongst the exhibits of The Bradford Wool Extracting Co., Ltd., of Pit Lane Mills, were some fine chemicals, including phenacetin, salicylic acid and its derivatives, and acetanilide. As examples of chemicals illustrating the manufacture from raw potash material produced in this country, the British Cyanides Co., Ltd., of Oldbury, Birmingham, exhibited specimens of carbonate and bi-carbonate of potash, the permanganate, ferrocyanide, and chloride. The products of the "Wellcome" Chemical Works (Messrs. Burroughs, Wellcome and Co., Snow Hill Building, London, E.C.) formed an interesting exhibit of synthetics, notably kharsivan and neokharsivan, replacing the German salvarsan and neo-salvarsan. Similar replaced products were hexamine (syn., German urotropine), phenacetin, aspirin, among a number of fine chemicals used in medicine. Pilocarpine, atropine, eserine and homatropine and their salts were made on a commercial scale by this firm several years before the war broke out, and the researches carried out in their laboratories have produced "ernutin," a synthetic product presenting the active therapeutic principles of ergot, and emetine hydrochloride and emetine bismuth iodide. The Chemical Research Laboratory of the University of St. Andrews contributed some instructive specimens illustrating the manufacture of synthetic drugs in this country. No less than 25 fine chemicals, including novocain and orthoform, were shown and now prepared on the manufacturing scale by processes developed in the above laboratory since the outbreak of the war. Luminescence chemicals were the attractive feature of the exhibit of the Cold Chemical Co., of 13, Canal-road, Kingsland-road, N. 1. Amongst these were calcium tungstate, the basis of X ray intensifying screens, and cadmium tungstate and synthetic willemite fluorescent materials for the same screens. Sir William Crookes exhibited specimens of anti-glare glass, which, used in spectacle lenses for our troops and airmen, is doing good service, and also in munition work in which the workers are exposed to powerful light and heat rays. By the addition of various metallic oxides the glass acquires the dual property of arresting both the ultra-violet and the heat radiations. Messrs. Hedley and Co., of 120, Harrow-road, Leytonstone, showed specimens of ethyl chloride, bromide, and other related ethers used in anæsthetic practice. Ethyl chloride was manufactured in Germany to the extent of hundreds of tons both for the manufacture of pharmaceutical products and "intermediates" in dye production. An interesting series of organic compounds, the manufacture of which has been undertaken since 1914, was exhibited by Messrs. Thomas Kerfoot and Co., of Bardsley Vale Mills, Bardsley, Lancs. These included "kerocain" (Kerfoot's novocain), phenacetin, acetyl salicylic acid, and a number of chemical materials essential in the manufacture. Messrs. Boake, Roberts, of Carpenter's-road, Stratford, London, had a very interesting collection of organic salts, including acetates, formates, butyrates, and salicylates, and there were also shown specimens of formaldehyde, paraldehyde, and hexamine. Such is a rapid review of the more important preparations of medical interest in this section, all illustrating our independence of enemy supplies in the future, and the remarkable results which have followed our awakening to the need of applying science to the production of many essentials in medical practice.

SECTION IV.—OPTICAL APPARATUS.

The exhibits in this section are the outcome of this country finding itself at the outbreak of the war cut off from a supply of optical glass required in the construction of gun-sighting telescopes, field-glasses, and other service instruments. The essential constituent of certain glasses is potash, of which Germany possesses favourable sources. Now ample supplies of potash of high quality are produced by electrolysis in this country, with the result, as Professor R. A. Gregory says, that "glass-makers will never need to go to Germany again for this substance." We refer to the important results shown in this section because they clearly have a bearing upon the efficiency of medical investigation in which good lenses are a *sine qua non*, as in laryngoscopy, microscopic work, and bacteriology.

SECTION VIII.—SURGICAL, BACTERIOLOGICAL, AND PATHOLOGICAL APPLIANCES.

The importance of a supply of high-quality glass in medical practice was further illustrated in the exhibit of artificial eyes by Mr. Albert E. Waters, of the Empire Works, Mole-street, Sparkbrook, Birmingham. Prior to the war, it is stated, the major portion of the artificial eyes used in this country were imported from Germany. These eyes are now superseded by a British-made artificial eye superior to the German article in every particular. Messrs. Allen and Hanburys, Ltd., of 48, Wigmore-street, London, W., exhibited an improved cystoscope, giving large-field upright image and sharp definition. Constructed on the same principles is a cystoscope for the combined irrigation of the bladder and catheterisation of the ureters. It is fitted with channels through which ureteral catheters can be passed, and there is also an improved rubber valve which can easily be rendered sterile and

replaced when necessary. The British Laboratory Ware Association, Ltd., of 24, Martin's-lane, Cannon-street, London, E.C., exhibited well-known forms of apparatus used in bacteriological practice; all testify to the excellence of British manufacture. Amongst the exhibits of Messrs. Chas. W. Cook, Ltd., of University Works, Bridge-street (Owens College), Manchester, were a hand-press and filter designed by Professor Delepine for aseptically extracting pulp of juices from fresh tissues, and a microtome by the same designer for cutting large sections of animal tissue and for paraffin wax and other sections when using the freezing method. The manufacture of fluorescent and intensifying screens used in X ray work was practically a German monopoly, but Messrs. Harry W. Cox illustrated in their interesting exhibit how the enemy has been beaten in this direction. Messrs. Hawksley and Sons, of 357, Oxford-street, London, W. 1, exhibited their hæmacytometer, the feature of which is the special form of counting chamber. An all-glass hypodermic syringe, an ampoule syringe, a blood "extractor," and double-channel glass catheters, formed the novelties on the stall of Hyposol Limited, of High-road, Wealdstone, Harrow, while Messrs. S. Maw, Son, and Sons, Ltd., of 7–12, Aldersgate-street, London, E.C. 1, showed hypodermic syringes, together with antiseptic dressings and the "limpet" nail-brush for one-armed men. A very representative and up-to-date collection of surgical instruments was shown by Messrs. Mayer and Meltzer, of 71, Great Portland-street, London, W.1, most of them referring to war surgery and made since the war began. The exhibit included Shipway's warm anæsthetic vapour apparatus, already described in our columns. Mr. W. J. D. Roberts, of 81, Mortimer-street, London, W. 1, showed an improved stretcher, the chief claim of which is that the canvas is easily removed for the purpose of cleaning and sterilising, thus reducing the risk of infection to the patient. The exhibit of the Surgical Requisites Association, of 17, Mulberry-walk, Chelsea, referred chiefly to splints, as, for example, the papier-mâché splint, made on an actual cast of the affected part, so securing an accurate anatomical fit. The material is light, non-inflammable and waterproof, and, what is of some importance, transparent to X rays. A thoroughly representative exhibition of typical serums, vaccines and tuberculins was given at the stall of Messrs. Burroughs, Wellcome, and Co., all these being products of their research laboratories at Herne Hill, London.

We have attempted to deal with only those sections of the exhibition which give ample illustration of what British scientific effort is doing to ensure for medical science the efficiency of its material and equipment and to secure them entirely and satisfactorily within our own country or dominions. It need hardly be added that the other sections included industrial developments of the greatest importance to the nation's position in the world, developments which will advance more and more as science is brought to bear on the methods of production.

REPORT OF THE SANITARY COMMISSIONER WITH THE GOVERNMENT OF INDIA FOR 1916.

THIS annual report on the health of the population of India is as comprehensive and clearly arranged as in former years. It deals with the health conditions of 315 millions of people (about three-fourths of the population of the British Empire), including those of the European and Indian armies, the prisoners in jail, and the civil population generally, and gives an account of the various medical institutions, hospitals, dispensaries, medical schools and colleges, and laboratories for research work throughout the country.

Health of the European Army in India.

It is pointed out by the Director of Medical Services in India at the commencement of the portion of the report dealing with the health of the European troops, that, on account of the war conditions prevailing, any "comparison with statistics previous to 1914 must take into account the following factors: a continual outflow of healthy individuals to overseas forces, while soldiers unfit for active service are retained in India; this automatically raises the proportion of unfit men to the total strength; the lower standard of physique required for garrison battalions; a continued ingress into India from overseas forces of debilitated men who are more susceptible to disease; and the advent of large numbers of unacclimatised men straight from Europe with a susceptibility to tropical diseases." The average strength of troops (Regulars and Territorials) during 1916 was 60,737 warrant and non-commissioned officers and men. The admissions to hospital from all causes were in a ratio of 772 per 1000, the number constantly sick averaged 39·75, the deaths 6·54, and the invalids sent home 22·11 per 1000. Compared with 1915, when the admissions had been 823·1, the constantly-sick 39·08, the deaths 5·95, and the invalids 19·80 per 1000, all the ratios except that for admission to hospital are higher, and compared with the ratios for the preceding five-year period (1911–15) there is a considerable increase in every case, the quinquennial ratios having been 601·2, 31·06, 4·51, and 8·68 respectively. There is, however, no return to conditions such as prevailed in the period, 1881–1890, when the constantly sick averaged 73 and the deaths 14·79 per 1000. The chief causes of death from disease in 1916 were heat stroke (45 deaths), enteric fever (33), pneumonia (33), cholera (19), malaria (19), and dysentery (18). The healthiest parts of the country appear to have been Southern India and Upper Burma; in the former region (including Bangalore and Madras) the admission and constantly-sick ratios were only 501·9 and 28·7 per 1000 respectively; in Burma Inland (or Upper Burma) these ratios were 598·5 and 29·5 per 1000. The troops on the western coast, mostly at Colaba (Bombay), showed the highest constantly-sick ratio (58·7 per 1000), the admissions being in a ratio of 886·5; while those on the North-West Frontier (Peshawar, Nowshera, &c.) had the highest admission ratio (1116·5), the constantly sick averaging 45·7 per 1000. The chief large stations (with over 1000 effective strength) that showed excessive sickness were Sialkot (1326·3 admissions per 1000, of which 543·5 were due to malaria), Nowshera (1291·0, of which 457·8 malarial), Peshawar (1270·8 and 679·2), Ahmednagar (1070·9 and 380·6), Lahore (1009·9 and 162·6); the constantly sick ratios in these stations were 62·9, 56·1, 47·1, 41·1, and 50·6 respectively. On the other hand, Poona had only 610·1, Secunderabad 544·3, and Bangalore 481·9 admissions per 1000, the constantly-sick ratios being 46·7, 30·8, and 27·7 respectively.

Malaria was in 1916, as always, the predominating cause of inefficiency among British troops in India, and was more prevalent than in any year since 1909: there were 186·0 admissions and 0·31 deaths per 1000, compared with a quinquennial average of 123·1 admissions (1911–15) and 0·23, respectively, for 1911–15. The North-West Frontier group of stations suffered most with an admission ratio of 442·4 per 1000, Peshawar itself, with a garrison of 2363 European troops, having 679·2 per 1000, the most severe prevalence in the past seven years. Owing to frontier disturbance the troops had to be brought down from the hills earlier than usual. There was also an excessive rainfall. The general increase in malaria throughout the country is considered to have been largely due to the endemicity of the disease in certain garrisons of Northern India; the existence of active "carriers" among troops returning from overseas; the presence of a large proportion of young, unacclimatised soldiers, category B men, and garrison battalions; abnormally high rainfall at certain stations; and frequent and unavoidable changes of medical personnel. In addition sandfly fever caused 45·9 and pyrexia of uncertain origin 7·4 admissions per 1000, compared with 41·1 and 9·8 respectively in 1915; 6 deaths were due to the latter disease. Enteric fever caused 5·2 admissions and 0·54 deaths per 1000; in the decennium 1906–15 these ratios had been 7·3 and 1·28 respectively. The admission ratio was higher than in 1915 (3·7); higher, indeed, than in any year since 1909, the year in which effective inoculation was introduced. At certain stations there were actual epidemics, though on a small scale compared with those of former years; thus, at Bangalore there were 59 admissions for fevers belonging to the "enterica group" (16·7 per 1000), 5 only being actual enteric, while 51 were paratyphoid A and 3 paratyphoid B; at Nowshera there were 28 cases (13·9 per 1000) and at Peshawar 30 cases (12·7 per 1000); at Bombay there were 17 cases (10·6 per 1000). Carrier infection was suspected at each place and fly infection also at Nowshera. There was an increase in the prevalence of dysentery (8·2 admissions per 1000), the quinquennial ratio (1911–15) having been 6·0

per 1000 (though the ratio for 1906–15 was 9·1); it prevailed chiefly in Southern India, as at Bangalore, where there were 24 4, and at Secunderabad 23·5 admissions per 1000. Plague caused 8 admissions and 4 deaths; 4 of the cases occurred at Poona, none of which were fatal. For cholera there were 50 admissions and 19 deaths; 8 of the cases (with 5 deaths) occurred at Meerut. The incidence of venereal disease was higher (36·8 per 1000) than in 1915, but lower than in any previous year in recent times; for the decennium 1906–1915 it has averaged 66·3. At Calcutta the admissions were 151·1 and at Bombay 114·5 per 1000; while, on the other hand, at Lucknow this ratio was 47·9, at Jubbulpore 42·4, and at Rawalpindi 37·1 per 1000. Some explanation should surely be forthcoming as to these wide variations in prevalence. At Poona (where the venereal admission ratio was 54·6 per 1000) it was noted that 50 per cent. of the infection had been contracted in the United Kingdom, France, or Egypt. Heat-stroke (including sunstroke) accounted for 347 admissions and 45 deaths, giving ratios of 5·8 and 0·74 per 1000 respectively. At Ferozepore there were 94 6 admissions per 1000 for this casualty, at Lahore 62·0, at Multan 32·7. A large number of cases (136) occurred on a troop train travelling between Karachi and Peshawar in June, which were admitted to various hospitals en route; 19 of these were fatal. The mortality ratio for all India from this cause (0·74 per 1000) was more than double that for the decennium 1906–15, which had been 0·35 per 1000. Thirty-five victims of dog-bite were treated at the Pasteur Institutes at Kasauli and Coonoor; only 2 cases of hydrophobia occurred; one was treated at Kasauli, but subsequently developed the disease and died; the other, also a fatal case, who had been bitten by his own dog, did not report sick until the disease had developed.

Health of the Indian Army.

The average strength of Indian troops, including 2531 in China, Ceylon, and Somaliland (but excluding those on field service) was 139,076. The ratio of admissions to hospital was 757·4 per 1000, the constantly sick 37·7, and the deaths and invaliding 8·97 and 24·5 per 1000 respectively. All these ratios, except that for invaliding, were higher than in the previous year, and all were very considerably in excess over the quinquennial averages for 1910–1914, when the admissions averaged 546·9, the constantly sick 20·7, the deaths 4·39, and the invaliding 5·39 per 1000. There was a notably increased prevalence of malaria, venereal disease, dysentery, and pneumonia. For malaria the admission and death-rates were 200·7 and 0·69 per 1000 respectively; at Miranshah the admissions were as high as 1710·9 per 1000, the cases being mostly of the malignant tertian type. There was, however, much less pyrexia of uncertain origin (12·4 admissions per 1000, compared with 22·3 in 1915), and sand-fly fever (6·8, compared with 13·9). There were 86 cases of plague, 38 being fatal, the ratios per 1000 being 0·6 and 0·27 respectively; small outbreaks occurred at Poona (11·2 per 1000), and at Pindi (7·3 per 1000), the death ratios being 3·50 and 3·80 respectively. The most fatal disease attacking Indian troops was, as usual, pneumonia (16·9 admissions and 3·35 deaths per 1000); in the Peshawar Division these ratios were 23·7 and 5·57, both much in excess over recent years. Pulmonary tubercle caused 2·8 admissions, and 0·42 deaths per 1000, being most prevalent in the Gurkha regiments, where the admissions were 4·2 per 1000.

Health of the General Population.

The dry weather of the first four months of 1916 affected the wheat crops, especially in the unirrigated areas of the west and north-west; but the rice crops were the highest on record. A further decline in the birth-rate (37·13 per 1000, compared with 38·87 for the preceding quinquennium) applies to the greater part of the country, but not to Madras Presidency, the Punjab, or Lower Burma. The total death-rate of 29·10 per 1000 is slightly lower than that of the preceding quinquennium (30·08). Considerably more than half the deaths (17·13 per 1000) are returned under the head of "fevers," a very vague term. The highest mortality ratio occurred in the Central Provinces and Berar (39·95), the lowest (21·90) in Madras Presidency. Cholera prevailed in the Central Provinces (2 82 deaths per 1000), Bihar and Orissa (2·60), and Assam (2·16); for the whole country the death ratio was 1·21 per 1000. Plague was most severe in Bombay Presidency (4·06 deaths per 1000) and in the Central Provinces (2·06). Taking India as a whole, it was a mild plague year.

The jail sickness and mortality ratios (594 admissions to hospital and 19·78 deaths per 1000) were somewhat in excess of the decennial averages of 584·4 and 19·11 (1906–15), and of those for 1915 (586·1 and 18·74 per 1000). There was great variation in the statistics of different jails: in Bengal the admissions to hospital were 1113·3 per 1000, in Madras they were only 262·8, and in Burma 301·0 per 1000. The death-rates also varied greatly between 60·72 in the North-West Frontier jails and 13·18 in Madras. In Assam jails the improvement has been most marked; for the decade 1906–15 the mortality had averaged 36·87 per 1000; in 1916 it was only 18·97. Sanitary improvements are in progress at Delhi, now the capital of India, and the municipal boundaries of the city have been extended. Pathological and research work in various directions is carried out at the Central Research Institute and at the various Pasteur Institutes, the King Institute, Madras, and the Bombay Bacteriological Laboratory.

This valuable report is submitted by Major F. Norman White, C.I.E., I.M.S., Officiating Sanitary Commissioner with the Government of India, who succeeded Major W. W. Clemesha, I.M.S., in 1917.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Coming Congress of Surgery.

THE Twenty-seventh French Congress of Surgery will meet in Paris from Oct. 7th–10th next in the large amphitheatre of the Faculty of Medicine. Three subjects appear on the agenda, but on this occasion without preliminary abstract—viz.: (1) extraction of intrathoracic projectiles; (2) treatment and remote results of gunshot lesions of the nerves by projectiles; (3) esquillectomy and repair of bony loss.

Serum-therapy of Gas Gangrene.

At the same time that Professor Vincent acquainted the Academy of Science with his discovery of a new preventive serum for gas gangrene the Society of Surgery took a keen interest in the question and several communications were made to it upon the subject. M. P. Duval and M. Vaucher employed at one and the same time on a series of patients three serums, prepared from the bacterial agents commonly met with in this deadly complication—viz., *B. perfringens*, *B. œdematiens*, and the septic vibrio. The serums were prepared at the Pasteur Institute by M. Weinberg and M. Séguin. The injections were first made in the case of 50 men whose wounds seemed most likely to incur the danger of gangrene, and were administered on an average 5–6 hours after receipt of the wound, occasionally 10, 12, or even 18 hours after. None of these cases contracted gas gangrene; 25 died in the first 24 hours owing to the severity of the injury, but without sign of gangrene. None of those who recovered had symptoms of gangrene. After the battle of Flanders 37 men were treated in similar wise on an average 16 hours after being wounded. The three serums were injected at the same time in equal doses of 10–30 c.cm. A first group of 21, whose wounds, though grave, were in good condition, recovered without incident. Another series, who did not arrive at the field hospital until 20 hours after being wounded and whose wounds were already copiously infected, gave the following result: 2 deaths from streptococcal septicæmia without gas gangrene; 4 with wounds in very bad condition in which gas gangrene developed, of which 2 died, and 2 recovered after fresh injections of serum; 2 more seriously wounded and inoperable on arrival who died in spite of large injections. These two authors concluded in favour of the method, used as a complement to surgical operation. Professor Delbet reported on a case of antigangrenous serum-therapy with recovery in the case of a patient reaching hospital with gangrene of 24 hours' duration. He is satisfied that serum-therapy on the lines described is a most effective measure. M. Veau and M. Baudet reported each a similar case. M. Rouvillois has employed serums prepared from *B. bellonensis* and the septic vibrio. Among 12 cases of gangrene not treated with serum only one recovery occurred, and that one following operation; 25 other cases were treated with serum, of which 5 died of wounds without evidence of gangrene, while of the remaining 20 14 recovered and 6 died.

Aviators' Heart.

M. G. Etienne and M. Lamy, of Nancy, have systematically examined with the aid of radioscopy the hearts of a series of aviators, finding evidence of the existence of considerable hypertrophy. The hypertrophy sets in early, being demonstrable after five months of flying, and persists even in the case of aviators who had long ceased to fly. Its degree is roughly proportional to the altitude habitually reached. Simple examination on the screen serves to distinguish between chasers and bombers flying at 5000–6000 metres, and pilots and machine-gunners keeping within the 1000–3000 metre limit. The hypertrophy is progressive, beginning with a phase of rapid development, remains of moderate degree, and involves principally the left ventricle. Compensation nearly always remains perfect. The maximum tension is slightly raised in proportion to the increased muscular strength of the heart; the minimum tension remains normal. This cardiac hypertrophy is practically a physiological adaptation brought about by the effort of the heart to adapt itself to circulatory modifications, especially those of vascular pressure, determined by the varying conditions of the atmosphere crossed in flight, and by the incidents of aviation in general.

August 19th.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions and donations to the Fund have been received during the week ending August 17th:—

	£	s.	d.
Dr. Alfred Cox (monthly)	1	1	0
Lt.-Col. W. M. Dawson, R.A.M.C.	2	2	0
Dr. S. W. Carruthers ...	1	1	0
Dr. F. S. Palmer	2	2	0
Messrs. Steel Brothers and Co., Ltd.*	105	0	0
Sir James Barr	5	5	0
Staff-Surg. W. Kenneth Wills, R.N.V.R.	5	0	0
Messrs. Burroughs Wellcome and Co.	100	0	0
Dr. H. E. Belcher	2	2	0
Dr. L. B. Poole	2	2	0
Dr. J. R. Keith	1	0	0
Capt. H. E. H. Oakeley, S.A.M.C.	10	0	0
Capt. R. M. Stewart, R.A.M.C.	1	1	0
Dr. Percy Hughes† ...	3	3	0
Dr. W. H. Rowlands† ...	2	2	0
Dr. C. L. Hawkins† ...	2	2	0
Dr. Ambrose†	2	2	0
Dr. Williams†	1	1	0
Dr. Coaker†	1	0	0
Mr. Beilby†	1	1	0
Small sums†	0	11	0

* Per Dr. Herbert Spencer.

† Collected by Dr. Cameron Kidd.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

A. Patton to be temporary Surgeon.

ROYAL NAVAL MEDICAL RESERVE.

To be temporary Dental Surgeons: J. G. Townsend, W. G. Bowie, G. K. MacLennan.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. W. Bennett to be temporary Colonel whilst employed as Assistant Director of Medical Services of a Division.

Temp. Major A. Chartres to be acting Lieutenant-Colonel while in command of a Medical Unit.

Major J. A. Anderson to be temporary Lieutenant-Colonel whilst specially employed.

Temp. Major A. W. Nuthall (Capt., R.A.M.C. (T.F.)) relinquishes his temporary commission on re-posting.

H. E. Durham to be temporary Major whilst specially employed.

R. S. Turton and T. W. Shaw to be temporary Majors.

Temporary Lieutenants to be temporary Captains: G. A. Ticehurst, H. Holt, J. Raffan.

Late temporary Captains granted the honorary rank of Captain: T. MacHardy, H. W. Ward, J. H. Paterson, L. M. Davies.

To be temporary Captains: A. M. Ross, W. Edgecombe, E. F. Buckler, J. McI. Falkiner, J. B. O. Richards (late Captain, Devon Regt.), Hon. Capt. M. R. MacKay, D. Cotterill, G. Birch, Hon. Capt. V. M. Fisher, O. G. Morgan, J. A. Hadfield, R. L. Moorhead (late Surgeon-Captain, Yeo., T.F.), temp. Lieut. R. A. Attridge.

Temp. Hon. Lieuts. J. F. Harvey and J. V. Ricci to be temporary Honorary Captains.

To be temporary Lieutenants: A. C. Brown, W. N. Leak, C. J. L. Palmer, C. V. Macnamara, R. Price, J. Butterworth, J. Paxton, E. H. Milson, O. H. Woodcock, P. C. MacRobert, J. Clarke, J. Good, Z. M. H. Ross, T. S. Macaulay, J. M. Reid, G. H. Dunn, J. C. Carr, F. McF. Fellows, G. Smith, H. S. Roberts, C. M. Smith, W. G. MacArthur, V. D. Pennefather, I. Clarke, L. P. MacK. Gardner, N. B. Benjafield, A. G. L. Smith, R. M. Rendall, J. McClellan, B. D. Merrin, J. L. Phibbs, J. A. Aitken, B. Blacklock, A. P. Mitchell, R. Clark, G. H. Dart, O. Marriott, S. McClure, J. C. Warrick, G. B. Woodroffe, A. E. Hodgkins, H. P. Fairlie, R. W. Gilmour.

S. A. Moor to be temporary Honorary Lieutenant.

V. P. G. Pedrick, late temporary Lieutenant, to be honorary Lieutenant.

Temp. Lieut.-Col. R. B. Graham (Lieut.-Col., ret., T.F.) relinquishes his temporary commission.

Officers relinquishing their commissions: Temp. Majors H. C. T. Langdon and S. R Scott. Temp. Capts. H. J. Norman, A. McP. Warner, W. Clow (on appointment under the Ministry of National Service), A. Paterson, W. J. Macdonald, H. F. MacKendrick, O. De Muth, J. B. Anderson, H. G. Coulthard, T. H. Crews, S. Waddell, R. R. Scott, E. H. Lawson, S. H. Calnek, C. G. Sutherland, H. B. Lawson, A. M. Cowie, G. M. DeVine, D. S. Page (on account of ill-health and are granted honorary rank of Captain), W. C. Mayo, R. H. Dix and R. P. Kennedy (on account of ill-health contracted on active service and are granted the honorary rank of Captain), J. Mitchell (on account of ill-health caused by wounds received in action). Temp. Lieuts. R. J. Archibald and W. M. Hume (on account of ill-health and are granted the honorary rank of Lieutenant), and G. S. Ewen.

SPECIAL RESERVE OF OFFICERS.

Lieutenants to be Captains: C. C. Chesterman, J. C. Collins, W. I. FitzG. Powell, C. G. Irwin, J. B. S. Lewis, T. H. McLeod, A. G. E. Wilcock, C. V. Pink, H. W. Leatham, W. G. Woolrich, C. K. Mowll, H. J. C. Churchill, A. O. Bolton, D. Cameron, A. Rose-Innes, J. P. Williams, J. Rowland, H. Gainsborough, R. S. Corbett, I. Braun, R. L. Robinson, J. H. Wiseman, H. G. V. Mence, T. W. Shaw, J. W. Bowman, C. A. Harvey, J. Irvine, J. Kinnear, F. J. Charlton.

Capt. M. W. H. Miles relinquishes his commission on account of ill-health and is granted the honorary rank of Lieutenant.

M. Jackson and G. P. W. Staunton (from University of London Contingent, O.T.C.) to be Lieutenants

D. O. Macdonald to be Lieutenant.

TERRITORIAL FORCE.

Temp. Hon. Lieut.-Col. E. W. White to be temporary Lieutenant-Colonel.

Major E. J. Maclean to be acting Lieutenant-Colonel whilst specially employed.

Major A. F. Fergus relinquishes his commission on account of ill-health and is granted the honorary rank of Major.

Capt. G. M. A. Thomas relinquishes his commission on account of ill-health and is granted the honorary rank of Captain.

Capts. L. A. Avery and R. Thornton to be Majors.

Capt. (Brevet-Major) C. H. S. Frankau is seconded whilst holding a temporary commission in the R.A.M.C.

Capt. W. A. Phillipps relinquishes his commission on account of ill-health and is granted the honorary rank of Captain.

Capt. W. C. Hodges to be acting Major whilst specially employed.

Capt. (acting Major) L. Milton relinquishes his acting rank on ceasing to be specially employed.

L. F. Wallis, A. R. Ward, A. W. Bartlett, E. Jones, and F. Rae, to be Lieutenants.

Temporary Captains relinquishing their commissions: F. N. B. Smartt, J. Tichborne, R. J. Morgan, H. Whitwell, and P. S. MacLaren, who is granted the honorary rank of Captain.

Temp. Lieut. F. H. R. Heath relinquishes his commission.

Lieut. J. Jackson to be Captain.

Attached to Units other than Medical Units.—Capt. J. D. Wells to be a Deputy Assistant Director of Medical Services, and to be acting Major whilst so employed.

ROYAL AIR FORCE: *Medical Branch.*

H. J. Leviseur (late temp. Surgeon, R.N.), C. L. Birmingham (late temp. Lieutenant, R.A.M.C.), H. L. H. Greer (late Captain, R.A.M.C.) are granted temporary commissions as Captains.

The undermentioned are granted temporary commissions as Lieutenants: N. Homewood, R. G. J. McCullagh, S. A. Nield-Faulkner, P. C. Parr, N. Rumboll, G. Meadows, T. Montgomery, V. A. Spong.

INDIAN MEDICAL SERVICE.

Col. C. R. M. Green has been appointed to succeed Col. Robinson as Inspector-General of Civil Hospitals in the Central Provinces.

Lieut.-Col. A. D. Jameson, R A.M.C., has been appointed to succeed Major F. W. W. Dawson, R.A.M.C., Commandant of the Rangoon Station Hospital, who has left Rangoon on transfer in command of a hospital ship.

Major N. Walker, Professor of Medicine at the King George's Medical College, Lucknow, has been posted to Mussoorie as Civil Surgeon; Major J. W. D. Megaw, the Principal of the College, will act as Professor of Medicine in addition to his other duties.

Major R. A. Needham has been appointed Assistant Director-General (Sanitary) at Headquarters, and Major H. Ross succeeds him as Assistant Director-General (Stores).

Lieut.-Col. S. C. Evans has been appointed to act as Principal, Grant Medical College, in addition to his own duties.

URBAN VITAL STATISTICS.

(Week ended August 17th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had steadily declined from 21·1 to 10·4 in the five preceding weeks, was again 10·4 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 9·8, or 0·7 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 4·9 in Carlisle, 5·0 in Wallasey, and 5·1 in Hornsey, to 17·3 in St. Helens, 18·5 in West Hartlepool, and 25·0 in Barnsley. The principal epidemic diseases caused 289 deaths, which corresponded to an annual rate of 0·9 per 1000, and included 168 from infantile diarrhœa, 39 each from measles and whooping-cough, 31 from diphtheria, 8 from scarlet fever, and 4 from enteric fever. During the past five weeks the deaths from

diarrhœa have shown a progressive increase, but were below the numbers recorded in the corresponding period of last year. The 739 cases of scarlet fever and 903 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 7 and 1 below the respective numbers remaining at the end of the previous week. Of the total deaths in the 96 towns 116 resulted from violence. The causes of 33 deaths were uncertified, of which 8 were registered in Liverpool and 5 in Birmingham.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 10·0, against 13·1 and 11·8 per 1000 in the two preceding weeks. The 233 deaths in Glasgow corresponded to an annual rate of 10·9 per 1000, and included 27 from infantile diarrhœa, 6 from whooping-cough, and 3 from diphtheria. The 51 deaths in Edinburgh were equal to a rate of 8·0 per 1000, and included a fatal case each of whooping-cough and diphtheria.

Irish Towns.—The 135 deaths in Dublin corresponded to an annual rate of 17·6, or 2·3 per 1000 above that recorded in the previous week, and included 22 from infantile diarrhœa, 2 from whooping-cough, and 1 from enteric fever. The 118 deaths in Belfast were equal to a rate of 15·7 per 1000, and included 13 from infantile diarrhœa, and 1 each from enteric fever and whooping-cough.

VITAL STATISTICS OF LONDON DURING JULY, 1918.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 3·5 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 3·9, 4·1, and 4·5 per 1000. The lowest rates in July were recorded in Chelsea, the City of Westminster, Hampstead, Islington, Stoke Newington, Holborn, and Wandsworth; and the highest rates in Shoreditch, Bethnal Green, Stepney, Southwark, Bermondsey, and Greenwich. One case of small-pox was notified during the month, against 5, 21, 4, 3, and 0 in the five preceding months; this case belonged to Islington. The prevalence of scarlet fever was about 15 per cent. less than in the preceding month; this disease was proportionally most prevalent in Kensington, Finsbury, Shoreditch, Southwark, and Deptford. The Metropolitan Asylums Hospitals contained 753 scarlet fever patients at the end of the month, against 898, 786, and 846 at the end of the three preceding months; the weekly admissions averaged 105, against 105, 129, and 127 in the three preceding months. The prevalence of diphtheria was about 25 per cent. less than in the preceding month; the greatest proportional prevalence of this disease was recorded in the City of London, Shoreditch, Bethnal Green, Stepney, Southwark, Bermondsey, and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1358, 1232, and 1179 at the end of the three preceding months, numbered 918 at the end of July; the weekly admissions averaged 122, against 143, 202, and 165 in the three preceding months. The prevalence of enteric fever was slightly less than in the preceding month; of the 35 cases notified in July, 4 belonged to Hammersmith, 4 to Fulham, 3 to St. Marylebone, 3 to Hackney, and 3 to Lambeth. There were 23 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 23, 32, and 40 at the end of the three preceding months; the weekly admissions averaged 4, against 3, 5, and 6 in the three preceding months. Erysipelas was proportionally most prevalent in St. Marylebone, Shoreditch, Bethnal Green, Poplar, Southwark, and Camberwell. The 12 cases of puerperal fever included 5 in Lambeth. Of the 18 cases of cerebro-spinal meningitis 3 belonged to Battersea, 2 to Poplar, and 2 to Wandsworth; while of the 7 cases of poliomyelitis 2 belonged to St. Marylebone and 2 to Bermondsey.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the five weeks ended August 3rd the deaths of 5724 London residents were registered, equal to an annual rate of 14·8 per 1000; in the three preceding months the rates had been 17·1, 13·7, and 11·8 per 1000. The death-rates ranged in July from 9·9 in Wandsworth, 10·0 in Lewisham, 10·8 in Hampstead, 11·6 in the City of London, 12·0 in Kensington, and 12·1 in Paddington, to 18·0 in Greenwich, 18·6 in Finsbury, 19·1 in Bethnal Green, 19·9 in Bermondsey, 20·4 in Holborn, and 21·4 in Southwark. The 5724 deaths from all causes included 376 which were referred to the principal infectious diseases; of these, 139 resulted from measles, 13 from scarlet fever, 48 from diphtheria, 129 from whooping-cough, 4 from enteric fever, and 43 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded during the month in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Kensington, Hammersmith, Deptford, and Lewisham; and the highest in Finsbury, Bethnal Green, Southwark, Bermondsey, Lambeth, and Greenwich. The 139 deaths from measles were 34 above the average number in the corresponding period of the five preceding years; this disease was proportionally most fatal in Fulham, St. Pancras, Bethnal Green, Southwark, Bermondsey, Lambeth, and Greenwich. The 13 fatal cases of scarlet fever were 4 below the average number, and included 4 in Lambeth, 2 in Kensington, and 2 in Southwark. The 48 deaths from diphtheria exceeded the average number by 2, and included 6 in Stepney, 5 in Islington, 4 in St. Pancras, 4 in Lambeth, 4 in Camberwell, and 3 in Hackney. With the exception of the preceding month, the mortality from whooping-cough was considerably lower than in any other month of the year, the deaths numbering 129 against an average of 58; this disease was proportionally most fatal in Paddington, Fulham, Finsbury, and Southwark. The 4 deaths from enteric fever were 6 less than the average; of these 2 belonged to Camberwell. The 43 fatal cases of diarrhœa and enteritis among children under 2 years of age were less than a third of the average; 5 deaths belonged to Bermondsey, 4 to Islington, and 3 each to Kensington, Southwark, Wandsworth, Camberwell, Greenwich, and Woolwich. In conclusion, it may be stated that the aggregate mortality in London in July from these principal infectious diseases was 3 per cent. below the average.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JULY, 1918.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1917.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.								Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON...	4,026,901	1	535	599	—	35	1	12	142	18	7	1350	3·5	—	139	13	48	129	4	43	376	1·0	5724	14·8
West Districts:																								
Paddington	122,507	—	8	23	—	1	—	1	3	—	—	36	3·1	—	2	—	1	7	—	—	10	0·9	142	12·1
Kensington	151,535	—	31	6	—	1	—	—	3	1	—	42	2·9	—	1	2	—	1	—	3	7	0·5	174	12·0
Hammersmith ...	114,952	—	11	11	—	4	—	1	3	—	—	30	2·7	—	—	—	—	3	—	2	5	0·5	167	15·2
Fulham	145,186	—	21	11	—	4	—	—	4	—	—	40	2·9	—	7	—	1	8	1	—	17	1·2	184	13·2
Chelsea	57,368	—	4	1	—	1	—	1	1	—	—	8	1·5	—	2	—	—	2	—	—	4	0·7	75	13·6
City of Westminster	122,046	—	3	5	—	1	—	—	3	1	—	13	1·1	—	2	1	1	3	—	1	8	0·7	157	13·4
North Districts:																								
St. Marylebone ...	92,796	—	6	15	—	3	—	1	5	—	2	32	3·6	—	1	—	2	2	—	—	5	0·6	138	15·5
Hampstead	75,649	—	3	11	—	2	—	—	1	—	—	17	2·3	—	—	—	1	3	—	—	4	0·6	78	10·8
St. Pancras	186,600	—	24	35	—	—	—	—	7	1	—	67	3·7	—	15	—	4	5	—	—	24	1·3	294	16·4
Islington	297,102	1	21	34	—	2	—	—	9	1	—	68	2·4	—	2	—	5	11	—	4	22	0·8	452	15·9
Stoke Newington...	47,426	—	2	3	—	—	—	—	—	1	—	6	1·3	—	1	—	—	1	—	1	3	0·7	57	12·5
Hackney	196,598	—	14	24	—	3	—	—	6	1	—	48	2·5	—	1	—	3	5	1	2	12	0·6	252	13·4
Central Districts:																								
Holborn	35,303	—	4	4	—	—	—	—	—	—	—	8	2·4	—	1	—	1	1	—	1	4	1·2	69	20·4
Finsbury	68,011	—	13	7	—	—	—	—	—	—	—	20	3·1	—	3	—	—	6	—	1	10	1·5	121	18·6
City of London ...	16,138	—	—	4	—	—	—	—	—	—	—	4	2·6	—	—	—	—	—	—	—	—	—	18	11·6
East Districts:																								
Shoreditch	89,675	—	19	26	—	—	—	—	8	—	—	53	6·2	—	—	—	2	3	—	2	7	0·8	148	17·2
Bethnal Green ...	107,362	—	19	31	—	1	—	1	5	—	—	57	5·5	—	6	—	1	5	—	2	14	1·4	197	19·1
Stepney	232,010	—	35	69	—	—	—	—	8	1	—	113	5·1	—	8	1	6	3	—	1	19	0·9	372	16·7
Poplar	143,443	—	13	23	—	1	—	—	6	2	—	45	3·3	—	3	—	1	3	—	1	8	0·6	223	16·2
South Districts:																								
Southwark	167,936	—	85	39	—	1	1	1	14	—	—	141	8·8	—	16	2	2	9	—	3	32	2·0	345	21·4
Bermondsey	107,635	—	14	25	—	1	—	—	4	1	2	47	4·6	—	18	1	2	1	—	5	27	2·6	205	19·9
Lambeth	272,038	—	41	28	—	3	—	5	9	—	—	86	3·3	—	19	4	4	9	—	1	37	1·4	404	15·5
Battersea	150,023	—	18	19	—	—	—	—	6	3	1	47	3·3	—	6	1	2	7	—	—	16	1·1	206	14·3
Wandsworth	300,787	—	39	17	—	2	—	1	9	2	—	70	2·4	—	2	—	1	11	—	3	17	0·6	286	9·9
Camberwell	239,461	—	21	41	—	—	—	—	15	1	—	78	3·4	—	10	—	4	7	2	3	26	1·1	354	15·4
Deptford	103,527	—	21	17	—	2	—	—	3	—	—	43	4·3	—	1	1	—	1	—	1	4	0·4	125	12·6
Greenwich	90,440	—	15	20	—	1	—	—	2	1	1	40	4·6	—	5	—	2	4	—	3	14	1·6	156	18·0
Lewisham	161,405	—	7	28	—	—	—	—	4	—	1	40	2·6	—	5	—	1	2	—	—	8	0·5	154	10·0
Woolwich...	131,942	—	23	22	—	1	—	—	4	1	—	51	4·0	—	2	—	1	6	—	3	12	0·9	171	13·5
Port of London ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

Correspondence.

"Audi alteram partem."

THE FUTURE OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—I am not sure that it is worth while my discussing with Mr. Charles Parker what was the exact position of "the extreme Left party" in medical politics a few years ago. We may take it, however, that Mr. Parker, as an officer of the State Medical Service Association, is an authority on the present position of the party, and I am bound to say that its position, as stated in his letter to you last week, seems less logical and less practical than that which I assigned to it in my recent address on Medicine and the State. In pleading for more satisfactory relations between general practitioners and consultants I pointed out that "competition and coöperation cannot go hand in hand." Mr. Parker seizes on this phrase, states that it expresses a truism of universal application, and claims as a chief advantage of his party's ideals that they will completely abolish competition. But surely if it is now proposed to allow each medical man upon qualification to choose between becoming a whole-time servant of the State or a private practitioner, there will indeed be introduced between these two sections of the profession a very fierce form of competition. How otherwise indeed than by competition to the uttermost is Mr. Parker's belief "that private practice would then die a natural death" to be fulfilled? So long as man is allowed to be possessed of private property and to have any option in its disposal, large numbers of individuals will undoubtedly desire to make use of their wealth in order to purchase the private advice of such medical men as are allowed to compete for practice with the State Medical Service. If the extreme Left party desires to eliminate this form of competition it will be necessary to absorb into the State service every practitioner as and when he is qualified and to protect the service by making it illegal for any other persons to practise medicine.

The policy of the "extreme Left party," as re-stated by Dr. Benjamin Moore and Mr. Parker, is to abolish competition, and they believe that a whole-time salaried service will secure this. But will it? Does it do so in other whole-time salaried services? Is there not competition for more honourable or better paid whole-time jobs? Might there not be competition for less responsibility and lighter work? Might not a salaried doctor by cultivating the smiles of his Administrative Board instead of his patients compete with his fellows for early promotion? Might he not by want of sympathy and indifference to his troublesome patients and by constant reference to a higher authority compete with his more conscientious colleagues for ampler leisure to devote to scientific research or even to recreation? Elimination of competition is a party shibboleth, which, human nature being what it is, is not within our capacity to attain. In our present attempt to reconstruct medicine we shall be seriously handicapped if we follow any such will-o'-the-wisp. Let us by all means endeavour to eliminate obviously evil forms of competition such as underselling, profiteering, and qualified quackery, but let us recognise that amongst the most honest and honourable men there must always exist varying powers which may justifiably be used to increase one's opportunity of useful service.

My contention that coöperation and competition cannot go hand in hand as the basis of the relationship between consultants and general practitioners is founded on actual experience of everyday conditions. Few general practitioners will deny that they are constrained from seeking specialist advice for their patients, on every occasion when they would value it, by the fact that most specialists undertake independent, as well as consultative, practice, and thereby place themselves in competition with general practitioners. Few specialists will deny that they would prefer always to act in coöperation with a general practitioner, if by so doing their professional time were sufficiently occupied and an adequate income could be earned. To admit that a mixture of coöperation and competition between these two sections of the profession does not make for the public good, and to urge that in any scheme of reconstruction an attempt should be made to eliminate the competition, is not the same thing as asserting that all professional competition is undesirable. The belief that by proper organisation competition between consultants and general practitioners could be eliminated does not commit one to the proposition that in our present stage of civilisation the total abolition of competition is praticable. Even if total abolition of competition were practicable and desirable a whole-time salaried service would not secure it.

I am, Sir, yours faithfully,

August 11th, 1918. LAURISTON E. SHAW.

40 D.

To the Editor of THE LANCET.

SIR,—The powerful leading article which you publish in your number of August 17th on the subject of 40 D must convince everyone that the maintenance of the law as it at present stands is undesirable. It does not therefore follow that no attempt should be made to attain the object of 40 D by other means; indeed, such an attempt appears imperative in the interest of public health. May I suggest an alternative?

You state that some clinicians go so far as to regard the cure of gonorrhœa in the female as impossible and that the difficulty of a cure is admitted by all. Surely, this leads to the conclusion that we must aim at prevention and not cure. At the present moment facilities for prophylaxis are established for soldiers and very large sections of the male population, and these have diminished in a greater or lesser degree the danger of infection, but in the case of women such facilities either do not exist or are not availed of to any material extent. Are not women entitled to at least equal facilities for the prevention of infection? Indeed, arguing the matter from the national health standpoint, it would be easy to contend that facilities for them should not be equal but greater, as cure in their case is infinitely more difficult, while the presence of disease constitutes among certain classes an infinitely greater danger to the community. It is no argument against this procedure to say that its success will render promiscuous intercourse less dangerous for men, for this result would occur in all events which improve the general exemption from disease.

The main cause of failure, up to recent years, of all attempts to solve the drink problem was the fact that reformers mixed up physiology and morality, and judged physiological measures in the coloured light of their supposed moral effect. Let us not make the same mistake in the case of the venereal diseases. Morality and physiology have both their claims, but they must be treated separately and not in confused conjunction.

I am, Sir, yours faithfully,

August 20th, 1981. X. Y. Z.

HARVEY AND THE PLACE OF PATHOLOGY IN MEDICINE.

To the Editor of THE LANCET.

SIR,—The present-day inadequate instruction in pathology would have been criticised by Harvey. In the first of his Anatomical Exercitations concerning the Circulation of the Blood Harvey says:—

> "And I dare say the opening and dissection of one consumptive person, or of a body spent with some ancient or venomous disease, has more enriched the knowledge of physick than the dissections of ten bodies of men that have been hanged."

This dictum of Harvey, which might well serve for the text of a Harveian orator, has not, so far as I know, received the attention which it deserves. It occurs in a letter to John Riolan, professor and dean of anatomy in the University of Paris, expressing the desire which the publication of Riolan's "Encheiridion" had excited in Harvey to put forth a work on medicinal anatomy similar to Riolan's "Treaties concerning Anatomy and Diseases." Amongst other things, Harvey says, in close connexion with this, that "from pathology the use and art of administering physick, and occasions of inventing many new remedies do occur."

It is clear even at this time, in about 1650, that the man whom Harvey calls "the Prince of Dissectors of Bodies," and the discoverer of the circulation of the blood were at one as to the importance of pathology to the practitioner of

medicine, without depreciating the necessity of a knowledge of anatomy and physiology, but certainly does not place pathology behind them, when he makes this comparison. Indeed, this would seem to be a truism which one would have thought no teacher of any portion of the medical curriculum would have denied, yet it is often denied by the self-styled "pure physician." Even a layman such as Francis Bacon saw this, and in his philosophical work on the Advancement of Science (Bk. II., X. 5) he says:—

"In the enquiry which is made by anatomy (that is, by post-mortem examination), I find much deficience: for they enquire of the parts and their substances, figures, and collocations; but they enquire not of the diversities of the parts, of the secrecies of the passages and the seat or nestling of the humours, nor much of the footsteps and impressions of diseases. And for the humours, they are commonly passed over in anatomies as purgaments, whereas it is most necessary to observe what cavities, nests, and receptacles the humours do find in the parts with the differing kind of humour so lodged and received. And as for the footsteps of diseases.....they ought to have been exactly observed by a multitude of anatomies and the contribution of men's several experiences. ..... I will not doubt to note as a deficience that they enquire not the perfect cures of many diseases, or extremities of diseases, but pronouncing them incurable do enact a law of neglect, and exempt ignorance from discredit."

These words of Bacon apply especially to the so-called practical pathology as taught nowadays, in which considerable attention is paid to staining methods and the examination of microscopic sections, while true experimental pathology is hardly taught at all. In fact, I doubt whether there are any teachers of pathology who are aware of the possibilities of instructing the student in experimental pathology by the use of decerebrate animals. To those unaware I would suggest that they should study the course of experimental physiology as carried out in the University of Oxford, and would counsel them to adapt it to the course of experimental pathology.

But even at the present time there are several learned institutions in which the time devoted to the teaching of pathology is hopelessly insufficient, and proposals for its increase meet with opposition, and consideration of the matter is deferred for the duration of the war, as if the war could make any difference as to the amount of teaching required in any particular subject. One might as well defer all alterations in teaching until the war is over on this line of argument. That would be recognised as an obviously silly proposition, yet the other is on a level with it.

Some years ago I took the trouble to inquire of various universities the amount of time which was devoted to the teaching of this subject. The result obtained was approximately as follows:—

Leeds	120 hours.	Cambridge ...	200 hours.†
Liverpool	140 ,,	Birmingham ...	220 ,,
Guy's Hospital	160* ,,	Oxford	250 ,, about.
Manchester	170 ,,	Edinburgh ...	300‡ ,, ,,
Glasgow...	180 ,,		

* Plus extra for University candidates. † For Part I. pathology only.
‡ Two hours daily during three terms.

It was difficult to ascertain the amount of time spent in the dead-house, and it seemed occasionally not to be actually, even if it was nominally, compulsory.

In other medical subjects at Leeds (I quote Leeds as being the University with which I am best acquainted):—

Physiology ...	310 hours.	Surgery*	900 hours.
Anatomy	800 ,, about.	Gynæcology*	450 ,,
Medicine*... ...	900 ,,	P.M.	50 ,,

* Exclusive of school lectures.

Roughly, the estimation in which the degrees of these bodies are held may be said to be in proportion to the time spent on pathology.

In estimating the value of Harvey's opinion in this matter it is to be remembered that he was professor of anatomy and surgery at the Royal College of Physicians and also physician to the King, and consequently of considerable clinical experience and practice. Conversely, many physicians of repute have also been expert pathologists—for instance, Addison, Bright, Moxon, Goodhart, Bristowe, and many others.

If we regard, as Harvey also does, physiology as the science of health and pathology as the science of disease, there does not appear to be any reason why more time should be devoted to the former than to the latter in the medical curriculum. Nor is there any reason why the *art* of medicine should receive such a comparatively excessive amount. I mean by that excessive beyond the *science* of disease; it is not excessive for what is required, as seen by the above table. Inasmuch as pathology covers a similar area of knowledge as physiology or anatomy, there is no ground for supposing that the acquisition of this necessary knowledge would take less time in one case than in the other.

I plead, then, for more extended teaching of the subject which Harvey calls "the doctrine of diseases" (i.e., pathology) "by which actions of the body are hurt." "In this range sickness and its causes and accidents are handled, but the physician performeth his cure by preserving health and restoring it (if it so please God) when it is lost."

I am, Sir, yours faithfully,

August 10th, 1918. A. S. LEYTON.

WAR DEAFNESS.

To the Editor of THE LANCET.

SIR,—In your last issue Major Hurst, R.A.M.C., has criticised the article by Dr. Logan Turner and myself on "War Deafness." Nothing would please me more than to find that we have been unduly pessimistic, but, on the other hand, nothing adduced by Major Hurst has in the smallest degree affected my belief in the accuracy of the conclusions we have arrived at by clinical study of a large number of cases.

Major Hurst says, "My own 'opportunities of studying ear diseases' before the war were fortunately nil, and I was therefore able to face the problem of war deafness with an unprejudiced mind." Now from his letter I much fear that he has not studied the question from a scientific point of view even now, and that, as a consequence, his mind has remained not only unprejudiced but uninformed. To be perfectly candid, it occurred to me on first reading his letter that it required no reply, because it consisted of statements resting not upon the production of a definite series of properly observed cases but upon an *ipse dixit* and a certain number of inaccuracies. On consideration, however, it suggested itself to me that some of your readers might not compare our original paper with Major Hurst's letter, and might in consequence be influenced by the views he has expressed, so for this reason it has seemed necessary to reply.

To put the matter briefly, general statements are not of the slightest value in a controversy of this kind, and unless Major Hurst is able to produce a series of cases in support of his views these views will remain valueless. If and when he does so we shall all no doubt be prepared to give them the attention they deserve.

If he will consult otological literature Major Hurst will be able to convince himself of the fallacy of his statement that "it is very unlikely that the cochlea should be so damaged that complete deafness results without the adjacent semicircular canals being affected." I fear that his criticism of our two cases in which he has arrived at a diagnosis of hysterical deafness is rather characteristic of his methods. In one of them the injury which produced the deafness (Case 1, Group D) caused perforation of the tympanic membrane as well as a concussion lesion of the cochlear apparatus. Does he then think that the objectively demonstrable middle-ear suppuration was also hysterical, and if not, why not? Of course, I do not deny that hysterical deafness may occur in soldiers who have been exposed to shelling, only I believe it to be rare, and I hold that the cases recorded by Dr. Logan Turner and myself have proved that vestibular tests are not of great value in diagnosing between functional and organic deafness.

I am, Sir, yours faithfully,

Edinburgh, August 18th, 1918. P. MCBRIDE.

THE DISAPPOINTMENTS OF VACCINE THERAPY.

To the Editor of THE LANCET.

SIR,—I have read without surprise Dr. H. G. Adamson's paper with the above title in your issue of August 10th. His disappointment in the therapeutic results of vaccine therapy is, from the quotations he gives, evidently shared by Sir Almroth Wright, and, indeed, is general amongst those who follow the orthodox method of administration.

I have frequently pointed out during the last 13 years the common causes of failure. Let me repeat them:—

1. Inadequate dosage.
2. The use of the wrong or bad antigen.
3. Bad spacing of the doses.
4. Very rarely, incapacity of the patient to react.

Dr. Adamson says he rarely cures a case of sycosis barbæ or of acne vulgaris. I very rarely fail to do so. I may say the same of gonorrhœa, gleet, and lupus. These last three are practically always mixed infections, so that a single antigen is not likely to succeed. I have had the most rapid and dramatic results in two cases of paratyphoid B and three of *B. typhosus* infection, but again not with the specific antigen alone; it is necessary to include the patient's *B. coli* as well.

As to the dangers of abnormal reaction they are chimerical, as they can be controlled by the exhibition of iodine.

I ask Dr. Adamson to read my book "Therapeutic Immunisation" and to try again. I shall be much surprised if he does not get greatly improved results. I always feel myself that if I fail it is generally my own fault, that I have missed some essential microbe or that I have failed to adapt my immunisation to the reactivity of the patient. I am not so foolish as to think that the use of vaccines precludes the use of other methods of treatment, on the contrary; but I know that by its means results can be attained which can be obtained by no other known method.

I am, Sir, yours faithfully,

University College, Dublin, August 17th, 1918. W. M. CROFTON.

TRANSIENT HEMIPLEGIA.

To the Editor of THE LANCET.

SIR,—Enjoying a brief holiday, I have only just read the clinical note and your annotation upon my case of transient hemiplegia. The cerebro-spinal fluid was not examined, as owing to the rapid recovery of the patient to a condition of good health one did not feel justified in pursuing a very active investigation. There are none of the usual evidences of arterio-sclerosis, although an interesting cardiac condition was verified by autopsy in the patient's father, who died at a comparatively early age.

If I may say so, this case illustrates fully the need of a better coördination of work, happily called "team-work" by Sir Bertrand Dawson in his recent and most opportune manifesto. Many of his suggestions were published in the memorandum of the London Local Medical and Panel Committee in June, 1917. Those ideas were dominant in the minds of those who, in 1912, urged the profession to accept the modified terms of the National Insurance Act as a first great instalment of State coöperation, as applied to civilian medical services. The principle of mutual aid which the words "team-work" so happily express seems to me the only hope for both humanity and civilisation.

I am, Sir, yours faithfully,

Studland, Dorset, August 20th, 1908. H. H. MILLS.

A NEW REFLEX SIGN IN SPASTIC PARAPLEGIA.

To the Editor of THE LANCET.

SIR,—In THE LANCET of June 1st last, on p. 777, there appeared an editorial note under the above heading. The sign has been described recently by Dr. Bing, the neurologist of Basle, and consists of *plantar* flexion of the ankle when the *dorsum* of the foot is struck at any point along an imaginary line between the malleoli. It is stated that the sign occurs constantly in organic spastic conditions of the lower extremities, and that Dr. Bing claims that this "paradoxical" Achilles jerk can be elicited in cases in which the more common reflex signs of spasticity from cortico-spinal impairment appear to be absent.

Since June 1st I have made a point of testing this sign in every one of a large number of patients and I have found that, whereas it is certainly present in the conditions mentioned above, it is present also in cases of non-organic disease in which the tendon-jerks are exaggerated, and also in a considerable proportion of cases which, to my examination, are neurologically normal.

The matter can readily be tested by everyone for himself, and I think that it will be found that the sign has not quite the significance which has been claimed for it by its distinguished describer and by the author of your note.

I am, Sir, yours faithfully,

HILDRED CARLILL, M.A., M.D., M.R.C.P.,
Neurologist to the Royal Navy; Assistant Physician, Westminster Hospital, &c.

R.N. Hospital, Haslar, August 17th, 1918.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. W. H. Lister, D.S.O., M.C., with bars, R.A.M.C., was a student at University College, London, and qualified in 1913. At the time of the outbreak of war he was holding an appointment at University College, which he at once resigned, and joined up. He saw service in France and in Italy, in which latter country he was killed. In the Balkan War he served as a dresser in the British Red Cross Unit with the Greek army, for which he was awarded the Balkan Medal. The awards of the D.S.O., the M.C., and bars were recorded in THE LANCET respectively of June 26th, 1915, p. 1373; Oct. 28th, 1916, p. 770; Dec. 2nd, 1916, p. 595; and Dec. 22nd, 1917, p. 951.

Capt. G. H. H. Almond, R.A.M.C., received his education at Loretto, at Oxford, and at St. Bartholomew's Hospital, London, and qualified in 1906. After holding appointments at St. Bartholomew's Hospital and at the West London Hospital, he practised at Bath, where he was honorary assistant pathologist at the Royal United and Mineral Water Hospitals. He served in the South African War in a combatant capacity.

Lieut.-Col. A. J. A. Menzies, D.S.O., R.A.M.C., qualified at Edinburgh in 1912, and joined the R.A.M.C. prior to the outbreak of war. At the time of his death he was in command of a cavalry field ambulance. The award of the D.S.O. was recorded in THE LANCET of Nov. 13th, 1915, p. 1112.

Capt. W. H. Lloyd, R.A.M.C., attached London Regiment, was a student at the Middlesex Hospital, London, and qualified in 1915. He joined up shortly afterwards.

Surg. L. A. Martin, R.N., was a student at University College Hospital, London, and qualified in 1912.

Previously Reported Missing, now believed Killed.

Capt. C. W. Bond, R.A.M.C., was a student at St. Mary's Hospital, Paddington, and qualified in 1901. A few years later he qualified in dentistry from the Royal Dental Hospital, London. He took part in the Boer War.

Died of Wounds.

Capt. R. C. Rogers, R.A.M.C., attached H.A.C., qualified at Edinburgh at the close of the year 1914. He held an appointment at the Royal Infirmary in that city prior to joining up.

Capt. M. A. McKechnie, Canadian A.M.C.

Capt. T. Whitmore, Canadian A.M.C.

Wounded.

Lieut.-Col. D. Donald, Canadian A.M.C.
Major J. Hughston, R.A.M.C.
Capt. I. M. Barrow, Australian A.M.C.
Capt. D. St. C. Campbell, Canadian A.M.C.
Capt. E. A. McCusker, Canadian A.M.C.
Capt. J. D. H. W. Barnett, Canadian A.M.C.
Capt. D. A. Morrison, Canadian A.M.C.
Capt. J. A. C. Scott, M.C., R.A.M.C., attd. Durham L.I.

Wounded and Prisoner in German Hands.

Capt. G. Perkins, R.A.M.C.

Previously reported Killed, now reported Prisoner in German Hands.

Lieut. A. M. Clare, R.A.M.C., attached Durham L.I.

Previously reported Missing, now reported Prisoners in German Hands.

Lieut.-Col. A. C. H. Gray, R.A.M.C.
Capt. R. M. Handfield-Jones, M.C., R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. J. H. Wybrants, London Regiment, died of wounds, only son of the late Dr. R. B. Wybrants, of Wincanton, Somerset.

Temp. Capt. T. P. Muspratt, M.C., Worcestershire Regiment, died of wounds, second son of Dr. C. D. Muspratt, of Bournemouth.

Lieut. (acting Major) R. H. Collyns, M.E., Royal Engineers, died of wounds, second son of Dr. R. G. Collyns, of Dulverton, Somerset.

Lieut. R. O. C. Macdonald, M.C., R.F.A., accidentally killed whilst flying in England, son of Dr. R. J. J. Macdonald, of Wuchow, China.

Capt. W. B. Young, R.A.F., accidentally killed whilst flying in England, only son of Dr. J. Young, of Earlston, Berwickshire.

T. S. Keith, Cameron Highlanders, killed in action, youngest son of the late Dr. A. D. Keith, of Aboyne, Aberdeenshire.

Surg. L. A. Martin, R.N., accidentally killed at sea, youngest son of Dr. E. F. Martin, of Weston-super-Mare.

Corp. K. A. Clark, killed in action, elder son of the late Dr. A. W. Clark, of Wisbech, Cambs.

Lieut. R. A. Edwards, West Yorkshire Regiment, died of wounds, youngest son of Lieut. E. H. Edwards, R.A.M.C., of Rochdale, and formerly of Tai Yüan Fu, China.

Capt. O. Horsley, M.C. and bar, Gordon Highlanders, attached R.F.C., killed whilst flying in England, youngest son of the late Sir Victor Horsley, of Cavendish-square, London.

THE HONOURS LIST.

The following are the statements of service for which the decorations recorded in THE LANCET of March 9th, 1918, p. 386, were conferred :—

Bar to the Military Cross.

Temp. Capt. GEORGE LESTOCK THORNTON, M.C., R.A.M.C.—For conspicuous gallantry and devotion to duty. After his two orderlies had been killed he continued to attend to the wounded with complete disregard for his personal safety.

Military Cross.

Temp. Capt. ROBERT DANIELS BELL, R.A.M.C.—For conspicuous gallantry and devotion to duty. On the battery positions being heavily shelled with gas shells one shell struck a dug-out occupied by three men, badly wounding two of them and gassing the third. This officer immediately proceeded to their assistance, extricated them from the débris, and proceeded to bind up their wounds, removing his own gas mask in order to see more clearly. The men were successfully evacuated to a dressing station, but he, unable to find his mask, became badly gassed. Despite this he persisted in carrying out his duties for some time until he had to be evacuated. His absolute lack of fear was undoubtedly the means of saving the lives of the three men.

BROUGHT TO NOTICE.

The names of the following medical officers have been brought to the notice of the Secretary of State for War for valuable services rendered in connexion with the war :—

Army Medical Service.—Surg.-Gen. W. S. M. Price.

Royal Army Medical Corps.—Lt.-Col. H. J. Barnes, R.P. (late R.A.M.C.); Temp. Capt. D. J. Bedford; Lt.-Col. U. J. Bourke; Temp. Capt. A. E. Boycott; Temp. Maj. F. S. Brereton; Temp. Capt. R. Bruce-Low; Capt. G. A. Child (T.F.); Temp. Capt. W. A. Clayton; Temp. Capt. F. Corner; Temp. Maj. W. B. Cosens; Temp. Capt. S. E. Denyer, C.M.G.; Temp. Capt. J. Fairley; Capt. R. A. Freeman (T.F.); Temp. Lt.-Col. H. French; Lt.-Col. (temp. Col.) C. T. Green, T.D. (T.F.); Capt. L. C. Hayes; Temp. Hon. Maj. T. G. Hine; Capt. (temp. Lt.-Col.) E. A. Houchin (T.F.); Maj. H. A. Howes (T.F.); Temp. Maj. G. P. Humphrey; Capt. (acting Maj.) A. Jackson; Maj.-Gen. O. R. A. Julian, C.B., C.M.G. (formerly R.A.M.C.); Capt. G. E. Kinnersley; Capt. W. P. MacArthur, D.S.O.; Temp. Capt. E. F. W. Mackenzie, M.C.; Temp. Capt. D. W. Maclagan; Temp. Capt. J. A. Marsden; Capt. (local Maj.) A. T. J. McCreery, M.C.; Lt.-Col. H. M. Nicholls; Capt. G. W. S. Paterson; Temp. Capt. R. A. Peters, M.C.; Temp. Capt. (temp. Maj.) H. T. L. Roberts; Temp. Maj. W. V. Robinson; Temp. Capt. T. Russell; Capt. T. Sheedy (S.R.); Lt.-Col. W. F. Somerville, T.D. (T.F.); Maj. C. B. Turner (T.F.); Temp. Maj. R. Wilson; Capt. C. W. Wirgman (T.F.); Temp. Maj. S. W. Woollett; Lt.-Col. J. R. Yourdi, R.P.

Canadian Army Medical Corps.—Maj. S. C. Chown; Lt.-Col. W. H. Delaney; Lt.-Col. P. G. Goldsmith; Capt. (acting Maj.) J. R. Goodall; Lt.-Col. (acting Col.) L. E. W. Irving, D.S.O.; Col. S. H. McKee, C.M.G.; Lt.-Col. K. D. Panton; Capt. E. L. Warner; Capt. C. R. Wilson; Maj. C. A. Young.

Australian Army Medical Corps.—Maj. (temp. Lt.-Col.) J. K. Adey; Lt.-Col. C. E. Dennis; Lt.-Col. W. E. Grigor; Capt. (temp. Maj.) H. O. Lethbridge; Lt.-Col. F. Marshall; Lt.-Col. B. M. Sutherland; Maj. H. H. D. Turnbull; Maj. G. C. Willcocks, M.C.

New Zealand Medical Corps.—Capt. (temp. Maj.) W. Bruce; Capt. D. E. Fenwick; Col. W. H. Parkes, C.M.G.; Maj. T. R. Ritchie; Capt. W. S. Wallis.

South African Army Medical Corps.—Lt.-Col. H. H. Balfour, M.B.E. (temp. Maj., R.A.M.C.); Temp. Maj. J. C. A. Rigby.

United States Medical Corps.—Lt.-Col. W. J. Le H. Lyster.

Jersey Medical Corps.—Maj. A. C. Stamberg (temp. Maj., R.A.M.C.).

Queen Mary's Auxiliary Army Corps.—Dr. A. M. Roberts, Medical Rectg. Controller.

Dr. Mary E. Phillips has been granted permission to wear the Insignia of the Fourth Class of the Order of St. Sava conferred upon her by His Majesty the King of Serbia in recognition of her services with the Scottish Women's Hospitals in Serbia.

THE CHAIR OF SURGERY AT ZURICH.—Professor P. Clairmont, of Vienna, is to succeed Professor F. Sauerbruch as professor of surgery and director of the Surgical Clinic at Zurich.

OBITUARY OF THE WAR.

JOHN DOVER PROUD, M.B., B.S. DURH.,

MILITARY CROSS WITH BAR.
MAJOR, ROYAL ARMY MEDICAL CORPS.

Major J. D. Proud, who died on active service on August 1st, was 26 years of age and the only son of Dr. Frederick Proud, of Maryport. Educated at Charterhouse and Durham University he graduated M.B., B.S. in 1915, and at once joined the R.A.M.C. as a lieutenant in the Special Reserve, from which he later transferred to the Regular Army. Going at once to the Western front he was appointed to a field ambulance attached to a famous Highland division and saw constant fighting for three years. He was awarded the Military Cross in April of last year and a few months later a bar to the cross for conspicuous gallantry and unwearying exertions under heavy fire. He was wounded on July 28th, while acting as bearer officer for the forward clearing of wounded of an infantry brigade, dying at a casualty clearing station four days later.

When a student Major Proud represented his university in all branches of sport, and was a good game shot and keen ornithologist. His colonel writes of him in the field: "He was quite fearless and one of the best officers I have ever had serving under me."

ERIC NEWTON, M.B., CH.B. ABERD.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain E. Newton, who died of wounds in East Africa at the age of 32, had been reported missing since August, 1917, but official intimation of his death was only received recently. He received his early education in India, where his father was a medical officer, continuing at Aberdeen University, and graduating M.B., Ch.B. in 1915. After a brief period as assistant to Dr. A. E. Jones, of Prestwick, he obtained a commission in the R.A.M.C., and was sent out to East Africa in charge of a hospital.

Captain Newton had some reputation as an all-round sportsman. At hockey he was a good full-back, playing on several occasions in international matches, and his quickness and sureness of eye stood him in good stead at lawn tennis and cricket. He was unmarried.

WADE SHENTON GARNETT, M.B., B.S. MELB.,

MAJOR, AUSTRALIAN ARMY MEDICAL CORPS.

Major W. S. Garnett, who was recently killed in France, graduated M.B., B.S. at Melbourne University in 1910 with honours and was appointed to the resident medical staff of the Melbourne Hospital for 12 months. Later on he was resident at the Women's Hospital and at the Children's Hospital, where he became senior resident before commencing practice in Prahran. In April, 1916, he enlisted in the A.I.F., going overseas in August. He was for some months

attached to the staff of an Australian general hospital in France, and later was transferred to a field ambulance and then to the 45th Battalion, with which he was serving when he was wounded fatally by a shell whilst dressing men in the open. His loss is keenly felt amongst a large circle of Australians and others.

WILLIAM McCALL, M.B., C.M. GLASG.,
DISTINGUISHED SERVICE ORDER,
LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel W. McCall, who died in the 1st Southern General Hospital at Birmingham in his forty-seventh year, was the elder surviving son of William McCall, of Irvine, Ayrshire. Educated at the Irvine Royal Academy, where he was a medallist, he went on to Glasgow University, where he graduated M.B., C.M. in 1894. Three years later he settled in Birmingham as assistant in a practice which he eventually bought. In 1908 he joined the R.A.M.C. (T.F.) and was attached to the 1st South Midland Field Ambulance. On the outbreak of war he was mobilised with the Territorial Force and given the rank of major. In March, 1915, he was sent to France, and in 1917 was given command of an ambulance with the rank of lieutenant-colonel. Last November he went with his unit to Italy and was stationed for some time in the neighbourhood of Vicenza, his name being included in the New Year's Honours list. In April he was invalided home and underwent an operation from which he never rallied. He is survived by his widow, a son, and two daughters.

Medical News.

MATRICULATION CANDIDATES FROM THE SERVICES.—Candidates who have been on active service during the present war will be admitted to the matriculation examination by the joint board of the Universities of Manchester, Liverpool, Leeds, Sheffield, and Birmingham under the following conditions: Each candidate will be required to apply to the board on an official form, and to supply evidence of qualifications with a statement of the purpose in joining a faculty of a university. The representatives on the board appointed by each of the universities will conduct an examination to ascertain the general standard attained by the candidate, consisting of a *viva-voce* examination, with a general paper and essay to all candidates, and such other papers as they may think desirable. They have power to exempt from the matriculation examination applicants who satisfy them of their general attainments and ability to take the course in the specified faculty with a reasonable prospect of taking a degree. The fee for examination and for certificate of registration is £2, and forms of application may be obtained from the secretary to the board, 24, Dover-street, Manchester.

CIVICS AND EUGENICS AT OXFORD.—On Monday last, August 19th, a Summer School of Civics and Eugenics was opened at Oxford, with a preparatory course dealing with the scientific basis of educational and social work. The second week, beginning on August 26th, will be divided into three courses, dealing respectively with the training of teachers, social workers, and speakers. Among the lecturers for the various courses and lectures are Professor J. Arthur Thomson, Sir Malcolm Morris, Dr. Mary Scharlieb, Major Leonard Darwin, and Professor James Lindsay. The subjects included in the courses are Venereal Disease, Prostitution, Marriage and Social Welfare, and the Life of Women and Girls in Factories. Further particulars may be obtained from the secretary, Civil and Moral Education League, 11, Tavistock-square, W.C. 1.

ARMY PROHIBITION ORDER IN REGARD TO PHENACETIN AND ACETANILIDE.—In exercising the powers conferred upon them by the Defence of the Realm Regulations Act the Army Council have prohibited the sale or supply of phenacetin and acetanilide, and any salts, preparations, derivatives, or admixtures prepared from or with either of the above-mentioned drugs, to or for any member of His Majesty's Forces except subject to certain conditions. This Order adds two more drugs to a growing list of those forbidden to be sold to the Army. The new Order is dated from the War Office, August 8th, 1918, and appeared in the *London Gazette* of August 13th.

PRESENTATION TO A WOMAN DOCTOR.—Dr. Mary Gordon, who was recently appointed senior medical officer to the Johannesburg General Hospital, was the recipient of an address of congratulation from the Women's Suffrage Conference held at Johannesburg on July 5th. As this is the first appointment of a medical woman made at the institution a similar address was sent to the board of the hospital.

BRITISH DENTISTS' HOSPITAL.—This hospital, founded in 1911, to provide treatment by registered dentists for necessitous workers and their families, has just issued its sixth annual report, dealing with the work at its four centres of Camden-road, Lewisham, Clapham, and St. Pancras School for Mothers. The attendances at these centres during 1917 were 2343, 2566, 880, and 201, a total of 5990. Of these, extraction cases totalled 1804 and fillings 1006, scaling 146, dentures 290, dressings, temporary fillings, and root treatment 412, and crowns 12. The receipts were £539, £674, £256, and £484, and the expenses £728, £610, £367, and £416, showing for the four centres (1) a deficit of £189, (2) a surplus of £64, (3) a deficit of £111, (4) a surplus of £68; or a total net deficit on the working of £168. The constitution and by-laws are under process of revision, as decided by the executive committee in the light of the experience they have gained, and a new scale of fees to be charged for the treatment of patients and supplying dentures has been agreed upon. The President of the hospital is Sir Francis Farmer and the Vice-Presidents include Lady Meyer, the Mayor of St. Pancras, and the medical officers of health for Bermondsey and Tottenham. Mr. George Thomson is chairman of the executive committee and trustee. The head offices are at 31, Camden-road, N.W. 1.

PRESENTATION.—Dr. J. Johnston, the author of "Visits to Walt Whitman," an interesting picture of the American poet in his old age, has been presented with the long-service silver medal of the Order of St. John of Jerusalem in England in recognition of his 27 years' service to the St. John Ambulance Association and Brigade. Dr. Johnston was for 12 years an honorary surgeon to the Bolton Infirmary and for 16 months was an officer on the staff of Queen Mary's Military Hospital at Whalley. He holds the St. John Ambulance South African War medal and the Coronation Medal of King George.

DEATH OF DR. W. R. MACDERMOTT, J.P.—The death occurred at his residence, Poyntzpass, on August 9th, in his seventy-ninth year, of a well-known North of Ireland practitioner, Dr. W. R. MacDermott, who had been medical officer of Poyntzpass Dispensary district, co. Armagh, since 1867. Born in co. Meath, the son of a doctor, Dr. MacDermott graduated in the University of Dublin in 1866, and in the same year he obtained the qualification of the Irish College of Surgeons. In 1868 he was elected medical officer of the Poyntzpass district, the duties of which he discharged to the complete satisfaction of everybody, until in January of this year he was laid aside by illness. At the time of his golden jubilee the guardians granted him a substantial increase of salary, and at the time he died he was the oldest dispensary doctor in Ireland. He was the author of two books, "The Green Republic," dealing with the Irish land question, and "Foughilotra," a story laid in the "montiaghs," or boggy districts along Lough Neagh. He also communicated articles at times to such papers as the *Statist* and *Observer*. In all the relations of life he was kind, sympathetic, and respected by everyone.

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, AND UNWIN, LIMITED, London.
Breathing Power. By Haydn Brown, L.R.C.P. Edin. 1s. 6d.
Religio Grammatici. The Religion of a Man of Letters. By G. Murray, LL.D. 1s. 6d.

AMERICAN LARYNGOLOGICAL ASSOCIATION, New York.
Transactions, 1917.

HEINEMANN, WILLIAM, London.
War Nursing. By C. Richet. Translated by Helen de V. Beauclerk. 3s. 6d.

KIMPTON, HENRY, London.
Treatise on Cystoscopy. By G. Luys. Translated by A. L. Wolbarst, M.D.
Roentgen Technic (Diagnostic). By Norman C. Prince, M.D. 2nd ed.

Vacancies.

For further information refer to the advertisement columns.

Abertillery Urban District Council.—M.O H. and Sch. M.O. £500.
Birmingham Education Committee.—Asst. School M.O. £300.
Brighton, Royal Sussex County Hospital.—H.P. £100.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Cheltenham General Hospital.—Res. H.S. £200.
Derbyshire County Council.—Asst. M.O. £400.
Great Northern Central Hospital, London, N.—H.S. £100.
Huddersfield County Borough.—Female Asst. M.O.H. £400.
Liverpool, Walton Institution, West Derby Union.—Two Asst. Res. M.O.'s. £330.
London Temperance Hospital, N.W.—Surgical Registrar. 40 guineas.
Manchester Corporation.—Coroner. £1000.
Manchester Royal Eye Hospital.—Sen. H.S. £150.
Metropolitan Hospital, Kingsland-road, E.—H.P. £150.
Netley, British Red Cross Hospital.—M.O.
Queen Mary's Hospital, Stratford.—H.S.
Rochdale Infirmary and Dispensary.—Jun. H.S. £150.
Sheffield Royal Infirmary.—Res. S.O. £200. Also H.S. £150.
Scottish Women's Hospitals.—Female Surg. C.M.O.
South Mimms, Clare Hall Sanatorium.—Asst. Med. Supt. £300.
Stoke-on-Trent County Borough.—Asst. Tuberc. O. £400.
Swansea General Hospital.—H.S. £250.
Walsall General Hospital.—Female Sen. H.S. and Anæs. £250.
Westmorland Consumption Sanatorium.—Sec. Asst. M.O. £200 to £250.
Willesden Urban District Council.—Asst. M.O. £10 10*s.* per week.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Avoca, Wicklow.

Births, Marriages, and Deaths.

BIRTHS.

BARRINGTON-WARD.—On August 16th, at George-street, Hanover-square, the wife of L. E. Barrington-Ward, F.R.C.S., of a daughter.
DE BOINVILLE.—On August 18th, at South Grange, Aigburth-road, Liverpool, the wife of Captain V. Chastel de Boinville, M.D., R.A.M.C. (T.), of a son.
CROSBIE.—On August 3rd, the wife of Major D. E. Crosbie, M.C., D.A.D.M.S., of a daughter.
RADFORD.—On August 15th, at Saxtead, Marshall's-road, Sutton, to Muriel Radford, M.B. (née Lloyd), wife of Maitland Radford, M.B.—a daughter.
ROPER.—On August 17th, at Exeter, the wife of Major F. A. Roper, R.A.M.C. (T.), of a daughter.

MARRIAGES.

GRIFFITHS—JAMES.—On August 13th, at Charles-street Congregational Church, Cardiff, Hugh Ernest Griffiths, M.B. Lond., F.R.C.S. Eng., to Doris Eirene, youngest daughter of the late Mr. W. H. James and Mrs. James, of Penylan, Cardiff.
IRVING—BRADSHAW.—On August 15th, at Crosthwaite Church, Keswick, Robert James Irving, F.R.C.S., to Violet Dorothy Gwenllian Pole, daughter of Edward H. G. Bradshaw, of Clifton, Bristol.
MALSEED—STUART.—On August 15th, at Waterside Presbyterian Church, Captain Alfred Malseed, M.C., R.A.M.C., attached King's Liverpool Regiment, to Eileen, daughter of the Rev. Dr. and Mrs. Stuart, Clifton Manse, Londonderry.
MILLER—GILFORD.—On August 15th, at St. Luke's Church, Reading, Reginald Miller, M.D., F.R.C.P., to Dorothy, daughter of the late William Gilford and Mrs. Gilford, of Wilmington, Wokingham-road, Reading.

DEATHS.

ALMOND.—Killed in action, August 9th, Captain George Hely-Hutchinson Almond, R.A.M.C., M.A., M.B., B.Ch. Oxon., aged 41, son of the late Hely-Hutchinson Almond, Headmaster of Loretto, and of Mrs. Almond, and dearly loved husband of Violet Almond (née MacCormac), 6, Brock-street, Bath.
GLASCOTT.—On August 14th, at Rosemullion, Budleigh Salterton, after a very short illness, Charles Edward Glascott, M.D., F.R.C.S., late of Manchester.
LISTER.—On August 9th, killed in action, Captain William Howard Lister, D.S.O., M.C., R.A.M.C., Fellow of University College, London, of Buxton, aged 31.
MENZIES.—On August 9th, killed in action, Lieutenant-Colonel Arthur J. A. Menzies, D.S.O., R.A.M.C., aged 32.
PROCTER.—On August 15th, at Brampton-Kinlet, Canford Cliffs, John Ward Procter, M.R.C.S., L.R.C.P., aged 84.
SCOTT-LAUDER.—On August 14th, at Helensburgh, Henry Scott-Lauder, Deputy Surgeon-General, R.N. (retired), aged 81 years.
WESTON.—On August 12th, after many years' illness, in Devonshire, Arthur Ernest Weston, L.R.C.P. Lond., M.R.C.S. Eng., age 47.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

The following journals, magazines, &c, have been received:—Medical Review, Shield, Bulletin of the Johns Hopkins Hospital, Journal of Nervous and Mental Disease, Middlesex Hospital Journal, Birmingham Medical Review, New Zealand Medical Journal, American Journal of Public Health, Canadian Practitioner, Therapeutic Gazette, Bulletin of the International Association of Medical Museums, Journal of Obstetrics, American Journal of Tuberculosis, Medical Journal of South Africa.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of Post-Graduate Course were given in issue of August 3rd.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.

THE THROAT HOSPITAL, Golden-square, W.
MONDAY, August 26th.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

EDITORIAL NOTICES.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Communications, Letters, &c., to the Editor have been received from—

A.—Major A. Abrahams, R.A.M.C.; Col. J. G. Adami, A.D.M.S.; Mr. C. B. Andrews, Lond.; Mrs. V. Almond, Weston-super-Mare.
B.—Dr. F. Barlow, Lond.; Board of Agriculture and Fisheries, Lond.; Mr. W. H. Bowen, Cambridge; Mr. S. S. Barton, Liverpool; Dr. A. E. Brindley, Derby; Messrs. John Bale, Sons, and Danielsson, Lond.; Capt. P. Bahr, R.A.M.C.; British Dentists' Hospital, Lond.; British Hospitals, Association, Lond.; Mrs. C. Brereton, Lond.
C.—Capt. J. Campbell, R.A.M.C.; Surg. H. Carlill, R.N.; Dr. W. M. Crofton, Dublin; Mr. G. E. Cope, Finchampstead; Mr. A. L. Cameron, New York; Chicago School of Sanitary Instruction; Capt. C. M. Craig, R.A.M.C.; Central Council for District Nursing in London; Committee concerning Causes of Death, &c., Melbourne, Chairman of; Major D. W. Carmalt-Jones, R.A.M.C.(T.F.)
D.—Dr. W. T. Davies, Llanbister; Decimal Association, Lond.; Dr. V. Dickinson, Lond.; Dr. M. A. S. Deacon, Liverpool; Dr. H. A. Des Vœux.
E.—Mr. W. Eugster, St. Gall; Dr. H. Elliot-Blake, Beer; Dr. J. S. Edkins, Lond.
F.—Capt. W. Fletcher, R.A.M.C.; Factories, Chief Inspector of, Lond.
G.—Capt. J. A. Glover, R.A.M.C.; General Medical Council, Lond., Acting Registrar of; Dr. H. L. Gordon, Lond.
H.—Col. W. Hunter, R.A.M.C.; Major S. R. Harrison, C.A.M.C.; Major A. F. Hurst, R.A.M.C.; Major H. Hemsted, R.A.M.C.; Dr. J. Haddon, Denholm; Capt. A. Maude, R.A.M.C.; Mr. F. G. Hallett, Lond.
I.—Capt. A. C. Inman, R.A.M.C.
J.—Dr. G. Jessel, Wigan.
L.—Dr. T. Lumsden, Lond.; Mrs. Lloyd, Carmarthen; Messrs. Lea and Febiger, Philadelphia; Local Government Board, Lond.; Dr. P. Lassablière; Mr. R. Lake, Lond.
M.—Mr. G. Mayall, Bolton; Dr. P. McBride, Edinburgh; Messrs. Alex Morison and Co., Edinburgh; Dr. A. S. Morton, Lond.; Dr. H. H. Mills, Studland; Mr. J. E. R. McDonagh, Lond.; Dr. A. Miles, Edinburgh; Capt. W. A. Murray, R.A.M.C.
O.—Capt. J. R. O'Brien, R.A.M.C.; *Oil and Colour Trades Journal*, Lond.; Optical Munitions, Controller of.
P.—Mr. R. H. A. Plimmer, Lond.; Dr. F. Proud, Maryport; Dr. G. K. Paterson, Edinburgh.
R.—Dr. H. F. Renton, Doncaster; Dr. A. Routh, Lond.; Mr. H. S. Reynolds, Upwell; Dr. R. J. Reece, C.B., Lond.; Royal Italian Embassy, Lond.; Dr. E. D. Ross, C.I.E., Lond.; Capt. E. D. Roberts, R.A.M.C.; Mrs. M. Robertson, Aberdeen.
S.—Prof. J. W. W. Stephens, Liverpool; Mr. H. M. Savery, Cleethorpes; Dr. L. Shaw, Lond.
T.—Dr. F. W. Twort, Lond.; Dr. J. M. Taylor, Bar Harbor, Maine.
W.—Dr. S. A. K. Wilson, Lond.; Mr. J. Ward, Richmond.

Offices: 423, STRAND, LONDON, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

THE HOUSEHOLD FUEL AND LIGHTING ORDER.

THE drastic demands of the Fuel Order may well give rise to anxiety for the coming winter. The shortage of coal means now not only a cutting down of the domestic supply of the fuel itself, but of the services of gas and electricity, which are, of course, terms interchangeable with coal. The allowance under the Order imply in no uncertain terms a very severe reduction in the quantities of coal, electricity, and gas which people have been accustomed to consume. Nor can the supplies be equalised on the old basis, for the consumer is informed that he is allowed so many units of gas, electricity, and coal, and he has the difficult task of deciding how to parcel out the allowances of each to his best advantage. If he takes his full allowance of coal, then he can have neither gas nor electricity. The quantity of gas and electricity allowed him is, in other words, dependent upon the reduction he is able to effect in the coal allowance, which already is probably in the large majority of cases a considerable reduction on past consumption. The situation is thus a very difficult one, and we may expect it will lead to one of the worst hardships inflicted upon us by the war so far as home conveniences are concerned. We are glad to see, however, that a clause provides for a special allowance for the invalid and infirm, as well as for the aged and young children. Temporary allowance in case of illness may be granted on production of a medical certificate. The public are advised to study very seriously how best they can tide over the crisis with the least discomfort. Attention should be given particularly to the use of wood, coke, and gas. As much coal as possible should be reserved for the gasworks, where it is economically used, and valuable by-products, including coke, obtained from it. It is devoutly to be hoped that the coming winter will not be severe.

CHLORETONE IN THE TREATMENT OF BURNS.

To the Editor of THE LANCET.

SIR,—I note in your issue of August 17th reference by Dr. H. Mallins to the use of chloretone in the treatment of burns. Until I became acquainted with the different preparations of flavine I used chloretone, not in powder form, but in a solution of olive oil, 30 gr. to 1 oz. I found that the introduction of chloretone relieved the pain and made dressing of the burns a comparatively painless process. The value of chloretone as a local anæsthetic also led me to introduce it into iodine solutions, so that the preliminary agony following the application of iodine solution to a raw surface was abolished.—I am, Sir, yours faithfully,

H. MEARNS SAVERY, M.R.C.S. Eng., L.R.C.P. Lond.

Cleethorpes, Lincs, August 20th, 1918.

TREATMENT OF INFLUENZA IN SWITZERLAND.

IN a useful article in the current number of the principal Swiss medical journal Professor R. Staehelin, of Basle, points out that little is really known of the actual death-rate from the present epidemic of influenza in Switzerland in spite of the alarmist returns in the press, inasmuch as the total number of cases is merely a matter of conjecture. Not much success appears to have attended any particular system of treatment. Professor Staehelin says:—

"We saw no effect from salvarsan, and only fleeting fall of temperature from optochin. Electrargol occasionally gave rise to rigor with resulting fall of temperature and definite improvement of general condition, but for the most part of transient nature. Subjectively antipyretics worked best (of these quinine showed no specially favourable effect), and in particular salicyl preparations, sweating being succeeded by a fall in the fever and increased comfort for several hours. In pneumonia camphor in large doses was the only effective remedy, with of course, venesection where indicated. We should welcome any suggestions from colleagues of a more effective remedy."

The same need is also being felt nearer home.

COLONIAL HEALTH REPORTS.

Bermuda.—According to the Blue-book for 1916, recently received at the Colonial Office, the Registrar-General estimates that the total resident civilian population at the end of the year was 21,215, composed as follows: White, 7282 (3477 male, 3805 female); coloured, 13,933 (6761 male and 7172 female). The birth-rate was 32·2 per 1000 among the resident civilian population, being 23·1 among white residents and 34·00 among coloured residents. The death-rate among resident civilians was 18·67. The illegitimate births were in the proportion of 14·42 per 100 births among the civil population (3·5 white and 18·4 coloured). The death-rate among white resident civilians was 14·42 per 1000 and among coloured residents 20·76. The European infantile mortality rate was 10·8 per 100 living births, and the rate among the coloured population 21·3 per 100, a considerable increase over the rate during 1915, which was 16·1 per cent. The mortality among children under 5 years of age was 35·2 per cent. of the total deaths (excluding stillbirths), as compared with 31·2 in 1915. The deaths from cancer among the resident civil population numbered 16, and those due to tuberculosis 39, being 5 among white inhabitants and 34 among coloured. No outbreak of serious infectious disease occurred. There is no hospital maintained by the Colonial Government, but during 1912 an Act was passed authorising the building of a general hospital, to be known as the King Edward VII. Memorial Hospital. The erection of this hospital was begun during 1913, but the works being interrupted by circumstances arising out of the war only about one-half of the structure was completed at the end of 1916. There is a cottage hospital near the city of Hamilton, which is supported by voluntary contributions, and hospitals are also maintained in connexion with the Imperial Naval and Military establishments. An asylum for the care and treatment of the insane was first established in this colony in 1846. The medical officer of health is the medical superintendent of the institution. Twelve patients (6 male and 6 female) were admitted into the asylum in 1916. Five patients were discharged and 12 died; 66 patients (32 male and 34 female) remained in the institution at the end of the year.

Mauritius.—Reporting on the affairs of the colony for the year 1916, Mr. L. Kœnig, Assistant Colonial Secretary, states that the estimated population, inclusive of Dependencies, was 384,253, an increase of 1513 on that of the previous year, and in the proportion of 492 males and 1021 females. There were 13,161 births, or 67 more than in 1915. The birth-rate was 35·0 per 1000 of the estimated population, as compared with 34·8 per 1000 for 1915. Of the births registered, 4280, or 32·5 per cent., were legitimate and 8881, or 67·5 per cent., illegitimate. The deaths registered were 11,432, or 1669 less than in the previous year. The death-rate was 30·4 per 1000 of the estimated population, as against 34·8, the death-rate in 1915, or a decrease of 4·4. Comparing the infant mortality with the births during the year, 13,161 infants were born and 1932 died at one year of age or under, equal to 16·9 per cent. The percentage under 5 years was 30·5. The principal causes of death throughout the colony during the year were: malaria, 32·6 per cent.; phthisis and other forms of tuberculosis, 18 per cent.; dysentery, 9·8 per cent. 227 cases of enteric fever were notified, with 52 deaths. Plague registered 22 attacks with 15 deaths, giving a death-rate of 68·2 per cent. Port Louis has been plague-free since April 6th, 1915. Trapping and poisoning of rats is carried out continuously. Rat-catchers accounted for 55,532 rats in Port Louis and 66,860 in the districts. Anti-malaria and anti-mosquito measures were continued during the year. The civil hospital in Port Louis, with 275 beds, is the most important of the colony. The number of patients admitted at this institution during the year was 6411, the number discharged 6060, and the daily average in hospital 246. The number of deaths was 329. Of those discharged 3128 were reported as cured, 2605 were relieved, and 327 were not improved. District hospitals are also maintained by Government at Barkly Asylum (Beau Bassin), Mahebourg, Souillac, Long Mountain, Poudre d'Or, Flacq and Moka, with an aggregate accommodation of 592 beds. The total number of cases treated at all district hospitals was 12,164, as against 12,782 in 1915. A new hospital is under construction at Candos, Quatre Bornes, to replace the present hospital buildings at Barkly Asylum. The outlying districts are served by dispensary hospitals and dispensaries for the treatment of emergency and pauper cases. The Immigration Law also requires the maintenance of hospitals on every estate on which there are 20 Indian indentured labourers. There were 72 inmates in the leper asylum at the close of the year, a decrease of 9 as compared with 1915.

THE RISKS OF ETHER IN THE OPERATING THEATRE.

A FATAL accident recently occurred in the operating theatre of the Germiston Hospital, near Johannesburg, South Africa. While preparation was being made for an operation a bottle of anæsthetic ether was upset, part falling on to a nurse's dress and part on a heating radiator, which at once ignited. The nurse with her dress on fire rushed into the corridor, where Dr. Spaulding extinguished the flames by wrapping her in a blanket, being himself burned in the act. The nurse died from her injuries, but the life of the child on the operating table was saved by the presence of mind of a second medical man, Dr. Th. Lund, who was present. In this country it is the rule not to use ether as an anæsthetic when there is any naked flame in the theatre, since it is well recognised that not only is the liquid inflammable but the invisible vapour itself is heavy, and may be wafted a considerable distance and take light unexpectedly.

THE LANCET.

LONDON: SATURDAY, AUGUST 31, 1918.

The Study of Clinical Medicine.

A RECENT debate, held under the auspices of the Abernethian Society at St. Bartholomew's Hospital, London, was devoted to discussion on a motion: "That ..... the study of surgery at the present time is of greater importance than the study of medicine." Major L. Bathe Rawling, R.A.M.C., who proposed the motion, contended that the mantle of medicine could readily be thrown over the surgeon, and that while the physician could not at the call of necessity wield the scalpel, the surgeon could at any time minister to the needs of the civilian population by consulting the stethoscope. Sir Thomas Horder and Dr. A. E. Stansfeld opposed the motion, the former on the ground that the fitness or otherwise of the recruit for military service was a matter almost solely in the hands of the physician, and that even in the actual field of war the surgeon's scope was limited, in that the vitally important first-aid work was best carried out by well-trained orderlies; while on the Eastern front the man with the knowledge of medicine was occupied all the time with malaria, dysentery, and other acute disease. At home the investigation and treatment of heart and nerve cases and of trench fever was fully occupying the attention of the physician, who was given to think more deeply than the surgeon. Dr. Stansfeld expressed the opinion that surgery could be more easily "picked up" than medicine, the third-year student demonstrably feeling less at a loss in the surgical than in the medical wards of a hospital. The motion was lost by a two-thirds majority.

We recognise that the debate was held in the informal atmosphere of a students' society, and that the champions of medicine and surgery doubtless were not so judgmatic in the expression of their views as they would have been on a more responsible occasion. But the report of the meeting, which we have derived from the *St. Bartholomew's Hospital Journal*, illustrates the striking fact that in the midst of war, with its myriad urgent claims, 80 or more students of a single metropolitan medical school were found to take part in debating an educational problem; and that, notwithstanding the wonderful success of war-time surgery, and its consequent glamour, they came to a conclusion which ranks clinical medicine as the principal subject for general study. For the verdict suggests that while medicine in its broadest sense is a scientific whole, internal medicine (or clinical medicine, as we generally call it) is to be regarded as the mother of all other clinical divisions. This conclusion has been repeatedly forced upon medical teachers on both sides of the Atlantic.

THE RENEWED INTEREST IN MEDICAL EDUCATION.

The debate and its outcome are significant at a time when we are witnessing an intense revival of interest in the whole subject of medical education, of which the effect cannot yet be foreseen, but which will certainly be nothing short of revolutionary. A forecast of this revival we may without false modesty see in the series of articles on medical education which appeared in our own columns nearly ten years years ago, and which were republished later in book form under the title "Some Considerations of Medical Education";[1] and these were immediately supplemented by the able reports on Medical Education[2] to the Carnegie Foundation for the Advancement of Teaching made by Abraham Flexner, on which more recent reformers have largely based their own schemes. The year which has elapsed since our last Students' Number has seen two further remarkable contributions to the study of medical education in this country. The first of these is the inquiry conducted under the auspices of the Edinburgh Pathological Club, the results of which have been published in instalments by the *Edinburgh Medical Journal* month by month since January, 1918, and are not yet concluded. The other is the Memorandum[3] on Medical Education addressed to the President of the Board of Education by the Chief Medical Officer, Sir George Newman. On these two sources we shall draw freely in what follows, giving actual quotations where these are likely to make for clearness.

[1] THE LANCET, ii., 1909. [2] Bulletin No. 4 (United States and Canada), 1910, No. 6 (Europe), 1912, Carnegie Foundation, New York City. [3] Cd. 9124, H.M. Stationery Office. 9d.

CLINICAL MEDICINE AND ITS IMPLICATIONS.

The modern conception of clinical medicine, which lies at the root of all the recent attempts made to realise it, defines the laboratory as a place constructed for the express purpose of facilitating the collection of data bearing on definite problems and initiating practical measures for their solution. Flexner finds that the hospital and the dispensary are laboratories in the strictest sense of the word. The practising physician and the "theoretical" scientist are thus, he says, engaged in doing the same sort of thing, even while one is seeking to correct a digestive aberration and the other to localise the cerebral functions of the frog.

"Certain conclusions as to clinical teaching follow. The student is to collect and evaluate facts. The facts are locked up in the patient. To the patient, therefore, he must go. Waiving the personal factor, always important, that method of clinical teaching will be excellent which brings the student into close and active relation with the patient: close, by removing all hindrance to immediate investigation; active, in the sense, not merely of offering opportunities, but of imposing responsibilities.

Clinical teaching has had substantially the same history as anatomical teaching. It was first didactic: the student was told what he would find and what he should do when he found it. It was next demonstrative: things were pointed out in the amphitheatre or the wards, those who got the front seats seeing them more or less well. Latterly it has become scientific: the student brings his own faculties into play at short range—gathering his own data, making his own construction, proposing his own course, and taking the consequences when the instructor who has worked through exactly the same process calls him to account: the instructor, no longer a fountain pouring forth a full stream of knowledge, nor a showman exhibiting marvellous sights, but by turns an aid or an antagonist in a strenuous contest with disease."

This is, in other words, the English method of clinical training in ideal if not in practice. The method has been generally lauded by American and Continental schools, and arose directly from the way in which the English schools originated, although in those days laboratories were undreamt of and physiology was almost an untouched branch of human knowledge. The medical schools of England were a development of the apprentice system. Originally students became doctors by learning their work through direct apprenticeship to their seniors, certain universities and corporations giving them degrees and diplomas afterwards, if such hall-mark was applied for and could be earned. Then hospital surgeons and physicians began to receive pupils at high fees who had the advantage of seeing the practice of the institutions to which their principals were attached. This procedure grew until first around individual surgeons and physicians, and later around the accommodating hospitals medical schools grew up. They were originally an integral part of the hospitals, for the students acted as the assistants of their principals in the treatment of the patients. This association of pupil and master became crystallised gradually into a system of clinical clerkships, surgical dressership, house physicianships, and house surgeonships. This method, it will be seen, never was that of a large class of obedient listeners to an authoritative professor. The relation was that of disciples serving and working under a leader. But the system no longer meets the position fully. Our students do not get the training which enables them to pass their examinations in a reasonable time. The fault lies somewhere between the teachers and examiners, both of whom are drawn from the same class and whose opportunities are given no fair scope; the teachers are ill-paid, the curriculum has become unwieldy; and the students do not face the exigencies of private practice as well equipped as they should be. These are the main things which have to be remedied, and while they are considered here in relation to clinical medicine, *mutatis mutandis* the remarks hold good over the whole field of medical education.

THE PRESENT UNSATISFACTORY POSITION.

One of the teachers of the Edinburgh School of Medicine describes the function of the school thus:—

"To turn out thoroughly qualified practical men, well versed in modern methods of investigating and treating

disease in its early and late stages—men imbued with a desire to help in advancing our knowledge of disease, recognising that in many directions their aid is both necessary and valuable."

This being the aim and scope of the study of clinical medicine, and being realised as such by practically every one who has taken the trouble to think out its general principles, why has not the practice been brought into harmony with the principles which have been so clearly enunciated? Certainly because it is not quite clear where reforms should begin. Flexner considers that our examination system is at fault, and has attacked it on the ground that too much deference is paid to seniority.

"The English profession," he writes, "governs and examines itself. But the active governors—those prominent in the corporations—are in the main elderly men, wise, seasoned, and eminent veterans to be sure, but in large measure veterans still. ..... To get a new point of view into the examination, chemical, pathological, or other, it must first be got into teaching. The ultimate reliance for ideals and intelligence must be on the schools as such, not on the schools acting under the coercion of examining bodies. ..... Now the official profession is eminent, dignified, and conservative—loyal to its past, deferential to the interests of the schools. ..... A change can be wrought only if a new spirit takes hold of education; it is not likely that stubborn or long resistance to revising the examinations would be made, once a revolution in educational sentiment has been accomplished."

We have, of course, heard an enormous amount of criticism of examinations and examiners, and no one suggests that medical students are not an over-examined class; but reform of examinations can follow upon reform in the educational curriculum as easily as it can precede it, and perhaps it is the curriculum that should be amended first. As regards deference to seniority, a writer in the *St. Mary's Hospital Gazette* said bluntly some months ago:—

"Test everything possible for yourself, and do not place too blind a trust in books or teachers; uncritical respect for one's elders and betters is irreverence in a scientific man."

This spirit has its faults as well as its merits; it makes the work of the instructor very difficult, and so diminishes the good that he might do to less independent students. Originality would be thus kept unimpaired, but the independent-minded students would not pass their tests under the existing state of things. Before it would be practically safe for the student to follow the above counsel, with which we much agree, it will be necessary for the medical curriculum to become less a series of unconnected, if parallel, paths, and more a broad and continuous highway upon whose surface there is room for some alternations of courses. General education would then rank above particular instruction, and examinations would become more flexible.

REFORM OF THE EXAMINATION SYSTEM.

To determine that the present position of medical examinations is wrong is one thing and to analyse the defects with a view to their removal is another. Professor G. Lovell Gulland regards it as essential to make the final examinations both more practical and more searching. In clinical medicine he would discard the farce of "spotting" urines and microscopical specimens. We ought, he says, to insist on real urine-testing, real chemical examination of other substances, and real microscopic work.

"We should also consider the advisability of including in the final examination the results of class examinations and the work in the wards, so as to encourage steady work and discourage spurting. We all know that neither the student nor the examiner is always at his best at an oral examination. Confidential reports from the systematic and clinical teachers might well take their place in determining whether man should pass his final, and at what level."

The same solution is proposed by Sir George Newman, speaking from his experience as medical assessor to the Universities Branch of the Board of Education:—

"A vast and almost immediate benefit would accrue to the whole business of clinical education in this country if the whole basis of the Degree Examinations was the training the student had received and not certain items of information which, on a given date, he was able to furnish to the examiner. If the medical work of the examinee was assessed—his theoretical and practical work, his preparations, slides and drawings, his reports of cases, the records of his clerking, dressing, and clinical pathology, and the results of his class examinations—and could form a substantial portion of the Degree Examination, we should immediately see an improvement in the system of education. Cramming and other forms of alchemy would disappear, and the purpose of training would be its own intrinsic value, the equipment of a practitioner of medicine and surgery, and not an artificial test on a theoretical basis at a given date in an examination hall."

This is a return to a policy which has been advocated for many years, but has always been addressed to deaf ears. The policy is supposed to imply eventually the examination of the students by their own teachers, and this again is supposed to be a retrograde procedure. But is either deduction true? It ought to be quite easy to have such a proportion of extern examiners that there would be no risk in allowing the actual teachers some share in the fate of their students; and it is certain that students could work with smaller apprehension of their fate and more determination to acquit themselves well in the eyes of their teachers if the latter were known to have a voice in the issue. In talking of the vices of the examination system we must always remember that while the curriculum is undoubtedly influenced by the character and standard of its examinations, so the character and standard of the examinations are influenced by the curriculum. If, for example, the curriculum is disjointed, the examination will generally be fussy and meticulous in detail, rather than directed towards broad principles of learning.

THE IMPERFECTIONS OF THE MEDICAL CURRICULUM.

The various plans laid down by the qualifying bodies for the medical curriculum of their students will be found fully set out as usual in the Students' Number of THE LANCET, and it will be seen that all these plans conform practically to one pattern. The student first learns the general sciences of chemistry, biology, and physics up to the point where he is introduced to the special sciences of human anatomy, physiology, and pharmacology, those being the divisions of biology and chemistry on which his professional education will be founded. Then come hospital practice, theoretical and practical medicine, surgery, and obstetrics, the pathology and therapeutics of all these being illustrated by the patients receiving attention at the hospital either as in-patients or out-patients. Under the Medical Acts the student is supposed to occupy five years of training in his studies between the time of entering the medical school and the time of obtaining his degree or diploma from a University or corporation. As a matter of fact, the average time taken is over six years, and on this ground alone the curriculum has been much criticised. Further, it is doubtful whether the young man, so large a slice of whose life is occupied in professional training—all of which must be really preliminary to the acquisition of professional wisdom—is as well equipped as he might be considering the money and trouble expended. There seems to be a consensus of opinion that he is not. Sir George Newman finds that there is a lack of scientific spirit in the curriculum; the Edinburgh critics find that the neglect to instruct students in incipient disease and early symptoms renders the first years of their professional life very difficult ones; and thirdly, on all hands it is admitted that the student is given too much to learn in the allotted time. But the essential blot on the system, which if it is particularly clear in the case of clinical medicine is present also in the cases of surgery and obstetrics, is the want of continuity in the training. The student finds at each stage that he has too much to learn, because what he has learned in the past is not made to help him sufficiently in the later stages. This is a lack of scientific spirit.

LACK OF SCIENTIFIC SPIRIT.

A larger measure of the scientific spirit is Sir George Newman's first requisite in adapting the teaching of clinical medicine to the needs of the time. How difficult this is to ensure even in London with its unlimited opportunities he illustrates by a painful example:—

"Here is a London medical school of the first rank with a large and eminent staff, but there is only one clinical lecture per week, or 12 in a term; here are four other London medical schools with the attendance of the clinical teaching staff irregular, intermittent, and unreliable owing to the prior claims of practice; and here is an example of a school where the physicians and surgeons teach only their own clerks."

He concludes that the result of such conditions is absolutely to preclude clinical teaching of university standard, and all reformers of education are working towards the University degree as the only proper termination of an

academic and practical course of training. Twenty years ago such an ideal would have had little foundation; to-day it is the inevitable outcome of the rise of a large group of provincial universities, well equipped materially and educationally, and infused with an ardent spirit of progress.

It is difficult to agree that the absence of clinical lectures connotes the absence of the scientific spirit, but we are perfectly sure that the medical curriculum is not interpreted by its exponents, either teachers or taught, in the ways that lead to the highest mental development or the finest conceptions of medicine. And the reason for this is mainly the lamentable want of continuity in studies, so that the student hardly perceives while he is learning pathology that he is dealing with modified physiology, while the clinical teacher who finds himself in contact with a question of chemistry cannot elucidate the points for his class, even if he perceives the connexion, because he has forgotten them, having from his practical, but hopelessly unscientific, point of view no reason to remember them.

Edinburgh is wide awake to the need of raising the standard of clinical teaching, and the medical faculty has drawn up a memorandum of changes desirable after the war. These include a limitation in the size of clinics, subdivision of classes for junior and senior students, closer supervision of case-taking, a fuller utilisation of the services of the assistant physicians, and the following up of cases to the post-mortem room. The last of these things is exactly illustrative of what was said above—that the lack of scientific spirit leads to lack of continuity. The post-mortem examination is the last chapter in the most fateful of the hospital stories which it is the student's privilege to read, and that last chapter he may never hear of!

NEGLECT OF DISEASE IN ITS EARLIEST STAGES.

Failure to deal with the early or incipient stages of disease has been a very usual reproach against the medical curriculum because when the young practitioner first faces his public it is upon early and correct diagnosis that his utility and future will largely depend. It must be admitted that incipient cases of disease do not find their way in bulk into hospitals; but this is a direction where teachers should ever be on the alert to furnish out of their experience lessons which the ward or the out-patient department for the moment is not supplying. The absence of enthusiasm among Edinburgh students for medicine as contrasted with the intense attraction exerted by present-day surgery is noted, and will be seen to be in direct opposition to the way in which the Abernethian Society of St. Bartholomew's Hospital registered their votes. This apathy is attributed by Dr. Chalmers Watson in part to the fact that hospital students are continually seeing cases of chronic disease which remain for months and leave the wards very much *in statu quo*. The neglect of dispensary teaching is lamented by the younger Edinburgh men, who regard dispensary practice as of great value to the student.

"A great part of his afterwork consists in the recognition and treatment of minor maladies, which he does not, and cannot, see in the wards of the infirmary, but which are of everyday occurrence in dispensary practice. Dispensary teaching should be definitely coördinated with the teaching in the infirmary. ..... If this arrangement were carried out the teaching of medicine from the curative point of view could be brought into line with teaching from the preventive point of view."

Professor Gulland agrees that the weak point in the present teaching is that it is conducted on hospital patients—i.e., either on people so seriously ill that they cannot be handled by large numbers of students, or else on cases of well-established disease, excellent enough for physical signs, but not admitting of really curative or preventive treatment.

WHAT IS THE VALUE OF SYSTEMATIC LECTURES?

The Edinburgh faculty has devoted special attention to the place of systematic lectures in the curriculum. Clinical medicine to Professor Harvey Littlejohn *is* the teaching of medicine, and he adds:—

"Systematic medicine ought simply to be giving the student a general outline of various diseases. My idea of systematic lecturing is that the lecturer should be simply like a guide taking a number of people round a picture gallery, devoting the greater part of the time to those pictures which are standards in art. He should point out the characters of all the pictures, but devote special attention to those which really may be taken as outstanding types."

It is noteworthy that attendance at certain groups of systematic lectures has been made optional for the duration of the war by London University and other examining boards, and this course was taken, no doubt, because the war has removed so many of the competent guides from the class-rooms to the zones of battle. In the special case of medicine Dr. Robert Thin considers such lectures to be simply a relic of mediæval times, when books were non-existent or were too expensive to be in the hands of students. Dr. Edwin Matthew, speaking for himself and the other Edinburgh assistant physicians, regards the attempt to give in the course of two hundred lectures a more or less complete account of diseased conditions (their recognition, results, and treatment) as a mere dictation exercise, of little benefit to the student. Professor William Russell sees the advantage of retaining the systematic course embodying the complete knowledge of an experienced lecturer for the sake of the sense of perspective so necessary for the student. Professor Gulland finds the text-book out of date almost from the moment of its publication, but humorously suggests that the lecturer at all events derives untold benefit from reviewing his knowledge in every department of medicine at least once a year. Dr. Ivy McKenzie's suggestive idea of coördinated work is a special systematic lecture at the end of each week, dealing with the subject demonstrated in detail at ordinary clinical lectures during the week. A fruitful line of coördination is sketched by Professor Lorrain Smith, who says that the attempt has lately been made in Edinburgh to make the study of pathology introductory to the subjects of medicine and surgery—

"by making the main part of our course the teaching of how the story of disease in a given case is to be read in pathology in correspondence with the clinical observations and history of the case. ..... By thus coördinating the work of these departments a great deal of introductory matter could be got over, and physiology, anatomy, and pathology could be made more interesting to the students, who would arrive at medicine not unfamiliar with the living patient."

In pathology, he adds, systematic lectures are of little importance until the student has a basis on which to build.

In London the yoke of the systematic lecture has pressed all too heavily in recent years. A writer in one of the hospital gazettes hardly exaggerated the position in the following words:—

"The habit of lecture attendance grows; the student gains a greedy appetite for them, until in his final years he (or she) spends most of his time in passing from one lecture-room to (sleep in) another. And on those rare occasions when there are no lectures the armchairs around the library fires become filled rather than the laboratory, wards, or museum."

We agree with this writer in thinking that the blame lies with the system rather than with the student, but if lectures were of the character postulated by Dr. Ivy Mackenzie, and took the form of a topical résumé of a week's hospital work in a definite direction, the value of such teaching would at once appear. In this way the past and present work of the student would be constantly revised and coördinated.

SIMPLIFICATION AND ORGANISATION.

We have alluded to the errors and omissions in the present system of teaching in clinical medicine not in any despondent spirit, but because we believe that now is the time when old and worn-out methods may be discarded and our faces set in the direction of new and fruitful effort. The general directions which progress should take are fairly obvious, and what applies to clinical medicine applies also in large measure to other sections of medical education.

The curriculum is overloaded, for the students cannot pass their examinations in reasonably high numbers in the allotted time. The large average of failures in examinations may be due, in part, to the nature of the tests devised; and, in part, to the disjointed nature of the educational course. Two remedies suggest themselves. The first is that as far as possible the study of the ancillary scientific subjects should be carried on at a secondary school, though in some divisions of the United Kingdom State aid might here be needed. The second is that continuity in scientific and pathological training should be instituted at all medical schools by a properly paid corps of teachers in touch with each other's work. Medical examinations, reformed to test the merits of students thus educated, would then meet both professional and public needs.

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION OF THE UNITED KINGDOM.

POWERS, DUTIES, AND CONSTITUTION OF THE GENERAL MEDICAL COUNCIL.

THE powers and duties of the General Medical Council or "General Council of Medical Education and Registration of the United Kingdom" to give the Council its full title, have been set out in detail in many previous Students' Numbers of THE LANCET. It is first a registering body: no person, even though his qualifications have been obtained, is a legally qualified medical practitioner unless his name appears on the Medical Register. Secondly, it is a standardising body, ensuring that the education of medical men is kept up to an efficient standard by scientific examination. Thirdly, it is a penal and disciplinary body, having power to remove from the Register any practitioner adjudged guilty of conduct "infamous in a professional respect." Fourthly, to the Council is committed the codification of pharmaceutical remedies.

The duties of the Council are thus primarily of a public nature, and its construction shows its fitness for its fourfold responsibilities.

The Council at present consists of 38 members, of whom, as will be seen by the annexed list, all but 11 are official representatives of some corporate body. Five members are chosen by the Crown on the advice of the Privy Council, and six others are elected by the members of the medical profession as Direct Representatives.

President of the General Council: Sir Donald MacAlister, Members of the General Council: Dr. Norman Moore, chosen by the Royal College of Physicians of London; Mr. Holburt Jacob Waring, Royal College of Surgeons of England; Mr. Meredith Townsend, Apothecaries' Society of London; Mr. Arthur Thomson, M.B., F.R.C.S., University of Oxford; Mr. Frederick Gowland Hopkins, M.A., M.B., University of Cambridge; Dr. Robert Howden, University of Durham; Sir Frederick Taylor, University of London; Dr. Grafton Elliot Smith, Victoria University of Manchester; Mr. Harry Gilbert Barling, C.B., University of Birmingham; Dr. Richard Caton, University of Liverpool; Dr. Alfred George Barrs, University of Leeds; Mr. Rutherfoord John Pye-Smith, University of Sheffield; Sir Isambard Owen, University of Bristol; and Dr. David Hepburn, C.M.G., University of Wales. Dr. William Russell, chosen by the Royal College of Physicians of Edinburgh; Mr. James William Beeman Hodsdon, Royal College of Surgeons of Edinburgh; Dr. David Neilson Knox, Royal Faculty of Physicians and Surgeons of Glasgow; Dr. H. Harvey Littlejohn University of Edinburgh; Sir Donald MacAlister, University of Glasgow; Dr. John Theodore Cash, University of Aberdeen; and Dr. John Yule Mackay, University of St. Andrews. Sir John William Moore, chosen by the Royal College of Physicians of Ireland; Sir Arthur Gerald Chance, Royal College of Surgeons in Ireland; Dr. Edward Magennis, Apothecaries' Hall of Ireland; Dr. Arthur Francis Dixon, University of Dublin; Sir Bertram Coghill Alan Windle, National University of Ireland; and Dr. Johnson Symington, Queen's University of Belfast. Nominated by His Majesty, with the advice of his Privy Council: Mr. Charles Sissmore Tomes, Sir Arthur Newsholme, Sir Francis Henry Champneys, Dr. John Christie McVail, and Dr. Edward Coey Bigger. Elected as Direct Representatives: Dr. Langley Browne, Dr. H. A. Latimer, Dr. J. A. MacDonald, Mr. Thomas Jenner Verrall, Dr. Norman Walker, and Dr. Leonard Kidd. Treasurers of the General Council: Mr. Charles Sissmore Tomes and Sir Frederick Taylor.

THE EDUCATIONAL CURRICULUM.

Professional Education.—The course of professional study after registration occupies at least five years. The Final Examination in Medicine, Surgery, and Midwifery must not be passed before the close of the fifth academic year of medical study.

Registration and Preliminary Examination of Medical Students.—The following are the General Medical Council's Regulations in reference to the registration of students in medicine.

Every medical student should be registered in the manner prescribed by the General Medical Council. The registration of medical students is placed under the charge of the Branch Registrars. Every person desirous of being registered as a medical student should apply to the Branch Registrar of the division of the United Kingdom in which he is residing; and should produce or forward to the Branch Registrar a certificate of his having passed a preliminary examination as required by the General Medical Council, and evidence that he has attained the age of 16 years, and has commenced medical study at an institution approved by the Council. The Branch Registrar shall enter the applicant's name and other particulars in the Students' Register and shall give him a certificate of such registration. Each of the Branch Registrars shall supply to the several licensing bodies, medical schools, and hospitals, in that part of the United Kingdom of which he is registrar, a sufficient number of blank forms of application for the registration of medical students. The commencement of the course of professional study recognised by any of the qualifying bodies should not be reckoned as dating earlier than 15 days before the date of registration. In addition to the universities and schools of medicine there are many institutions where medical study may be commenced. Applications for special exceptions are dealt with by the Students' Registration Committee, which reports all such cases to the Council.

Regulations for the Maintenance of the Register of Medical Students.

The following examinations have been approved by the Council:—(*a*) The final examinations for the degrees in Arts and Science of any University of the United Kingdom or of the British Dominions. (*b*) All examinations which are accepted for Matriculation in the Faculties of Arts and Science in any one of the Universities of Great Britain, provided the pass-certificate (or certificates) includes English, Mathematics, and at least two other subjects named in the following list:—Latin, Greek, Hebrew, Arabic, Persian; French, German, Spanish, Italian, Russian, or any approved modern language; History, Geography, Natural Philosophy or Physics, Chemistry, Biology, Physical Geography, Geology. (*c*) All examinations not included under the foregoing section (*b*), which are accepted for Matriculation in the Faculty of Medicine in any one of the Universities of the United Kingdom of Great Britain and Ireland provided the examination is completed at not more than two periods of examination, and that the pass-certificate (or certificates) includes English, Mathematics, Latin (or Greek or Hebrew), and at least one other subject named in the following list:—Latin, Greek, Hebrew, Arabic, Persian, French, German, Spanish, Italian, Russian, or any approved modern language. (*d*) The Council may grant special recognition to the following examinations not included under the foregoing sections (*a*), (*b*), and (*c*):—(1) The final examinations for the degrees in Arts and Science of any specially recognised Foreign University. (2) Examinations conducted by approved Examining Bodies within the United Kingdom under the provisions set forth in the foregoing section (*c*). (3) Examinations conducted by approved Examining Bodies out of the United Kingdom under the provisions set forth in the foregoing section (*c*), and under such other conditions as the Council may impose in each case.

List of Bodies whose Examinations are accepted under the Foregoing Regulations.

I. *Examinations in Great Britain.*

(1) The Matriculation Examinations in the Faculties of Arts of Science of, and all examinations accepted in lieu thereof by, the following Universities: Oxford (including Responsions and Moderations), Cambridge (including the Previous Examination and the General Examination), Durham, London, Manchester, Birmingham, Liverpool, Leeds, Sheffield, Bristol, Wales, Edinburgh, Glasgow, Aberdeen, St. Andrews. These examinations are accepted subject to the conditions set forth under Section 2 (*b*) above. (2) The Preliminary Examinations in the Faculty of Medicine of, and all examinations accepted in lieu thereof by, the Universities of Durham, Edinburgh, Glasgow, Aberdeen, St. Andrews. These examinations are accepted subject to the conditions of Section 2 (*c*) above. (3) Specially recognised Examinations conducted by approved bodies.

The following Schools Examinations have been recognised by the English Board of Education and are accepted by the General Medical Council under the conditions noted below:—

AS FIRST EXAMINATIONS.

1. The School Certificate Examination of the Oxford and Cambridge Schools Examination Board.
2. The Senior Local Examination of the Oxford Delegacy for Local Examinations.
3. The Senior Local Examination of the Cambridge Local Examinations and Lectures Syndicate.
4. The School Certificate Examination of the University of Bristol.
5. The First School Certificate Examination of the University of Durham.
6. The General School Examination of the University of London.
7. The School Certificate Examination of the Northern Universities Joint Matriculation Board.

AS SECOND EXAMINATIONS.

8. The Higher Certificate Examination of the Oxford and Cambridge Schools Examination Board.
9. The Higher School Certificate Examination of the Oxford Delegacy for Local Examinations.
10. The Higher School Certificate Examination of the Cambridge Local Examinations and Lectures Syndicate.
(*a*) 11. The Higher School Certificate Examination of the University of Bristol.
12. The Higher Certificate Examination of the University of Durham.
(*a*) 13. The Higher School Certificate Examination of the University of London.
14. The Higher Certificate Examination of the Northern Universities Joint Matriculation Board.

(*a*) These Examinations will be held for the first time in 1919.

In the First Examinations: School Certificates ("passes with credit") and in the Second Examinations: Higher Certificates, provided in both instances that they fulfil the conditions required for Matriculation in the Faculties of Arts or Pure Science in any University of Great Britain, are accepted by the General Medical Council under Clause 2 (*b*); otherwise they are accepted under Clause 2 (*c*), provided that evidence is afforded that all the subjects required by the Council have been actually passed on an approved standard. (*Applicants are advised to apply to the Examining Bodies for the necessary evidence.*)

Other Certificates accepted under Clause 2 (*b*). Scottish Education Department: Leaving Certificates.

Other certificates accepted under Clause 2 (*c*). Intermediate Certificate. Central Welsh Board: Senior Certificate. University of St. Andrews: Final Examination for Diploma of L.L.A. College of Preceptors: Senior Certificate; Preliminary Examination for Medical Students Certificate. Educational Institute of Scotland: Preliminary Medical Examination Certificate.

II. *Irish Examinations.*

University of Dublin: Matriculation Examination: (*a*) Junior Freshman Term Examination (exclusive of Trigonometry); (*b*) Special Preliminary Examination to be held in March, the standard and subjects of which shall be those of a Junior Freshman Examination (exclusive of Trigonometry); (*c*) Junior Exhibition Examination on obtaining marks of sufficient merit in the subjects of (*a*) or (*b*); (*d*) Examinations for the First, Second, Third, or Fourth Year in Arts. (Certificate to be signed in the approved form by the Medical Registrar of the University.) Queen's University of Belfast: Matriculation Examination. National University of Ireland: Matriculation Examination. Intermediate Education Board of Ireland: Middle Grade Examination, with Honours in three subjects; Senior Grade Examination. Royal Colleges of Physicians and Surgeons in Ireland: Preliminary Examination. These Examinations are accepted subject to the conditions set forth in Section 2 (*c*) above.

The remainder of the curriculum, though all under the supervision of the Council, is in detail in the hands of the various degree- and diploma-granting bodies whose representatives are members of the General Medical Council. In the next pages we give the regulations of the various examining bodies, but it must always be remembered that the examinations are under the supervision of the General Medical Council, who visit the various centres in turn and closely inspect the procedure.

III. *Examinations Held Out of the United Kingdom.*

Every Certificate from Indian, Colonial, and Foreign Universities and Colleges must contain evidence that the Examination has been conducted by or under the authority of the Body granting it, must include all the subjects required by the General Medical Council, and must state that all the subjects of Examination have been passed in at not more than two examinations; copies of the form of the required Certificate are supplied by the Registrar of the Council for the purpose. In the case of Natives of India or other Oriental countries whose vernacular is other than English an Examination in a Classical Oriental Language (e.g., Sanskrit, Arabic, Chinese) may be accepted instead of an Examination in Latin. The German Abiturienten-Examen of the Gymnasia and Real-Schulen and the examinations entitling to the French diplomas of Bachelier ès Lettres and Bachelier ès Sciences and other corresponding Entrance Examinations to the Universities in Europe are recognised by the General Medical Council.

These examinations are accepted subject to the conditions set forth in Section 2 (*c*) above.

Further particulars are given in the Students' Regulations, which can be obtained at the offices of the Council, price 9*d*.

The Officers of the Council.

Norman C. King, Registrar of the General Council and of the Branch Council for England, 44, Hallam-street, Portland-place, W. 1.—James Robertson, Registrar of the Branch Council for Scotland, 54, George-square, Edinburgh.—Richard J. E. Roe, Registrar of the Branch Council for Ireland, 35, Dawson-street, Dublin. All communications should be addressed to "The Registrar" and not by name.

POSTPONEMENT OF THE ELECTION OF DIRECT REPRESENTATIVES.

By an Order in Council dated August 14th the provisions of the Parliament and Local Elections Act, 1918, have been extended to the election of members of this Council by registered practitioners resident in the United Kingdom, the effect of which is to extend the term of office of the existing Direct Representatives until Dec. 31st, 1919. Accordingly no election of Direct Representatives will fall to be held in the present year.

THE MEDICAL EXAMINING BODIES AND SCHOOLS OF THE UNITED KINGDOM.

A GUIDE TO THE FACILITIES FOR OBTAINING THE VARIOUS MEDICAL DEGREES AND OTHER QUALIFICATIONS FOR THE BRITISH MEDICAL REGISTER.

I.—ENGLAND AND WALES.

THE UNIVERSITIES.

UNIVERSITY OF OXFORD.

THERE are two degrees in Medicine, *B.M. and D.M.*, two degrees in Surgery, *B.Ch. and M.Ch.*, and two diplomas, *Public Health* and *Ophthalmology*.

Graduates in Arts (B.A. or M.A.) are alone eligible for the degrees. The most convenient course for the B.A. degree for intending graduates in Medicine is to take Responsions, the Preliminary Science Examinations mentioned below, and the Final Honour School of Physiology. In order to obtain the degrees of B.M. and B.Ch. the following examinations must be passed:—1. Preliminary subjects: Mechanics and Physics, Chemistry, Zoology, and Botany. 2. Professional. (*a*) First Examination: Subjects—Organic Chemistry, unless the candidate has obtained a first or second class in Chemistry in the Natural Science School; Human Physiology, unless he has obtained a first or second class in Animal Physiology in the Natural Science School; Human Anatomy. (*b*) Second Examination: Subjects—Medicine, Surgery, Midwifery, Pathology, Forensic Medicine with Hygiene, Materia Medica and Pharmacology. The approximate dates of the examinations are as follows:—Preliminaries—Zoology, Botany, and Chemistry, December and June; Mechanics and Physics, March and June; Professional (First and Second B.M.), June and December.

The First Examination for the degrees of B.M. and B.Ch. may be passed as soon as the Preliminary Scientific Examinations have been completed. Anatomy and Physiology are to be passed together, and Organic Chemistry may be taken before or after these have been passed.

The Second Examination may be passed after the completion of the first, but Pathology, Hygiene, and Materia Medica and Pharmacology may be taken before or with the remaining subjects. Before admission to the Second Examination candidates must present certificates of attendance on a course of laboratory instruction in Practical Pathology and Bacteriology and of having acted as post-mortem clerk for three months, surgical dresser for six months, and clinical clerk for six months. Also they must produce certificates of instruction in Infectious and Mental Diseases, and of attendance on Labours, of proficiency in the practice of Vaccination and Anæsthetics, and of having attended a course of Practical Pharmacology. Also in respect of the First Examination candidates must present

certificates showing that they have dissected the whole body once and have attended courses of laboratory instruction in Practical Histology and Practical Physiology.

The degree of D.M. is granted to Bachelors of Medicine of the University provided they have entered their thirtieth term and have composed on some medical subject a dissertation which is approved by the professors in the Faculty of Medicine and examiners for the degree of B.M. whose subject is dealt with. The degree of M.Ch. is granted to Bachelors of Surgery of the University who have entered their twenty-first term, who are members of the surgical staff of a recognised hospital, or have acted as Dresser or House Surgeon in such a hospital for six months, and who have passed the M.Ch. examination in Surgery, Surgical Anatomy, and Surgical Operations. This examination is held annually, in June, at the end of the Second B.M. Examination.

Diploma in Ophthalmology. — This diploma has been suspended during the war.

Travelling Fellowship, Scholarships, and Prizes. — A Radcliffe Travelling Fellowship is awarded annually after an examination held in February. It is tenable for three years and is of the annual value of £200. The examination is in Physiology, Pathology, and Hygiene, and is partly "practical." Candidates must be graduates in Medicine of the University. The holder must travel abroad for the purpose of medical study. Application should be made to the Radcliffe Examiners, Radcliffe Library, University Museum. A Rolleston Memorial Prize is awarded once in two years to members of the Universities of Oxford and Cambridge of not more than ten years' standing for an original research in some Biological subject, including Physiology or Pathology. The Radcliffe Prize, founded by University College (1907), is of the value of £50 and is awarded biennially for research in some branch of medical science. The Theodore Williams Scholarships of the value of £50 each are awarded annually in the subjects of Anatomy, Physiology, and Pathology. A King's College Hospital Burney Yeo Scholarship of £80 is awarded each year. The Scholarships in Science which are offered by several Colleges are open to those who intend to pursue Medicine. The value of these scholarships is usually £80 a year for four years.

In addition to the University lectures and classes the several Colleges provide their undergraduates with tuition for all examinations up to the B.A. degree.

In the Radcliffe Infirmary and County Hospital clinical instruction is given by the Regius Professor of Medicine, the Litchfield Lecturers in Medicine and Surgery, and the other physicians and surgeons. Instruction is also given in post-mortem work and Clinical Pathology in connexion with the courses in Pathology.

More detailed information may be obtained from the University Calendar; from the Examination Statutes, 1918 (both of which are published by the Clarendon Press); from the Regius Professor of Medicine; and from the Professors in the several departments of medical science. Certain special conditions as regards students who have been engaged on war service may be obtained on application to the Assistant Registrar of the University, Clarendon Building, Oxford.

UNIVERSITY OF OXFORD: RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—Courses of instruction are given in connexion with the Oxford University Medical School. These include (1) a course in Practical Medicine by the Regius Professor of Medicine; (2) Clinical lectures by the Litchfield Lecturers in Medicine and Surgery; and (3) tutorial instruction and demonstrations in special Regional Anatomy (medical and surgical), methods of Medical and Surgical Diagnosis, and Surgical Manipulation. (4) Pathological demonstrations and instruction in post-mortem work are given by the Assistant Pathologist. Practical Pharmacy is taught in the Radcliffe Dispensary. Opportunities are offered to students who wish to act as surgical dressers and clerks. The Hospital contains 170 beds.

UNIVERSITY OF CAMBRIDGE.

The student must enter at one of the Colleges, or as a non-collegiate student, and keep nine terms (three years) by residence in the University. He must pass the Previous Examination in Classics, Mathematics, &c., if possible, before he comes into residence in October, or he may obtain exemption through the Oxford and Cambridge Schools Examination Board, the Oxford or Cambridge Senior Local Examinations, the London Matriculation Examination, the Scotch Education Department, Responsions at Oxford, and the Joint Matriculation Board of the Universities of Manchester, Liverpool, Leeds, and Sheffield, the Matriculation Examination of the University of Birmingham, or by being graduates of certain other Universities in the United Kingdom. He may then devote himself to medical study in the University, &c. Or he may, as nearly all students now do, proceed to take a degree in Arts by passing either (*a*) the General Examination and one Special Examination, or (*b*) two Special Examinations for the ordinary B.A. degree, or an Honours degree in one of the Triposes. The Natural Sciences Tripos is taken most frequently, as some of the subjects are practically the same as those for the first and second M.B.

For the degree of *Bachelor of Medicine* (*M.B.*) five years of medical study are required either in Cambridge or at one of the recognised Schools of Medicine. The first three or four years are usually spent in Cambridge till he has passed, say, the examination for Part I. of the Natural Sciences Tripos and the first and second examinations for M.B. Hospital practice and many of the requisite lectures may be attended in Cambridge, and some students remain to attend lectures and hospital practice until they have passed the second part of the second examination for M.B. The laboratories for Botany, Chemistry, Physics, Biology, Zoology, Human Anatomy, Physiology, Biochemistry, Pathology, Bacteriology, Pharmacology, Psychology, and Public Health are well equipped. Addenbrooke's Hospital, the Infectious Diseases Hospital, the Cambridge Research Hospital, and the Field Laboratories are utilised for study and research.

There are three examinations for M.B. The *first* includes (1) Chemistry and other branches of Physics, and (2) Elementary Biology. These parts may be taken together or separately. The *second* is divided into two parts—viz., (1) Human Anatomy and Physiology; and (2) Pharmacology and General Pathology. The *third* is also divided into two parts: (1) Principles and Practice of Surgery (including Special Pathology and Midwifery and Diseases Peculiar to Women); and (2) Principles and Practice of Physic (including Diseases of Children, Mental Diseases, Medical Jurisprudence), Pathology (including Hygiene and Preventive Medicine), and Pharmacology (including Therapeutics and Toxicology). The examinations are partly in writing, partly oral, and partly practical, in the hospital, in the dissecting room, and in the laboratories. An Act has then to be kept in the Public Schools, by the candidate reading an original dissertation composed by himself and being examined orally on some subject approved by the Regius Professor of Physic.

Candidates who have passed both parts of the third M.B. examination are admitted to the registrable degree of *Bachelor of Surgery* (*B.Ch.*) without separate examination and without keeping an Act.

The degree of *Doctor of Medicine* (*M.D.*) may be taken three years after that of M.B. or four years after that of M.A. The candidate is required to produce certificates of having been engaged in Medical Study for five years, and if an M.A., to pass the same examinations as are required for the degree of M.B. An Act has to be kept, consisting of an original Thesis sustained in the Public Schools with *viva voce* examination; and a short extempore essay has to be written on a topic taken from the general subject of his thesis, whether it be Physiology, Pathology, Pharmacology, the Practice of Medicine, State Medicine, or the History of Medicine.

For the degree of *Master of Surgery* (*M.Ch.*) the candidate must have passed all the examinations for B.C., or, if he is an M.A., have obtained some other registrable qualification in surgery. He is required either (1) to pass an examination in Principles and Practice of Surgery, Surgical Anatomy and Surgical Operations, and Pathology, and to write an extempore essay on a Surgical Subject; or (2) to submit to the Medical Board original contributions to the advancement of the Science or Art of Surgery. Before he can be admitted to the examination two years at least must have elapsed from the time when he completed all

required for the degree of B.C. Before submitting original contributions he must have been qualified at least three years.

Women Students.—Increased facilities have been offered to students of Girton and Newnham Colleges, and they are admitted to the First and Second M.B. Examinations under certain conditions.

University Prize in Medicine.—The one University Prize in Medicine, the Raymond Horton Smith Prize (value £19), is awarded to that candidate for the degree of M.D. who presents the best thesis for the degree during the academical year, provided that he has taken honours in a tripos examination. Medical Studies are endowed by the numerous Natural Science scholarships at the various colleges, information about which can be obtained from the respective Tutors.

An abstract of the Regulations and Schedules of the range of the examinations in Chemistry, Physics, Biology, Pharmacology, and General Pathology may be obtained upon sending a stamped directed envelope to the Registrary, the Registry, Cambridge.

ADDENBROOKE'S HOSPITAL.—Clinical Lectures in Medicine and Surgery, in connexion with Cambridge University Medical School, are given at this hospital twice a week during the academical year; and practical instruction in Medicine and Surgery is given in the wards and out-patients' rooms by the physicians and surgeons daily during the term time and vacations. The fee for pupilship is 3 guineas a term. All communications by students should be made to Dr. Aldren Wright.

UNIVERSITY OF LONDON.

The University of London was established by Royal Charter in 1836 as an examining and degree conferring body with affiliated colleges but no direct teaching functions. In 1900 it was reconstituted under the Act of Parliament 1898 and became a teaching as well as an examining body. Many schools already existing became constituent colleges, including all the metropolitan medical schools. Teachers were also appointed in special subjects to give lectures at the University.

Teaching Staff.—The teaching staff of the University is organised under two heads: 1. Appointed teachers—i.e., such as are appointed by, and are paid out of the funds of, the University. 2. Recognised teachers—i.e., those who have been appointed and are paid by the several schools of the University and other institutions at which instruction is given under the auspices of the University, and who have been recognised by the Senate as conducting work of University standard. Courses by non-recognised teachers may also be approved in schools of the University. The lecturers in the Medical Sciences and the professors in the Faculties of Medicine in University College, London, and King's College, London, will be found enumerated under their respective medical schools.

Internal and External Students.—All the examinations of this University are open to men and women alike. Matriculated students of the University may be either internal or external. Internal students of the University are students who have matriculated at the University and who are pursuing a course of study approved by the University, either (*a*) under the direct control of the University or a committee appointed thereby; or (*b*) under one or more of the appointed or recognised teachers of the University. Centres for preliminary and intermediate medical studies have been established by the University at University and King's Colleges. Internal students must pursue their studies at one of the above centres, or at one of the medical schools connected with the University. These are St. Bartholomew's Hospital, Charing Cross Hospital, St. George's Hospital, Guy's Hospital, King's College Hospital, the London Hospital, St. Mary's Hospital, the Middlesex Hospital, St. Thomas's Hospital, University College Hospital, Westminster Hospital, and the London (Royal Free Hospital) School of Medicine for Women. The London School of Tropical Medicine and the Lister Institute of Preventive Medicine are also recognised as schools of the University in special departments. External students are all other matriculated students, and may pursue their studies at other universities and medical schools, presenting themselves for examination at the University of London.

Faculty of Medicine.—The Faculty of Medicine grants the joint degrees of M.B., B.S. (*Bachelor of Medicine and Surgery*), and the higher separate degrees of M.D. (*Doctor of Medicine*) and M.S. (*Master of Surgery*).

The curriculum for the medical degrees is now five and a half years from the time of matriculation, except in the case of students who have passed the Preliminary Scientific Examination or the First Examination for Medical Degrees before July, 1910, and the examinations formerly known as the Preliminary Scientific, the Intermediate, and the Final Examination in Medicine are now respectively entitled the First, Second, and Third Examinations for Medical Degrees. Part II. of the former Preliminary Scientific Examination has now been made Part I. of the Second Examination.

A. *Internal Students.*—In order to be admitted to the Bachelor's degrees a student must normally, after registration as an internal student, have: (1) Attended prescribed courses of study for five and a half years in one or more schools of the University. (2) Passed the following examinations, under the conditions mentioned below: (*a*) The First Examination for Medical Degrees in Inorganic Chemistry, Physics, and General Biology; (*b*) the Second Examination for Medical Degrees: Part I., Organic and Applied Chemistry; Part II., Anatomy, Physiology, and Pharmacology, including Pharmacy and Materia Medica; (*c*) the Third Examination for Medical Degrees, or M.B., B.S. Examination in Medicine, including Therapeutics and Mental Diseases, Surgery, Midwifery and Diseases of Women, Pathology, Forensic Medicine and Hygiene.

B. *External Students.*—To be admitted to the Bachelor's degrees an external student must (1) have passed the Matriculation examination or have been exempted therefrom under Statute 116 not less than five and a half years previously; (2) have passed subsequent examinations similar to those required of an internal student; and (3) have been engaged in professional studies during the five and a half years subsequently to Matriculation and four and a half years subsequently to passing the First Examination for Professional Degrees at one or more of the medical institutions or schools recognised by this University for the purpose, one year at least of the four and a half years to have been spent in one or more of the recognised institutions or schools in the United Kingdom.

The First Examination for Medical Degrees (Inorganic Chemistry, Physics, and General Biology) will take place twice in each year, commencing on the Monday following Dec. 10th and on the second Monday in July. It must as a rule be passed by internal students not less than one academic year after matriculation and by external students not less than nine months after matriculation.

The Second Examination for Medical Degrees (Part I.): Organic Chemistry.—This examination will take place twice in each year, commencing on the Thursdays following the third Monday in March and the second Monday in July. No candidate will be admitted to this examination within six months of having passed the First Examination. [During the continuance of the war only this examination will be held in December as well as in March and July.]

The Second Examination for Medical Degrees (Part II.) takes place twice in every year, commencing on the third Monday in March and on the first Monday in July. The subjects of the examination are Human Anatomy and Embryology, Physiology, and Pharmacology, including Pharmacy and Materia Medica. No candidate shall be admitted to the examination unless he has passed the First Examination for Medical Degrees at least 18 months previously, and has passed Part I. of the Second Examination for Medical Degrees.

The Third or M.B., B.S. Examination.—The M.B., B.S. examination takes place twice in each year, commencing on the fourth Monday in October and on the first Monday in May. No candidate except those who pass the Preliminary Science or First Examination for Medical Degrees before July will be admitted to this examination within three academic years from the date of passing in Anatomy and Physiology at the Second Examination (Part II.), nor unless he has completed that examination together with prescribed courses of study or practice summarised below. (1) Principles and Practice of Medicine; (2) Clinical Methods and Physical Diagnosis; (3) Insanity (with clinical demonstrations at a recognised Asylum); (4) Therapeutics; (5) Vaccination; (6)

Principles and Practice of Surgery; (7) Operative Surgery, Surgical Anatomy, Practical Surgery, and the Administration of Anæsthetics; (8) Diseases of the Eye, Ear, and Throat; (9) Lectures and Demonstrations on Midwifery and Diseases of Women; (10) Practical Midwifery, the conduct of at least 20 Labours, and practice as a Clinical clerk in Gynæcological work; (11) Pathology and Bacteriology; (12) work of the Post-mortem room; (13) Forensic Medicine; and (14) Hygiene. He must also have attended the Medical and Surgical practice of a recognised hospital for two years and a course of instruction at a recognised Fever Hospital for two months.[1] He must have had clinical instruction and must have held the posts of medical clinical clerk and surgical dresser for periods of six months each. Candidates will be examined in Medicine (including Therapeutics and Mental Diseases), Pathology, Forensic Medicine and Hygiene, Surgery, Midwifery, and Diseases of Women. The subjects may be divided into two groups—namely: (1) Medicine, Pathology, Forensic Medicine, and Hygiene; and (2) Surgery, Midwifery, and Diseases of Women. These groups may be taken either separately or together. The list of candidates who have passed will be published in two parts—namely, an Honours list and a Pass list. Bachelors of Medicine of this University who graduated in or before May, 1904, may obtain the B.S. degree by passing the Surgical part of the M.B., B.S. examination.

Doctor of Medicine.—The examination for this degree takes place twice in each year, commencing on the first Monday in December and on the first Monday in July. Candidates may present themselves for examination in one of the following branches, namely: (1) Medicine; (2) Pathology; (3) Mental Diseases; (4) Midwifery and Diseases of Women; (5) State Medicine; and (6) Tropical Medicine. Any candidate for the degree of M.D. may transmit to the Registrar a thesis or published work having definite relation to the branch of Medicine in which he is a candidate, and if the thesis be approved by the examiners the candidate may be exempted from the written examination in that subject.

Master in Surgery.—The examination for the degree of Master in Surgery takes place twice in each year and commences on the first Monday in December and on the first Monday in July.

Fees.—Matriculation £2 2*s.*, which will be returned if the candidate withdraws his name before the last day of entry. Should he fail to present himself an additional £1 1*s.* will be charged on subsequent presentation within eight months. £2 will be charged on each subsequent entry. At provincial examinations an additional fee of £1 1*s.* to £3 3*s.* is charged by the local authorities at the time of examination. First M.B., B.S. Examination: £5 5*s.* for each entry to the entire examination, or £2 2*s.* each subject if the examination is taken in parts. Second M.B., B.S. Examination: Part I. £2 2*s.*, repeated on each subsequent entry; Part II. £8 8*s.* for the whole examination. For re-examination in one subject £4 4*s.* Third (Final) M.B., B.S. Examination: £10 10*s.* for each entry to the whole examination and £5 5*s.* for examination or re-examination in each group. M.D. Examination: £21; for re-examination £10 10*s.* M.S. Examination: As for M.D.

Full details of the prescribed curricula of study and the names of the recognised Internal and External Schools of the University, can be obtained free on application to the Academic Registrar, University of London, South Kensington, S.W.

[1] During the continuance of the war students who have not passed the Second Examination for Medical Degrees in Anatomy and Physiology, but who have completed one year's study after passing the First Examination for Medical Degrees, will be allowed to count not more than six months' service as clinical clerk or not more than six months' service as surgical dresser in a recognised hospital as if they had so passed the examination in question. Clinical service during the continuance of the war, for any period of not more than twelve months in a medical Unit of the Regular or Territorial Forces, or in a hospital or detachment of the Red Cross Society, or in any hospital recognised by the military or naval authorities for war purposes, will be accepted by the University as equivalent to the medical and surgical practice in a recognised hospital for an equal period; and further, any portion or the whole of the time so spent will be accepted as equivalent to time spent either as a clinical clerk or as a dresser, at the choice of the candidate. Clinical service during the continuance of the war, as set forth above, will be similarly accepted for a period not exceeding six months from students who have not passed the Second Examination for Medical Degrees in Anatomy and Physiology, but who have completed one year of study after passing the First Examination for Medical Degrees, as if they had so passed the examination in question.

MEDICAL SCHOOLS OF THE UNIVERSITY OF LONDON.[1]

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.—The hospital contains 757 beds, of which 687 are for patients in the hospital at Smithfield and 70 for convalescent patients at Swanley. It receives over 8000 in-patients annually and its out-patients and casualties amount to more than 75,000 annually. Special departments have been organised for Diseases of Women and Children, the Eye, Ear, Larynx, and Skin, as well as for Orthopædic and Dental Surgery, and for Electro-therapeutics and X Ray work. Surgical operations take place every day at 1.30 P.M. and Surgical Consultations are held on Thursdays at the same hour. Medical Consultations are held on Thursdays at 3.15 P.M. The physicians and surgeons deliver clinical lectures weekly during both the winter and the summer sessions. Clinical Lectures on all special subjects are also given. The visits of the physicians and surgeons are made at 1.30.

Ten house physicians and ten house surgeons are appointed annually, and are provided with rooms by the hospital authorities and receive £80 a year as salary. A resident midwifery assistant, an ophthalmic house surgeon, and a house surgeon for diseases of the throat, nose, and ear are appointed every six months, and are provided with rooms and receive a salary of £80 a year. Three resident anæsthetists are appointed annually, and receive salaries of £120, £100, and £100 respectively, with rooms. An extern midwifery assistant is appointed every three months, and receives a salary of £80 a year. The clinical clerks, the obstetric clerks, the clerks to the medical out-patients, the dressers to the surgical in-patients and to the out-patients, and the dressers in the special departments are chosen from the students. A residential college is attached to the hospital.

New Buildings.—The new buildings comprise residential quarters for the resident staff, casualty, medical, surgical, and special out-patient departments, casualty wards, dispensary, and clinical lecture theatre. A new chemical laboratory has been added to the Medical School, and a laboratory devoted to instruction in Public Health. A second new block is devoted to Pathology, and contains the post-mortem room as well as extensive laboratories for bacteriology, clinical pathology, pathological histology, and pathological chemistry. *The Medical School Buildings* include three large lecture theatres, a large dissecting room, a spacious library (containing 13,000 volumes), a well-appointed museum of anatomy, physiology, comparative anatomy, materia medica, botany, and pathological anatomy. The pathological museum is the most complete in the kingdom. There are laboratories for chemistry, physiology, pharmacology, physics, public health, and biology, giving ample accommodation in every department.

Special Classes for the Primary and Final F.R.C.S. are held twice yearly. *Instruction in Preliminary Science* is given to University of London students in chemistry, biology, and physics throughout the year. *Laboratory Instruction for the D.P.H.* is provided during the winter and summer sessions.

The recreation ground of 10 acres is at Winchmore Hill for the use of the members of the Students' Union, which all students are expected to join. The Students' Union contains a large reading and smoking room, a committee and writing room, luncheon and dining hall, and a miniature rifle range.

Scholarships given in aid of Medical Study.—At this school various Scholarships, prizes, &c., are given. For five of the Scholarships and the Exhibition—namely, (*a*), (*b*), two Entrance Scholarships of the respective values of £75 and £100; (*c*) Entrance Scholarship in Arts, £100; (*d*) Jeaffreson Exhibition, £50; and (*e*) Shuter Scholarship, £50—a full or University course at St. Bartholomew's Hospital is required. The awards of (*a*), and (*b*) are made after examination in selections from the subjects of Chemistry, Physics, Zoology, Botany, Physiology, and Anatomy; (*c*) and (*d*) are awarded after examination in Latin, Mathematics, and Greek or French or German; (*e*) is awarded after competitive examination among Cambridge Graduates in Anatomy and Physio-

[1] For Ancillary Metropolitan Medical Schools see p. 280.

logy. The remaining Scholarships and prizes are as follows:—Four Junior Scholarships: (*f*) No. 1, £30, Anatomy and Physiology; (*g*) No. 2, £20, Anatomy and Physiology; (*h*) No. 3, £25, Chemistry, Physics, and Biology; (*i*) No. 4, £15, Chemistry, Physics, and Biology; (*j*) Senior Scholarship, £50, Anatomy, Physiology, and Chemistry; (*k*) Kirkes Scholarship, £30 and medal, Clinical Medicine; (*l*) and (*m*) two Brackenbury Scholarships, £39 each, one in Medicine and one in Surgery; (*n*) Sir G. Burrows Prize, £10, Pathology; (*o*) Skynner Prize, 13 guineas, Regional and Morbid Anatomy; (*p*) Matthews Duncan Medal and Prize, £20, Midwifery and Gynæcology; (*q*) Luther Holden Research Scholarship in Surgery, awarded by election, £105; and (*r*) Lawrence Research Scholarship and gold medal in Pathology, awarded by election, £115.

Information may be obtained on application to the Dean of the Medical School: Dr. T. W. Shore. The Warden of the College is Mr. W. Girling Ball.

CHARING CROSS HOSPITAL.—The Hospital, to which the School is attached, contains 300 beds. Over 3000 cases pass through its wards each year, and some 24,000 out-patients and casualties are treated. There are special departments for Mental Diseases, Midwifery, Diseases of Women, of Children, of the Skin, Eye, Ear, Throat, Nose, and Teeth, for Orthopædic Cases, X Ray work, and for Electrical Examination and Treatment.

Appointments.—In the Medical School Demonstratorships and Assistant Demonstratorships are open to students of the School. Medical, Surgical, and Obstetric Registrars to the Hospital are appointed annually. Six House Physicians, six House Surgeons, and two Resident Obstetric Officers are appointed each year after competitive examination.

Primary and Intermediate Studies.—By an agreement with the University of London the School sends its Primary and Intermediate Students to receive their lectures and practical work at King's College, which is situated within four minutes' walk. This arrangement has proved most successful.

Final Studies.—These are taken in the school and hospital, where systematic lectures, demonstrations, and tutorial classes are arranged to cover all the subjects necessary for qualifying examinations. Departments are also available for other final subjects of Bacteriology, Clinical Pathology, Materia Medica, Toxicology, Public Health, and Operative Surgery, and also for Research Work and Post-graduate Work.

The *Museum* contains over 4000 specimens, including a notable collection of over 800 gynæcological specimens, "The Cuthbert Lockyer Collection."

Students' Club.—The social comfort and convenience of students are met by library, reading, and smoking-rooms, refreshment-room, &c. The Club, which is under the control of a Committee of Students, provides needful athletic recreation, and includes the Medical Society.

Women Students.—Women students are accepted by the School and Hospital upon the same terms and conditions as men, and after qualification are eligible for resident Hospital appointments. A separate common-room and a female attendant are provided, but beyond this no further distinction is made. This system of co-education, under which men and women are placed on terms of complete equality throughout the whole of the curriculum, has been found to work successfully and to their mutual advantage.

Fees.—An entrance fee of 10 guineas and 8 guineas is payable by full-course and final-course students respectively, and an annual fee of 26 guineas covers all other expenditure, with the exception of 7 guineas for vaccination, dispensing, and fever hospital attendance, which must be taken outside the hospital. Membership of the Students' Club is included in these fees.

Further information may be obtained on application to the Dean, Dr. W. J. Fenton, Medical School, Charing Cross Hospital, London, W.C.

ST. GEORGE'S HOSPITAL.—This hospital has a service of 436 beds, of which 180 are allotted to surgical, 150 to medical cases, and 100 are at the Convalescent Hospital at Wimbledon. One ward is set apart for Diseases Peculiar to Women. Children's beds are placed in all the women's wards. Two wards are allotted to ophthalmic cases.

Entrance Scholarships and Endowed Prizes of a total value of £482 are awarded annually; a detailed list is placed below. The entire teaching and laboratories are now devoted to purely clinical subjects, and arrangements have been made with the University of London for students who enter during the first, second, or third year of the curriculum as students of St. George's to carry out the necessary courses of instruction at either University College or King's College. Students then complete their course, without payment of any entrance fee, in a school entirely devoted to Clinical work. The school is admitting a strictly limited number of women students during the war. These women students will be allowed to continue their studies until qualification.

Eight house physicians and eight house surgeons are appointed annually. Special attention is directed to the following paid appointments, among others, which are open to students after they have held house office:—Medical Registrarship at £200 per annum; Surgical Registrarship at £200; Assistant Curatorship of the Museum at £100; Obstetric Assistantship (Resident) at £50; the post of Resident Anæsthetist at £100; the post of Senior Anæsthetist at £50; the posts (3) of Junior Anæsthetists, each at £30. The St. George's Hospital Club, with smoking- and luncheon-rooms on the hospital premises, and an athletic ground at Wimbledon, is an amalgamation of the Hunterian Society, the *Gazette*, and the chess, lawn tennis, boxing, hockey, rifle, and golf clubs. Students have the advantage of a library of medical and scientific books which is kept up-to-date.

Scholarships and Prizes.—At this school two entrance scholarships are given, the money value and the subjects of examination being as follows: (*a*) and (*b*) two University Entrance Scholarships, 70 guineas and £50 respectively, Anatomy and Physiology. The others are as follows: (*c*) William Brown Exhibition, tenable for two years and open to perpetual pupils having registrable qualifications, £112 per annum, Practice of Medicine, Midwifery, and Surgery; (*d*) William Brown Exhibition, tenable for three years and open to perpetual pupils qualified not more than three years previously, £42 per annum, Essay and Original Work; (*e*) Allingham Scholarship in Surgery for Students qualified not more than three years, £50, Competitive Essay; (*f*) and (*g*) two Brackenbury Prizes, one in Medicine and one in Surgery, £30 each, open to students of not more than five years' standing; (*h*) H. C. Johnson Memorial Prize, £15, Practical Anatomy; (*i*) Pollock Prize, £17, Physiology, Physiological Chemistry, and Histology; (*j*) Clarke Prize, £5; (*k*) Thompson Medal, £5, Clinical Reports; (*l*) Brodie Prize, £7, Clinical Reports; (*m*) Webb Prize, open to perpetual pupils, £30, Bacteriology.

Further information may be obtained from the Acting Dean of the Medical School, Mr. R. R. James.

GUY'S HOSPITAL.—This hospital, founded by Thomas Guy in 1721 for the reception of 400 patients, and enlarged through the aid of a large bequest from the late William Hunt, contains at the present time 643 beds. The school buildings have been rebuilt and now offer very complete accommodation. Within the grounds of the hospital are situated the residential college, with accommodation for 60 students, the students' club, with reading, smoking, luncheon, and dining-rooms, a fives court, and swimming bath. The athletic ground and club house is situated at Honor Oak Park, and can be reached in 20 minutes from the hospital.

House physicians, house surgeons, out-patient officers and assistant house surgeons, obstetric residents, ophthalmic house surgeons, clinical assistants, clerks to anæsthetists, surgeons' and assistant surgeons' dressers, surgical and medical clinical clerks, post-mortem clerks, extern obstetric attendants, and dressers and clerks in the special departments are appointed from among the students upon the recommendation of the medical council according to merit.

There is a Medical Section of the Officers' Training Corps of the University of London in connexion with the Hospital. Drill is held in the grounds of the Hospital, so that the senior students can carry out the necessary military training without any serious interruption of their work in the wards. The establishment of a Venereal Clinic, in accordance with the Scheme of the Local Government Board and London County Council. Lectures and clinical instruction are given,

to which Medical Students and Practitioners are admitted without fee. Residential College: the rent of rooms remains the same, but the cost of board has increased.

Scholarships.—Five entrance scholarships are awarded annually as follows:—(*a*) one scholarship of £100 for students under 21 years of age, Latin, English, Greek or French or German, Arithmetic, Euclid, and Algebra; (*b*) one scholarship for students under 21 years, £120, Inorganic Chemistry, Physics, and Biology; (*c*) a Scholarship of £50, open to candidates under 21 years of age, to be awarded either in Arts or in Science, according to the discretion of the Examiners, and to the percentage of the marks obtained; (*d*) two scholarships, one of £75 and one of £35, for students under 25 years of age who have completed the curriculum for, or passed the examination in, Anatomy and Physiology for a medical degree in any University of the British Empire. Subjects: Any two of the following: Anatomy, Physiology, Pharmacology, General Pathology, Organic Chemistry.

In agreement with the practice of the Universities, an allowance will be made (1) for Military Service performed by candidates, the term "military service" meaning service in the Naval or Military Forces of His Majesty or of His Majesty's Allies during the present War; or (2) in respect of other approved duties in connexion with national defence.

The Honorary Dean of the Medical School is Sir Cooper Perry, the Sub-Dean Dr. M. S. Pembrey, from whom further information may be obtained.

UNIVERSITY OF LONDON: KING'S COLLEGE.—The medical department (Faculty of Science, Medical Division) at this College only deals with Preliminary and Intermediate subjects, and instruction in these subjects is given in the College laboratories by university professors and their assistants. The following four hospital schools prepare their students only for the final examinations—viz., King's College Hospital, Westminster Hospital, St. George's Hospital, and Charing Cross Hospital—sending them to King's College for the earlier part of the curriculum. The department is open to both men and women.

Fees.—For London University course: For First examination for medical degrees, 25 guineas; for the Second examination, 58 guineas, or two instalments of 30 guineas each. For Conjoint Board course: For First examination, 20 guineas; for Second examination, 58 guineas, or two instalments of 30 guineas each. For prospectus and further information application should be made to the Dean of the department (Professor W. D. Halliburton).

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL.—The advanced subjects in the curriculum are dealt with at the Medical School attached to King's College Hospital, which is situated at Denmark Hill, S.E. The hospital stands in the midst of a South London population, from which an immense amount of clinical material is forthcoming, an average of 3500 out-patients being dealt with weekly. There are 350 beds available for in-patients, and provision will ultimately be made for 600 beds. Special departments are provided for the following: diseases of women and children, the eye, ear, throat and nose, skin, teeth; radiography, radiotherapy and radium-therapy; pathology, massage, medical gymnastics, and electro-therapeutics. The appointments open to students are those of senior clinical assistant to the special departments; medical, surgical, and obstetric tutorships; resident casualty officer; resident anæsthetist; resident assistant pathologist; and medical, surgical, and obstetric registrarships. There are 16 resident medical and surgical officers appointed yearly.

Scholarships and Prizes.—For the first two scholarships in the list here shown a complete course at King's College is required. The money value and subjects of examination are as follows:—(*a*) Two Warneford Scholarships, tenable for four years, £25 each per annum; (*b*) Sambrooke Scholarship, £50; (*c*) Rabbeth Scholarship, £20; (*d*) Medical Entrance Scholarships, £50, Anatomy and Physiology, and, £50, Pathology and Pharmacology, open to students who (1) propose to take a degree at any British University, and have passed their University examination in Biology, Chemistry, and Physics, and who (2) will become students at King's College Hospital from date of entering upon Scholarship; (*e*) Two Medical Entrance Scholarships one in Arts and one in Science, £50 each, tenable for five years, successful candidates to study at King's College and King's College Hospital; (*f*) Three Medical Scholarships, £40 for fifth-year students, £20 for third-year students, and £20 for second-year students; (*g*) Two Sambrooke Registrarships, open to matriculated students who have filled certain appointments in hospital, £50 each; (*h*) Carter Prize, £15, Botany; (*i*) Tanner Prize, £10, Obstetrics and Diseases of Women; (*j*) Todd Prize, £4 4*s*. and medal, Clinical Medicine; (*k*) Two Burney Yeo Entrance Scholarships, £80 each, open to students of Oxford and Cambridge.

Athletics.—The King's College Hospital Clubs and Societies Union was formed in 1908, and consists of the Listerian and Musical Societies, the Hospital Common Room, and the various athletic and sports clubs. Admirable playing fields, over six acres in extent, have been provided for the use of the students on Dog Kennel Hill, Lordship-lane, S.E., about ten minutes' walk from the hospital. There are also Tennis Courts in the grounds of the Hospital and of "The Platanes," the hall of residence for students belonging to the hospital.

Fees.—The composition fee for Hospital work and Final subjects of the curriculum is 70 guineas if paid in one sum, or 72 guineas if paid in two instalments. For information and prospectus application should be made to Dr. H. W. Lyle, Dean of the Hospital, or to Mr. S. C. Ranner, M.A., Secretary of the Medical School, Denmark Hill, S.E. 5.

LONDON HOSPITAL.—The hospital has 933 beds in constant use and no beds are closed. It is the only general hospital for East London—i.e., for a million and a half people. In-patients last year, 16,053; out-patients, 102,130; major operations, 6656. From the beginning of the war to the close of 1917 4771 military patients were admitted, while naval patients (who were first admitted at the end of September) totalled 396. In the wards (containing 15 beds) provided for the treatment of syphilis 758 patients were admitted for treatment during 1917. Owing to the large number of patients more appointments are open to students than at any other hospital. 141 qualified appointments are made annually and more than 150 dressers, clinical clerks, &c., appointed every three months. All are free to students of the College. Holders of resident appointments have free board. Special classes are held for the degrees of the University of London, the Fellowship of the Royal College of Surgeons, and other higher examinations. Special entries for medical and surgical practice can be made. The Students' Hostel provides accommodation for 30 students. The Clubs Union Athletic Ground is within easy reach of the hospital. The Metropolitan and other railways have stations close to the hospital and the college.

Scholarships and Prizes.—At this school the successful candidates for the first items in the list here shown must enter as full students. The value and the subjects of examination are as follows:—Price Scholarship £100; and one Entrance Scholarship of £50, subjects of First Medical Examination at the University of London; Epsom College Scholarship, free education, subjects of First Medical Examination as above; Price Scholarship, open to students of Oxford and Cambridge Universities, £52 10*s*., Human Anatomy and Physiology; Buxton Scholarship, £31 10*s*., subjects of Preliminary Examination in Arts; three Scholarships for Clinical Work, £20 each, Medicine, Surgery, and Obstetrics; Sutton Prize, £20, Pathology; Duckworth Nelson Prize, biennial, £10, Pathology, Practical Medicine, and Surgery; Letheby Prizes (2), £25, Chemistry; £25 in Anatomy and Physiology; eight Dressers' Prizes, amounting to £40, zeal, efficiency, and knowledge of Elementary Clinical and Minor Surgery; Hutchinson Prize, triennial, £40, Clinical Surgery; two Practical Anatomy Prizes, £6 and £4 respectively; Andrew Clark Prize, biennial, £26, Clinical Medicine and Pathology; James Anderson Prizes, £9, Elementary Clinical Medicine; Wynne Baxter Prize, £5 5*s*., Forensic Medicine; Arnold Thompson Prize, £5; and Liddle Prize, triennial £120.

Medical Research Funds.—Research Funds of over £25,000, including the Eliza Ann Alston Endowment Fund for Medical Research, provide valuable scholarships for men wishing to undertake research or desirous of preparing Theses for University degrees.

The above arrangements are subject to revision in consequence of circumstances arising out of the war.

Further information may be obtained from the Dean of the Medical School, Professor Wm. Wright, or from the Secretary of the College, Mr. E. J. Burdon.

ST. MARY'S HOSPITAL.—305 beds. The number of in-patients treated during 1917 was 2861. The number of out-patients was 12,512 with 17,794 casualty cases, a total of 30,306. The situation of the hospital and Medical School in the centre of the residential districts of Paddington, Bayswater, and North Kensington renders it exceptionally convenient for students' rooms, a register of which is kept by the authorities for the use of students.

Laboratories, &c.—The Medical School provides for the entire curriculum. Special laboratories are in use for Biology, Chemistry, and Physics, a series of lecture theatres and laboratories for Anatomy and Physiology, and a spacious and well-lighted dissecting-room. The Pathological Department is under the direction of Dr. B. H. Spilsbury, and a block of consulting-rooms and laboratories in the New Wing of the Hospital has been equipped for the department of Therapeutic Inoculation.

Appointments.—All clinical appointments in the hospital are free to students of the Medical School and the resident medical officers are chosen by competitive examination. Six house physicians, six house surgeons, four obstetric officers are appointed in each year and receive board and lodging in the hospital. Two resident anæsthetists are appointed in each year and receive a salary at the rate of £100 per annum, with board and lodging. Four casualty house surgeons are appointed in each year upon the same conditions. Several assistants in the department of Therapeutic Inoculation are appointed annually at salaries of £100 per annum and upwards. In addition to the above, the senior appointments, medical, surgical, and obstetric registrar, casualty physician, demonstrator of anatomy, physiology, and biology are made annually.

Clubs, &c.—The amalgamated clubs include all the various athletic clubs, as well as the medical society, &c. There is a students' club on the Hospital premises, the membership of which is included in the amalgamated clubs. The athletic clubs' ground at Park Royal, Acton, has been commandeered by the War Office and sold. Steps are now being taken to procure a new site.

Special Tuition.—Special tuition is provided for the Intermediate and Final Examinations of the Universities of Oxford, Cambridge, and London, and for the Primary and Final F.R.C.S.

The composition fee for full students is £140 if paid in one sum, or £145 if paid in four instalments. University students who have completed their examinations in Anatomy and Physiology are admitted on payment of a composition fee of 65 guineas (£68 5*s.*) paid in one sum or by payment of two annual instalments of 40 guineas (£42) and 30 guineas (£31 10*s.*) respectively. A system of annual fees is also in force as an alternative to composition fees. Separate courses of lectures, laboratory work, or hospital practice may be taken.

Scholarships and Prizes.—The money value and subjects of examination of these are as follows: (*a*) and (*b*) Entrance Scholarships in Natural Science, £100 and £50 respectively, awarded by competition in September; (*c*) the Frederic John Palmer Scholarship in Natural Science, £25; (*d*) University Scholarship in Natural Science, open to members of Oxford or Cambridge University, £52 10*s.*; (*e*) University Scholarship in Natural Science, open to members of any British University, £52 10*s.*; (*f*) Epsom Scholarship, awarded by nomination, £52 10*s.*; (*g*) Gold Medal, £20, an Essay on Some Special Point in Clinical Medicine; (*h*) Meadows' Prize, awarded in alternate years, £8, Obstetrics; (*i*) Wallace Memorial Prize and Medal, for work in Vaccine Therapy, £5 5*s.* David Lees Prize in Clinical Medicine, £8.

Sir John Broadbent is Dean of the Medical School. The School Calendar and full information can be obtained from the Secretary, Mr. B. E. Matthews, St. Mary's Hospital Medical School, Paddington, W.

MIDDLESEX HOSPITAL.—The Hospital and Medical School are situated in Mortimer-street, at the top of Berners-street, and only a few minutes' walk from Goodge-street Station (Hampstead and Charing Cross Tube), Oxford Circus Stations (Bakerloo and Central London Tubes), and Great Portland-street Station (Metropolitan Railway).

The hospital contains 455 beds, including special wards for Cancer Cases, Maternity and Gynæcological Cases, and for Diseases of Children and the Skin and Eye.

The Cancer Charity, containing 92 beds and Special Investigation Laboratories, offers unrivalled opportunities for the study of Cancer, both in its clinical and pathological aspects.

In the Electro-Therapeutical Department students obtain instruction in the Treatment of Lupus and Cancer by the X Ray method of treatment. An Electrocardiograph Department has recently been established.

The Hospital and Medical School are fully equipped for the theoretical and practical teaching of all the subjects of the medical curriculum, and for the Diplomas in Public Health. Ample laboratory and class-room accommodation is provided.

The Bland-Sutton Institute of Pathology contains a new lecture theatre and large pathological, bacteriological, and clinical laboratories where every facility is given for original research. The Anatomical and Pathological Museum is now part of the Institute. Special classes are held to prepare students for the Intermediate examinations of the Universities, and for the Primary and Final examinations for the F.R.C.S. (England) Diploma. There is a Residential College in the hospital for students.

Hospital Appointments.—All appointments are made without fee of any kind, and the following are appointed at intervals annually: six house physicians, eight house surgeons, two obstetric and gynæcological house surgeons, two casualty medical officers, two casualty surgical officers, one resident anæsthetist, and two resident officers to the special departments. The medical and surgical casualty officers are appointed twice a year. The medical, surgical, and obstetric and gynæcological registrars are appointed as vacancies arise.

Non-resident qualified clinical assistants are appointed to assist in the various out-patient departments. Clinical clerks and surgical dressers are also appointed in every department.

Scholarships, Prizes, &c.—(*a*), (*b*), and (*c*) Three Entrance Scholarships, value £100, £50, and £25, and (*d*) a University Scholarship, value £50, are awarded annually in September. The successful candidates are required to become general students of the school. (*e*) A Freer Lucas Scholarship for Students of Epsom College is awarded annually on the nomination of the Headmaster. There are also, (*f*) and (*g*), two Broderip Scholarships, value £60 and £40 respectively; (*h*) the Lyell Gold Medal and Scholarship, value £55 5*s.*; (*i*) the John Murray Medal and Scholarship, value £25 (awarded every third year); (*k*) the Freeman Scholarship, value £30; (*l*) the Hetley Clinical Prize, value £25; (*m*) the Leopold Hudson Prize, value 11 guineas; and (*n*) the Second Year's Exhibition, value 10 guineas. There are also numerous class prize examinations.[2]

In connexion with the Cancer Investigation Department the following Scholarships are awarded:—Richard Hollins Research Scholarship, value £100; Walter Emden Scholarship, value £100; and a Cancer Research Scholarship, value £60.

Fees.—The Composition Fee for the curriculum for the diplomas of the Conjoint Board or Society of Apothecaries is 135 guineas; for the curriculum for the degrees of the University of London 145 guineas; for students who have passed the First Examination for Medical Degrees (University of London), 120 guineas; and for those who have completed their Anatomical and Physiological studies, 70 guineas. The fee for Dental students is 54 guineas. The fees may be paid by instalments.

The Amalgamated Students' Club includes the following: the Medical Society, the Common Room Society, the cricket club, the football clubs, the athletic club, the rowing club, the musical society, the chess club, the lawn tennis club, and the hockey club. A subscription to the Amalgamated Students' Club is payable by all General and Dental students.

ST. THOMAS'S HOSPITAL.—This hospital received its present charter from King Edward VI., but as a monastic institution was in existence prior to the year 1207. The building occupies a unique position by the river, opposite the Houses of Parliament, and contains 1014 beds, including

[2] Certain of these scholarships and those in connexion with the Cancer Investigation Department have been modified for the period of the war, particulars of which can be obtained on application.

530 for military patients. The in-patients last year numbered 9780, whilst the number of attendances as out-patients, including the casualty and light departments, was 242,686. There are special departments for the treatment of women, children, the eye, ear, nose and throat, skin, and teeth. The Tuberculosis Department forms a part of the Lambeth scheme for treatment of patients and for instruction. The Venereal Department has been established as part of the London County Council scheme. Departments for light treatment. X rays, and the Physico-therapeutic Department are also special features. A speech clinic has recently been inaugurated in connexion with the Children's Department. Exceptional facilities are offered in the hospital laboratories for the study of general pathology, clinical pathology, chemical pathology, cardiology, and of treatment by serums and vaccines. Surgical operations take place in the main theatres every day except Saturdays at 2 P.M. Clinical teaching in the wards, out-patients' and special departments, is available every day of the week. Clinical lectures are delivered every Wednesday during the sessions. All appointments in the hospital are open to students without extra fee. Clinical assistants to all the special departments are appointed every three months. A resident assistant physician and a resident assistant surgeon, at a salary of £150 each, are appointed biennially; also four hospital registrars (medical, surgical, obstetric, and ophthalmic), the two former receive a salary of £150 and the two latter £50. An assistant in the clinical laboratory and an assistant pathologist are paid at the rate of £200 per annum. Appointments open to students before qualification: Clinical clerks and dressers for in- and out-patients are selected from students who have completed their third year's work. Every student acts as clerk in the post-mortem room and in one of the pathological laboratories, takes his turn on maternity duty under proper supervision in the maternity ward, thus obviating any necessity for seeking instruction elsewhere. Students are instructed in the administration of anæsthetics by one of the hospital anæsthetists. The Students' Club comprises a spacious restaurant and smoking and reading room. There is no occasion for students to leave the hospital buildings during working hours. The curriculum is arranged to meet the requirements of all the Examining Bodies. Special classes are held for the examinations at the University of London and for the First and Final Fellowship Examinations of the Royal College of Surgeons of England. Tutorial classes in all subjects precede the various examinations. The hospital is easily accessible from all parts.

Fees.—The annual composition fee is 30 guineas, covering all tutorial classes—in addition to a fee on entrance. Qualified practitioners are permitted to attend the hospital practice on terms which may be ascertained from the secretary.

Scholarships and Prizes.—At this school there are five Entrance Scholarships—namely, two in Arts, equivalent to the tuition fees for the first medical examination; two in Natural Science, of the value of £150 and £60 respectively, to be taken out in tuition fees; and the University Scholarship of £50 in Anatomy, Physiology, and Chemistry. The money value and subjects of examination of the remainder are as follows: (*a*) and (*b*) two College Prizes, one for second-year students and one for third-year students, £10 and £5 respectively; (*c*) William Tite Scholarship for second-year students, £25; (*d*) and (*e*) Musgrove Scholarship or (alternately) Peacock Scholarship, each for third-year students and tenable for two years, £35 each; (*f*) three College Prizes for fifth-year students of £10 each and three of £5 each; (*g*) Cheselden Medal, Surgery and Anatomy; (*h*) Mead Medal, Medicine, Pathology, and Hygiene; (*i*) Toller Prize, Medicine, Pathology, and Hygiene; (*j*) Bristowe Medal, Pathology and Morbid Anatomy: (*k*) Solly Medal and Prize, biennially, Surgical Reports; (*l*) Treasurer's Gold Medal for the most distinguished fifth-year student; (*m*) Wainwright Prize, Medicine, Pathology, and Hygiene: (*n*) Hadden Prize, Pathology; (*o*) Beaney Scholarship, £50 biennially, Surgery and Surgical Pathology; (*p*) Sutton Sams Prize, biennially, reports of cases in Obstetric Medicine; (*q*) Grainger Testimonial Prize, £31 10*s*. Anatomy and Physiology; (*r*) Salters' Company Research Fellowship, tenable for three years, £100 annually, Pharmacology; (*s*) Louis Jenner Research Scholarship, tenable for two years, £60 annually, Pathology; and (*t*) Research Scholarship, tenable for two years, £200 per annum.

The Dean of the Medical School is Dr. E. Stainer, the Sub-Dean Dr. C. R. Box, and the Secretary Mr. G. Q. Roberts, from whom any further information may be obtained.

UNIVERSITY OF LONDON, UNIVERSITY COLLEGE.—University College has been constituted a University centre for the teaching of medical sciences. The College Faculty of Medical Sciences comprises the Departments of Physics, Chemistry, Botany, and Zoology (the Preliminary Medical Sciences); also the Departments of Anatomy, Physiology, and Pharmacology (the Intermediate Medical Sciences), and the Departments of Hygiene and Public Health, and of Pathological Chemistry (Post-graduate Study).

Faculty of Medical Sciences.—Composition fees.—For the courses required by the University of London. 1. For the First Medical Course, 26 guineas, entitling to one attendance and to the privileges of the Union Society for one session. 2. For the Second Medical (Intermediate) Course, 58 guineas if paid in one sum; 60 guineas if paid in two instalments of 30 guineas each. This fee entitles to attendance at Anatomy and Physiology during three years and to one attendance at Organic and Applied Chemistry, Pharmacology, and Materia Medica, and to the privileges of the Union Society for two sessions.

For the medical education required by the Examining Board in England and the Society of Apothecaries. First examination, Parts I., II., III., 21 guineas, entitling to attendance for the First and Second Terms and to the privileges of the Union Society for one session; 26 guineas, entitling to attendance throughout the session and to the privileges of the Union Society for one session. First Examination, Part IV., and second examination, 58 guineas if paid in one sum, and 60 guineas if paid in two instalments of 30 guineas each. This fee entitles to attendance during three years in all subjects but Practical Pharmacy and to the privileges of the Union Society for two sessions.

Scholarships and Prizes.—The first three items on the present list require a complete intermediate course at University College. The money value and subjects at examinations are as follows: (*a*) The Bucknill Scholarship, 135 guineas; (*b*) and (*c*) two Entrance Exhibitions, 55 guineas each, Chemistry, Physics, Botany, and Zoology; (*d*) Cluff Memorial Prize, £15 biennially, Anatomy, Physiology, and Chemistry; (*e*) Schäfer Prize in Physiology, £18 triennially; (*f*) Sharpey Physiological Scholarship, £105, Biological Sciences; (*g*) Morris Bursary for sons of deceased professional men, by nomination, tenable for two years, £16 a year; and (*h*) five Gold* and five Silver Medals* awarded annually in various departments.

Women students are admitted.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.—Dean: Dr. G. F. Blacker. Acting Secretary: G. E. Adams. It has been decided† to admit women as Medical Students to this Hospital and Medical School on and after Oct. 1st, 1918. They will now be able to pursue the whole of their Medical Education at University College and University College Hospital, and will be eligible for all Scholarships, Exhibitions, and Prizes, at the Medical School. Fees for Preliminary and Intermediate Course: See under University College. For the Final M.B., B.S. (London) Course, 80 guineas if paid in one sum, 82 guineas if paid in two instalments, as follows—first year, 50 guineas; second year, 32 guineas. This fee entitles to attendance on Lectures and Hospital Practice during three years and to one attendance on Practical Pathology and Practical Surgery. Vaccination and attendance at a Fever Hospital are not included. Students who obtain a medical qualification within three years of the time of commencing this course are not required to pay an additional fee for further attendance. This course of instruction is also suitable for the corresponding examinations at the Universities of Oxford, Cambridge, and Durham, and for the medical education required by the Examining Board in England and the Society of Apothecaries.

There are over 400 beds in the hospital.

* Award suspended during the war.

† See THE LANCET, August 10th, 1918, p. 190.

Special Departments, Clinical and Laboratory Facilities.—Those who are desirous of carrying out original research in Pathology, including Morbid Anatomy, Bacteriology, Experimental Pathology, and Chemical Pathology, are admitted to work in the laboratories of the school by the Director of Pathological Studies and Research, and under certain conditions can receive grants from the Charles Graham Medical Research Fund. A special course of instruction is given for preparation for the examinations for Diplomas in Public Health of the various universities and examining bodies; also special courses of Lectures and Demonstrations in Anæsthetics, Diseases of the Eye, Ear, Nose, and Throat, Skin, and Diseases of the Teeth, in Electrical and Radioscopic Diagnosis and Treatment, in Clinical and Tropical Pathology, and in Cardiac Pathology. These courses are designed for senior students and graduates. Special arrangements have been entered upon which, when completed, will enable students of University College Hospital to carry out a portion of their clinical studies at the National Hospital for Nervous Diseases, Queen-square, the Children's Hospital, Great Ormond-street, and the Central London Ophthalmic Hospital, Judd-street. The Royal Ear Hospital, Dean-street, Soho, has been amalgamated with University College Hospital as the Ear, Nose and Throat Department. In the Dental Department in Great Portland-street, formerly known as the National Dental Hospital, there is afforded the opportunity for attending lectures and practical instruction in diseases of the mouth and teeth.

Appointments tenable by Students.—Clerkships and dresserships to the physicians, surgeons, anæsthetist, and pathologist are allotted amongst the students of the hospital. Maternity students are appointed each month and reside in the Students' House connected with the Medical School and Hospital. Eight house physicians and house surgeons, four senior and four junior obstetric assistants, are selected annually by examination from among the senior students who have a medical qualification. The house physicians and house surgeons reside free in the hospital for six months, and the senior obstetric assistants for three months. In addition to these posts there are certain special appointments which are vacant from time to time and are filled by senior students of the hospital: 1. The Resident Medical Officer. This officer is appointed for a period of two years and is chosen from amongst the more senior recent residents of the hospital. 2. The two Surgical Registrars are also chosen from among the more senior recent residents of the hospital. 3. The Obstetric Registrar. 4. Two Casualty Medical Officers and a Casualty Surgical Officer are appointed, each for a period of six months. 5. Assistant in Ear and Throat Department, appointed for one year. 6. Assistant in Ophthalmic Department, appointed for one year. 7. Registrar in Anæsthetic Department, appointed for one year. 8. Deputy Anæsthetists. During the absence of one or another of the Anæsthetists in the summer months a senior qualified student is appointed as a substitute and is granted a special certificate.

Museum of Pathological Anatomy.—The Museum, a spacious and well-lighted room, is open for study from 9 A.M. to 5 P.M. Microscopic sections of most of the specimens in the Museum have been prepared and are available for the use of students on application to the Curator. The Museum contains 1100 admirable paintings by Sir Robert Carswell and Sir Charles Bell and a collection of old surgical instruments formerly belonging to Robert Liston.

The Anatomical Museum of the University of London, University College, is open to all students of University College Hospital and Medical School on the recommendation of the School Committee.

The Medical Library is open daily for the purposes of study to every student of the Medical School from 9 A.M. to 5 P.M., Saturdays 9 A.M. to 1 P.M. It contains about 13,500 works on medical subjects, including all the current text-books and works of reference required for study or research.

The Medical Society of University College Hospital Medical School exists for the dual purpose (1) of promoting the study of Medical and Surgical Science, and (2) of promoting social intercourse among its members. All Students of the Medical School are eligible for membership. Meetings are held once a fortnight for the purpose of discussing subjects connected with the study of medicine. In its social aspect the society includes various athletic clubs and superintends the gymnasium and squash racquet court in the Medical School. The Athletic Ground, which is used in conjunction with the Union Society of the University of London University College, is situated near the Great Western Railway station at Perivale.

Scholarships and Prizes.—At this School the first two Scholarships (*a*) and (*b*) require a complete course at University College and University College Hospital Medical School; the second two (*c*) and (*d*) require a final course at the Medical School. The money value and subjects of examination are as follows:—(*a*) Entrance Scholarship, Bucknill, 135 guineas, Chemistry, Physics, Botany, and Zoology; (*b*) Epsom Free Medical Scholarship, subjects of Preliminary Scientific Examination and Nomination by Epsom College; (*c*) and (*d*) two Goldsmid Entrance Exhibitions, 80 guineas each, Anatomy and Physiology; (*e*) Graham Scholarship in Pathology, £200 per annum for two years, awarded by the Senate of the University of London; (*f*) Atkinson Morley Scholarship, tenable for three years, £45 per annum, Surgery; (*g*) Atchison Scholarship, tenable for two years, £55 per annum; General Proficiency in Medical Studies: (*h*) Magrath Clinical Scholarship, about £100, Clinical Cases; (*i*) Percival Alleyn Scholarship, about £60, Surgery; (*j*) Filliter Exhibition, £30, Pathology; (*k*) Erichsen Prize, £10 10*s*., Practical Surgery; (*l*) two Senior and two Junior Fellowes Clinical Medals for Clinical Medicine; (*m*) two Liston Gold Medals for Clinical Surgery; (*n*) Alexander Bruce Gold Medal for Pathology and Surgery; and (*o*) Tuke Silver and Bronze Medals for Pathology. (*p*) Radcliffe Crocker Travelling Scholarship for Dermatology.

Residence of Students.—University College Hall, Ealing, is recognised by the Medical School authorities as a residential hostel. The Students' House in University-street contains large and comfortable rooms. The Maternity Students occupy them on payment of a moderate charge. Gentlemen who desire assistance in their studies should consult the Dean or Lecturers.

WESTMINSTER HOSPITAL.—The hospital contains 215 beds and affords relief to upwards of 2000 in-patients and 30,000 out-patients annually. There are separate departments for Diseases of the Eye, Ear, Skin, Teeth, and Throat, for Orthopædic practice, for Diseases of Women, for Diseases of Children, for Radiography, and for the Light Treatment. The Anatomical, Pathological, and Materia Medica Museums are open to all students of the school.

The usual registrarships and house appointments will be made at the conclusion of the war.

By a scheme for the concentration of the teaching of the preliminary and intermediate subjects of the curriculum, which has the support of the London University, an arrangement has been made by the Westminster School for the teaching of these subjects at King's College. Students, however, join the Westminster Medical School as formerly and may compete for Entrance Scholarships as heretofore.

Scholarships and Prizes.—The following Entrance Scholarships are offered for competition: Winter Session: (*a*) Arts Scholarship, the "Guthrie," £60. (*b*) Science Scholarships: Natural Science Scholarship, £60; Chemistry and Physics Scholarship, £30; and Two Scholarships in Anatomy and Physiology, £50 each. Summer Session: Two Scholarships in Anatomy and Physiology, £50 each. During the period of study the following prizes may be competed for: Sturges Prize in Clinical Medicine, about £6, Notes of Cases; Clinical Surgery Prize, £5, Notes of Cases; Chadwick Prize £21 in books or instruments, Medicine and Surgery, including Pathology and Applied Anatomy and Physiology; Frederic Bird Medal and Prize, open to Fourth-year Students, £14 in medal and books or instruments—Midwifery, Diseases of Women, Medicine, Pathology, Forensic Medicine and Bacteriology, and Public Health and Toxicology; Abrahams Prize in Clinical Pathology, 5 guineas, a Paper and Tests in Practical Work; Alfred Hughes Memorial Prize, open to Second-year Students, about £5 in books or instruments—Anatomy; Huxley Memorial Prize, 3 guineas in books or cash, open to Second-year Students—Physiology; Carter Gold Medal and Prize for Botany, open to Students of not more than three years' attendance, gold medal and books of the joint value of £15;

Jelf Medal awarded to Third-year Students; Second-year Scholarship, £20, Elementary Anatomy, Physiology, Histology, and Organic Chemistry; Daniell Scholarship, tenable for two years, £20, Chemistry; Rabbeth Scholarship, open to First-year Students, £20, Class Examinations in the Preliminary Scientific Course; and the Sambrooke King's College Scholarship in Science, value £25.

The Secretary to the Medical School is Dr. E. B. Hulbert (Librarian) to whom inquiries may be addressed.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN, 8, Hunter-street, Brunswick-square, W.C.—The fee for the medical course for the degrees of the University of London and for the diplomas of the Royal Colleges of England and for other qualifications is £169 in one sum, or £179 in five instalments. These sums include library and laboratory fees.

The Royal Free Hospital contains 184 beds, of which 78 are reserved for surgical, 64 for medical, 13 for gynæcological, six for ophthalmic, 11 for maternity, and four for isolation cases. Students can also attend the in-patient and out-patient practice of the Elizabeth Garrett Anderson Hospital.

An agreement has also been made under which students of the school attend full clinical courses at St. Mary's Hospital, Paddington (305 beds).

Special courses are arranged for the Primary Fellowship Examination of the College of Surgeons; also for dental students in conjunction with the London Dental Hospital, Leicester-square, and the National Dental Hospital.

Students after qualification can hold the posts of house physician, house surgeon, obstetric assistants, clinical assistants, anæsthetists and assistant anæsthetist, medical and surgical registrars, pathologists, medical electrician, and museum curator; and at the Medical School the posts of demonstrators in the departments of Anatomy, Physiology, Chemistry, and Physics. They can also hold posts at the Elizabeth Garrett Anderson Hospital, South London Hospital for Women and Children, and at four other hospitals in London officered by medical women. Many other resident posts in London and elsewhere are also open to them.

The School buildings have been entirely rebuilt in recent years, and there are spacious, well-equipped laboratories, which afford every facility for efficiency of teaching and practical work in all departments. An extension of the School was opened in 1916. The extension will enable 90–100 new students to be received at the School each year.

There are residential chambers at 8, Hunter-street, 25, Gordon-square, and 36, Tavistock-square, and the Warden can be consulted on the subject of other residences for students. The Students' Union arranges the social, athletic, and other clubs and societies at the School.

Scholarships and Prizes.—(*a*) Isabel Thorne Scholarship, £30. (*b*) St Dunstan's Medical Exhibition, £60 a year, tenable for three or five years. (*c*) Mrs. George M. Smith Scholarship, £50 a year, tenable for three or five years and next to be awarded in 1919. (*d*) Bostock Scholarship, tenable for two or four years, and next to be awarded in June, 1919, £60. (*e*) Mabel Sharman-Crawford Scholarship, tenable for four years, £20 a year. (*f*) Sir Owen Roberts Scholarship, £75 a year for four years. (*g*) Mabel Webb Research Scholarship, tenable for one year and renewable, £30, Physiology, Chemistry, or Pathology. (*h*) Fanny Butler Scholarship, tenable for four years; next award in July, 1918, £14 10*s*. (*i*) John Byron Bursary, tenable from two to four years, for students already in the School requiring assistance for the prosecution of their medical studies, application to the Secretary by March 31st; next award in March, 1919, £20. (*k*) Ellen Walker Bursary tenable for two years, awarded to a student beginning fourth year of medical study, £25 a year. (*l*) Helen Prideaux Scholarship, awarded every second year to a student who has become qualified during the two years immediately preceding the award, and to be spent in assisting the holder to further study, £40. (*m*) Agnes Guthrie Bursary, value £60, is offered annually to students who desire to pursue a full course of study for the Licentiateship in Dental Surgery. (*n*) Dr. Edith Pechey Phipson Post-graduate Scholarship of the value of £40, awarded annually in June. It is open to all medical women, preferably coming from India, or going to work in India, for assistance in Post-graduate study. (*o*) Sarah Holborn Scholarship, value £20 a year for three or five years, awarded every alternate year; next award in 1919. Two Richardson-Kuhlmann Prizes are given each year, value £12, for proficiency in Clinical Obstetrics, value £8, for proficiency in senior subjects respectively. Two Evans Prizes of £2 2*s*. and £1 1*s*. are given each year on the results of the class examination in Midwifery. The Evans Prize for Operative Midwifery, value £5 5*s*., is awarded yearly. The Edith Pechey Phipson Prize in Pharmacology, value £3 3*s*., is awarded annually. There is also a small loan fund from which assistance can occasionally be given to students and to graduates who specially require pecuniary help. Prizes and Certificates of Honour are awarded in each class at the end of the session.

The Dean of the Medical School is Miss Aldrich-Blake, M.D.; the Honorary Secretary, Dr. May Thorne; and the Warden and Secretary, Miss L. M. Brooks, to whom inquiries may be addressed.

UNIVERSITY OF DURHAM.

Two Diplomas, one Licence, and six degrees are conferred—viz., the Diploma in Public Health, Diploma in Psychiatry, the Licence in Dental Surgery, and the degrees of Bachelor of Medicine, Bachelor of Surgery, Master of Surgery, Doctor of Medicine, Bachelor of Hygiene, and Doctor of Hygiene.

For the degree of *Bachelor of Medicine* there are four professional examinations. The subjects of the First Examination are—Elementary Anatomy, Elementary Biology, Chemistry, and Physics. The subjects of the Second Examination are—Anatomy and Physiology. The subjects for the Third Examination are—Materia Medica and Pharmacy, Pathology, Medical Jurisprudence, Public Health, and Pathology and Elementary Bacteriology. The subjects of the Fourth Examination are—Medicine, Clinical Medicine and Psychological Medicine, Surgery and Clinical Surgery, Midwifery and Gynæcology, Therapeutics, and Diseases of the Skin, of the Throat, Nose, and Ear, and of Children.

It is required that at least one of the five years of professional education shall be spent in attendance at the University College of Medicine, Newcastle-upon-Tyne. Candidates who have passed the First and Second Examinations of the University will be exempt from First and Second Examinations of the Conjoint Board.

For the degree of *Bachelor of Surgery* every candidate must have passed the examination for the degree of Bachelor of Medicine of the University of Durham and must have attended one course of lectures on Operative Surgery and one course on Applied Anatomy. Candidates will be required to perform operations on the dead body and to give proof of practical knowledge of the use of surgical instruments and appliances.

For the degrees of *Doctor of Medicine* and *Master of Surgery* a candidate must not be less than 24 years of age and must satisfy the University as to knowledge of Greek or German. If he has not already satisfied the Matriculation Examiners in either Greek or German he must pass in one of these subjects at one of the ordinary matriculation examinations of the Newcastle division of the University. He must also have obtained the degree of Bachelor of Surgery of the University of Durham and must have been engaged for at least two years subsequently to the date of acquirement of the degree of Bachelor of Surgery, in attendance on the practice of a recognised hospital, or in the naval or military services, or in medical or surgical practice. The candidate for the M.D. degree must present an essay. The subjects of examination for the M.S. are:—Principles and Practice of Surgery, Surgical Pathology, Surgical Anatomy, Surgical Operations, Clinical Surgery.

Doctor of Medicine (without residence).—The University of Durham has instituted a special examination whereby the degree of Doctor of Medicine may be obtained without residence. Candidates shall not be under 40 years of age and shall have been in active practice for 15 years as registered medical practitioners. They shall produce certificates of moral character from three registered members of the medical profession. The fee will be 50 guineas, of which 20 guineas will be retained if the candidate fails to satisfy the examiners.

Candidates for any of the above degrees, diplomas or licence, must give at least 28 days' notice to Professor Howden, Secretary, College of Medicine, Newcastle-upon-

Tyne. In the case of the M.D. (essay) examination candidates must send in their essays six weeks before the date of the examination.

Scholarships and Prizes.—In connexion with this University the following Scholarships and prizes are awarded:—(*a*), (*b*), (*c*), and (*d*). Four Scholarships of £25 a year each, tenable for four years; the examination will be the September Matriculation Examination. Candidates must take English, Latin, Arithmetic, Euclid, Algebra, Geography, English History, with Greek or German, or both. (See College Calendar for special books.) Open to candidates desirous of being admitted as Medical Students. The successful candidates must take out their entire curriculum at the University of Durham College of Medicine, Newcastle-upon-Tyne. (*e*) Pears Scholarship of £50 a year (when vacant), tenable for three years; Matriculation Examination.—At the College of Medicine are: (*f*) Dickinson Scholarship, interest on £400 and gold medal; examination in Medicine, Surgery, Midwifery, and Pathology. Open to full students of the College of Medicine who have passed the third M.B. Examination. (*g*) Tulloch Scholarship, interest on £400; examination in Elementary Anatomy, Biology, Chemistry, and Physics. (*h*) Charlton Memorial Scholarship, interest on £700; examination in Medicine. Open to full students of the College entered for the class on the Principles and Practice of Medicine. (*i*) Gibb Scholarship, interest on £500; awarded annually as a Scholarship in Pathology to full student who passes the best examination in that subject. No student is eligible after completion of his curriculum. (*j*) Luke Armstrong Memorial Scholarship, interest on £680: Original Essay on some subject in Comparative Pathology. (If no essay of sufficient merit be presented the scholarship may be awarded to the candidate who, in passing the first part of the Examination for the B.Hy. Degree, obtains the highest number of marks in Comparative Pathology during the year.) Open to all Graduates in Medicine or Hygiene and candidates for these degrees who have spent six months at the University and whose age does not exceed 30 years. (*k*) Stephen Scott Scholarship, interest on £1000; Original Essay on any Surgical subject. Open to any graduate in Medicine or Surgery of the University or any student of the College of Medicine. Student's age must not exceed 30 years. (*l*) Heath Scholarship, interest on £4000. For 1916: Original Essay on Genito-urinary Tuberculosis: Its Etiology, Pathology, Methods of Spread, Prognosis, and Treatment. All Graduates in Medicine or Surgery of the University are eligible. (*m*) Gibson Prize, interest on £250 stock; examination in subject of Midwifery and Diseases of Women and Children. Open to students who have attended one course of lectures on Midwifery and Gynæcology. (*n*) Outterson-Wood Prize, interest on £250, in Psychological Medicine. (*o*) Turnbull Prize and Medal; examination in Surface Anatomy. Open to students at end of their second winter session.—At the Royal Infirmary is (*p*) Goyder Memorial Scholarship, interest on £325; awarded annually to student who most distinguishes himself in Clinical Medicine and Clinical Surgery at the Royal Infirmary. For further information apply to Professor R. Howden, Secretary of the College.

Hygiene.—The regulations with regard to the degrees in Sanitary Science will be found under the section on Public Health.

THE COLLEGE OF MEDICINE, Newcastle-upon-Tyne.—Clinical instruction is given at the Royal Victoria Infirmary, containing 585 beds. In it adequate accommodation is provided for the study of the various special subjects, in addition to the ordinary clinical work.

NEWCASTLE-UPON-TYNE ROYAL VICTORIA INFIRMARY.—The Infirmary was founded in 1751, but has been entirely rebuilt, the new hospital being opened by His late Majesty King Edward VII. in 1906. The number of beds is 585. The number of in-patients annually is 9200 and of out-patients 69,000. The medical students of the University of Durham attend the practice of this hospital. Clinical Lectures are delivered by the Physicians and Surgeons weekly and ward demonstrations are given daily. Tutorial classes are held by the Assistant Physicians, Assistant Surgeons, and Surgical Registrars weekly, and demonstrations are given in the several out-patient departments daily. Pathological demonstrations are given by the Pathologist daily or as opportunity occurs, and in the new buildings nothing has been spared in perfecting scientific equipment. In addition to medical and surgical in-patient and out-patient departments the following special departments are fully equipped for teaching students: Ophthalmic, Throat, Nose, and Ear, Skin, Gynæcological, and Electrical. The hospital building contains the following laboratories: 1. Special Pathological Laboratory, attached to the post-mortem rooms. 2. Bacteriological Laboratory, in which all clinical bacteriological investigations are carried out—opsonic indices estimated with a view to treatment by vaccines and serums, &c. 3. There is in addition a Clinical Laboratory attached to each ward and to the out-patient department. There are five operating theatres in use in the hospital. The surgical practice is especially good. The session opens on April 17th and Oct. 2nd of each year. Applications for detailed information should be made to the acting Dean, Dr. D. Wells Patterson, at the hospital.

There are other institutions in addition to the Royal Victoria Infirmary at which the student of medicine of the University of Durham can receive clinical instruction. Practical Midwifery can be studied at the Newcastle Lying-in Hospital. Instruction is given in Psychological Medicine at the Northumberland County Asylum, Morpeth. A special course of instruction is given in the City Hospital for Infectious Diseases by the City Officer of Health. Ophthalmology is further taught at the Northumberland, Durham, and Newcastle Infirmary for Diseases of the Eye. Out-patients, 11,892; in-patients, 410. Secretary: Mr. Richard Smith, 61, Westgate-road, Newcastle-on-Tyne.

UNIVERSITY OF BIRMINGHAM.

The University of Birmingham grants the degrees of M.B., Ch.B., M.D., Ch.M., and also a degree and a diploma in Public Health. The course for the Bachelors' degrees extends over five years from the date of commencement of professional study. As a rule the first four of these years must be spent in the University, but the Senate has power of recognising attendance at another University as part of the attendance qualifying for these degrees and of recognising examinations passed at such other Universities as exempting from the examinations in Chemistry, Physics, and Elementary Biology. In the case of such students at least three years must be spent in attendance upon classes at the University. The fifth year may be spent at any other school or schools of medicine recognised by the University. The students of the Medical Faculty can be members of the University Club, the University Athletic Club, and the University Officers' Training Corps, while they possess a guild—the Guild of Undergraduates—which is designed to be a recognised medium of communication between the teachers and the taught. The University Medical Society and the Dental Students' Society also offer opportunities of coöperation for mutual benefit.

Degrees of Bachelor of Medicine and Bachelor of Surgery.—The student must have passed the Matriculation Examination of the Joint Board or an examination accepted in lieu thereof. All communications respecting the Matriculation Examination, and examinations accepted in lieu thereof, must be sent to the Secretary to the Board, Joint Matriculation Board, 24, Dover-street, Manchester. First Examination.—Chemistry and Physics and Elementary Biology. Second Examination.—Anatomy and Physiology. Third Examination.—General Pathology and Bacteriology, Materia Medica, and Practical Pharmacy. Fourth Examination (at the end of the fourth year).—Forensic Medicine, Toxicology, Public Health, Therapeutics, and Special Pathology. Two years' hospital work must have been accomplished. Final Examination.—Medicine, Surgery, Midwifery, Diseases of Women, Mental Diseases, and Ophthalmology. Attendance at a general hospital for a year after the passing of the fourth examination will be required, also attendance at a fever hospital three months, maternity hospital one month, and lunatic asylum three months. Vaccination instruction must be taken out and courses of Ophthalmology, Medical and Surgical Anatomy, and Operative Surgery.

Degrees of Doctor of Medicine and Master of Surgery.—At the end of one year from the date of having passed the final M.B., Ch.B. examination the candidate will be eligible to present himself for the higher degrees of either Doctor of Medicine or Master of Surgery or both.

Candidates for either of these degrees have to present a thesis embodying observations in some subject embraced in one of the departments of the medical curriculum, and in addition pass a general examination in Principles and Practice of Medicine for the M.D., and general examination in Principles and Practice of Surgery, including operations on the cadaver for the M.Ch. It will be in the power of the Board of Examiners to exempt from the practical parts of the examination a candidate whose thesis is of exceptional merit from any part of these examinations.

Fees.—Matriculation, £2; First Examination, £2; Second Examination, £2; Third Examination, £2; Fourth Examination, £2; Final Examination, £8; M.D. or Ch.M., £10.

At the University of Birmingham the following Scholarships are awarded:—(*a*) Myers Travelling Studentship of £150, tenable for one year, awarded by vote of committee to M.B., Ch.B. Birm., B.Sc. candidates, tenable at some University or Hospital not in Great Britain or Ireland; (*b*) Ingleby Scholarship of £10, awarded to the candidate at Final Examination obtaining highest "first-class" marks in the subjects of Midwifery and Diseases of Women; (*c*) Sydenham Scholarship of £42, tenable for three years, award of Council to orphan sons of medical practitioners; (*d*) Sands Cox Scholarship of £42, tenable for three years, awarded to the candidate, not being more than 19 years of age, taking the highest marks at the July Matriculation; (*e*) Dental Scholarship of £37 10*s*., Open Competitive Examination in subjects learned during apprenticeship; (*f*), (*g*), (*h*), and (*i*) Four Queen's Scholarships of £10 10*s*. each. In the Second and Fourth Examinations the Scholarship is awarded respectively to the student taking the first place and obtaining "first-class" marks. In the Third Examination the Scholarship is awarded to the student obtaining the highest "first-class" marks in Pathology and Bacteriology, provided that such student passes at the same examination in the subjects of Materia Medica and Practical Pharmacy. In the Final Examination the Scholarship is awarded to the candidate taking the first place in the examination—that is, obtaining the greatest aggregate number of marks—provided that in each of the subjects of Medicine, Surgery, and Midwifery he gains not less than 60 per cent. of the total available marks; (*j*) George Henry Marshall Scholarship of £10, awarded annually, for the encouragement of Research Work in Ophthalmology; and (*k*) Russell Memorial Prize, a prize of books, value about £2, awarded annually to the student who, not being of more than six years' standing as a student of the School of Medicine of the University, shall pass the best examination in the subject of Nervous Diseases.

Clinical Instruction.—The medical students of the University receive their clinical instruction by attending the amalgamated practice of the General Hospital and the Queen's Hospital, details of which follow.

The clinical instruction of the Birmingham medical students is carried on under the direction of the University Clinical Board. The hospitals present an excellent field for clinical work, possessing more than 500 beds, treating annually over 8000 in-patients and 100,000 out-patients. The students spend part of their curriculum in each hospital, and thus have every opportunity of acquiring a varied, full, and practical knowledge of their professional work. The curriculum is adapted in the first place to meet the needs of the students of the University of Birmingham, but it is also well adapted to the requirements of students preparing for the examinations of all other universities and licensing bodies. At the General Hospital there are open to the students the following appointments: A resident medical officer, elected annually (£100); a resident surgical officer, elected annually and eligible for re-election for three years (£100); a resident pathologist, elected for six months (£50); three surgical casualty officers, elected annually and eligible for re-election (£50); three house physicians and four house surgeons hold office for six months, receiving board, residence, and salaries at the rate of £50 a year; two house surgeons to the gynæcological, ophthalmic, and aural departments are elected every six months, receiving board, residence, and a salary of £50 a year; two assistant house surgeons are elected every three months, receiving board, residence, and salaries at the rate of £40 a year; a resident medical officer at the Jaffray Hospital, who is elected annually but is eligible for re-election, and who receives £150 a year; and a resident medical assistant at this hospital, who is not necessarily qualified, is provided with board and residence, and holds office for three months. At the Queen's Hospital there are open to the student the following appointments: Three house physicians, three house surgeons, and one obstetric and ophthalmic house surgeon, who hold office for six months and have salaries at the rate of £80 a year. Thirty-eight other appointments of varying value are at the City Workhouse and Workhouse Infirmary, at the Birmingham General and Branch Dispensaries, at the Birmingham Lunatic Asylums, at the City Fever Hospitals, at the Children's Hospital, at the Birmingham and Midland Eye Hospital, at the Orthopædic and Spinal Hospital, at the Maternity Hospital, and at the Ear and Throat Hospital.

THE BIRMINGHAM GENERAL HOSPITAL.—400 beds are in daily use, 5560 in-patients per annum. Special wards for children, gynæcological, septic and infectious cases; special beds for eye, ear, and skin cases. About 50,000 out-patients per annum. Laboratories for bacteriology and morbid histology. Separate rooms adjoin the medical and surgical wards for clinical pathology. Five operating theatres (one for out-patients), all designed and fitted on the most modern lines. In addition to clinical teaching given in the wards and out-patient department by the honorary staff, medical and surgical tutorial classes are held for senior and junior students. Clinical instruction in all the special departments. The Jaffray Branch Hospital contains 54 beds.

THE QUEEN'S HOSPITAL.—Similar arrangements for clinical teaching are made here, and the material also is excellent. Ward and tutorial classes are regularly conducted by the staff, there are daily clinics in the out-patient department, while teaching duties are definitely assigned to the house physicians and house surgeons. There are also special departments for gynæcology and ophthalmology.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, Birmingham.—This hospital possesses 120 beds, and there is an average daily attendance of out-patients of over 250. This institution is recognised by Universities and the Royal College of Surgeons, England, and Royal College of Physicians, London, as an ophthalmic hospital at which clinical instruction in ophthalmology may be received. Students attending for a period of three months will be granted certificates which will qualify for the University and Conjoint Board examinations.

UNIVERSITY OF LIVERPOOL.

The degrees in the Faculty of Medicine are Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), and Master of Hygiene (M.H.).

Degrees of Bachelor of Medicine and Bachelor of Surgery.—Candidates for the degrees of Bachelor of Medicine and of Surgery must have attained the age of 21 years on the day of graduation. At least two of the five years of medical study must have been passed in the University, and one year at least must have been passed in the University subsequently to the date of passing the First Examination. The other three years may be passed at any college or medical school recognised for this purpose by the University. Candidates must pass three examinations entitled respectively: the First Examination, the Second Examination, and the Final Examination. The fee is £5 for each examination. The subjects of the First Examination are: (1) Chemistry, Inorganic, Organic, and Physical; (2) Biology (Zoology and Botany); and (3) Physics. The examination is divided into two parts—namely, (1) Chemistry and Physics, and (2) Biology; and candidates may present themselves in these parts separately. The subjects of the Second Examination are (*a*) Anatomy and Physiology (including Physiological Chemistry and Histology), and (*b*) Materia Medica, Pharmacy, and Pharmacology. Candidates may present themselves in (*a*) or (*b*) separately. The subjects for the Final Examination are: (1) General Pathology and Morbid Anatomy; (2) Therapeutics; (3) Forensic Medicine and Toxicology; (4) Public Health; (5) Obstetrics and Diseases of Women; (6) Surgery, Systematic, Clinical, Operative, and Practical, including Ophthalmology; and (7) Medicine, Systematic and Clinical, including Mental Diseases and Diseases of Children. The Final Examination is divided into three parts, the first consisting of subject (1),

the second of subjects (2), (3), and (4), the third of subjects (5), (6), and (7). Candidates may present themselves in these parts separately. Candidates for the third part must have completed the fifth year of medical study.

Degrees of Doctor of Medicine and Master of Surgery.—No candidate will be admitted to the degree of Doctor of Medicine or Master of Surgery unless he has previously received the Degrees of Bachelor of Medicine and Bachelor of Surgery, and at least one year has elapsed since he passed the examinations for those degrees. Candidates for the degree of Doctor of Medicine are required to present a dissertation embodying the results of personal observations or original research, either in some department of medicine or of some science directly relative to medicine: provided always that original work published in scientific journals or separately shall be admissible in lieu of, or in addition to, a dissertation specially written for the degree.

At this University the following Scholarships and Fellowships and Prizes are awarded:—(*a*) and (*b*) Robert Gee Entrance Scholarships, two annually, of £25 each, tenable for two years, Joint Matriculation Board Examination held in July, open to First M.B. Course Students; (*c*) Lyon Jones Scholarship, No. 1, of £21 per annum, tenable for two years, Competitive Examination among Junior Students in First M.B. Subjects, Perpetual Course at the University; (*d*) Lyon Jones Scholarship, No. 2, of £21, Competitive Examination among Senior Students in Anatomy, Physiology, Pharmacology, and Materia Medica; (*e*) Derby Exhibition of £15, Competitive Examination among Fourth- or Fifth-year Students in Clinical Subjects, and Clinical School Exhibition of £15 annually for Fourth- or Fifth-year students; (*f*) University Scholarship of £25 for one year, awarded on results of Second Examination for the degrees; (*g*) Holt Fellowships, Physiology and Pathology, of £100 each, for one year; (*h*) Gee Fellowship, Anatomy, of £100, for one year; (*i*) Alexander Fellowship, Bacteriology and Pathology, of £100, for one year; (*j*) Johnston Colonial Fellowship, Bio-Chemistry, of £100, for one year; (*k*) John W. Garrett International Fellowship, Bacteriology, of £100, for one year; (*l*) Thelwall Thomas Fellowship, Surgical Pathology, of £100, for one year; (*m*) Ethel Boyce Fellowship in Gynæcological Pathology, of £100, for one year; numerous prizes and medals; (*n*) Mary Birrell Davies Memorial Fund Scholarship, of the value of £60, tenable for four years, offered for competition in alternate years; open only to women students who will have attained the age of 19 on the first day of October next following the award; students who are or have been registered day students of the University are eligible for election; holder to proceed to a University degree in Medicine; candidates must apply in writing to the Registrar, forwarding evidence of their qualifications, on or before July 1st.

Medical School Buildings.—Medical research has also been endowed with several new laboratories in which students can pursue research work after graduation. All the laboratories and class-rooms are situated close together, communicating with one another, and are made up of four large blocks of buildings which form one side of the College quadrangle. There are the Johnston Laboratories for Experimental Medicine, Bio-Chemistry, and Tropical Medicine; the Medical School for Anatomy, Surgery, Toxicology, and Ophthalmology; and the Thompson-Yates Laboratories for Physiology and Pathology.

Clinical Instruction.—The Clinical School of the University now consists of four general hospitals—the Royal Infirmary, the David Lewis Northern Hospital, the Royal Southern Hospital, and the Stanley Hospital; and of five special hospitals—the Eye and Ear Infirmary, the Hospital for Women, the Infirmary for Children, St. Paul's Eye Hospital, and St. George's Hospital for Skin Diseases. These hospitals contain in all a total of about 1134 beds. The organisation of these hospitals to form one teaching institution provides the medical student and the medical practitioner with a field for clinical education and study which is unrivalled in extent in the United Kingdom. All the hospitals are within easy access of the University. There are a large number of appointments to house physicianships and surgeonships both at the general and special hospitals which are open to qualified students of the school.

School of Veterinary Science.—There is a school of Veterinary Science in connexion with the University which provides full courses of instruction for the M.R.C.V.S. Degrees of B.V.Sc., M.V.Sc., and D.V.Sc., together with a diploma in Veterinary Hygiene, are also granted by the University.

Public Health Department.—This is located in a separate building known as Ashton Hall, in which full courses of instruction are given to students for the Diplomas and Degrees of the University and of other Examining Boards.

Prospectuses and further information may be had on application to the Dean of the Faculty of Medicine, University of Liverpool.

THE VICTORIA UNIVERSITY OF MANCHESTER.

Four degrees in Medicine and Surgery are conferred by the University—viz., Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). A Diploma in Psychological Medicine is awarded by examination to registered medical practitioners.

Degrees of Bachelor of Medicine and Bachelor of Surgery.—Before admission to the degree of M.B. or Ch.B. candidates are required to present certificates that they will have attained the age of 21 years on the day of graduation and that they have pursued the courses of study required by the University Regulations during a period of not less than five years subsequently to the date of their registration by the General Medical Council, two of such years having been passed in the University and one year at least having been passed in the University subsequently to the date of passing the first M.B. Examination. All candidates for the degrees of Bachelor of Medicine and Bachelor of Surgery are required to satisfy the examiners in the several subjects of the following examinations.

The First Examination.—(1) Inorganic Chemistry and Physics; (2) Biology; and (3) Elementary Organic Chemistry and Bio-Chemistry. Candidates must have attended during at least one year courses both of lectures and of laboratory work in each of the above-named subjects. The Examination is divided into three parts: Part 1, Inorganic Chemistry and Physics; Part 2, Biology; Part 3, Elementary Organic Chemistry and Bio-Chemistry; and the candidates may pass in these parts separately under certain conditions.

The Second Examination.—(1) Anatomy; (2) Physiology, including Physiological Chemistry and Histology. Candidates may pass in (1) and (2) separately under certain conditions.

The Third Examination.—(1) Pathology; (2) Pharmacology and Therapeutics; (3) Hygiene. These subjects may be taken separately under certain conditions.

The Final Examination.—(1) Medicine, Systematic and Clinical (including Mental Diseases and Diseases of Children); (2) Surgery, Systematic, Clinical, and Practical; (3) Obstetrics and Gynæcology (including Clinical and Practical); (4) Forensic Medicine (including an Oral Examination). These subjects may be taken separately under certain conditions.

Candidates for the Final Examination must have completed the fifth year of medical study.

Degree of Doctor of Medicine.—Candidates are not eligible for the degree of Doctor of Medicine unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees. Candidates may elect either (1) to present an original dissertation; or (2) to undergo an examination. The dissertation must embody the results of personal observation or original research, either in some department of medicine or of some science directly relative to medicine. The examination, which will be partly written, partly practical, is in the Principles and Practice of Medicine, in Pathology, and in some other subject to be selected by the candidate.

Degree of Master of Surgery.—Candidates are not eligible for the degree of Master of Surgery unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees. The

subjects of examination are as follows: (1) Surgical Anatomy; (2) Surgery; (3) Operative Surgery; (4) Clinical Surgery; (5) Ophthalmology; and (6) Pathology and Bacteriology.

Communications should be addressed to the Registrar, The University, Manchester.

Scholarships, Fellowships, and Prizes.—At this University there are 22 Foundation Scholarships, 12 Exhibitions, five being for subjects connected with medical study, a Surgical Prize, a University Fellowship (Leech Fellowship, £100), Research Fellowships in Public Health, and Honorary Research Fellowships. 13 Entrance Scholarships are tenable for Medical courses; one Scholarship is offered in Surgery, Biology, Physiology, and Diseases of Children respectively, and one General Medical and Surgical. Exhibitions are offered in Physiology and Anatomy, and one for French and German. "The Dumville" Surgical Prize is awarded on the results of the Final Examination in Surgery in the Summer Term, £15. The Leech Fellowship (£100) is for the encouragement of study and research, and is open to persons who have graduated M.B., Ch.B., in the University not more than 18 months previously. The Honorary Research Fellowships, tenable for two years, conferring the right of free use of the laboratories, are awarded generally in October on application, with evidence of capacity for independent investigation.

There are many entrance scholarships, the examinations for which are held in the month of May. Full particulars can be obtained from the Dean.

The Medical School.—This medical school, largely extended in 1895, is provided with dissecting-rooms, physiological laboratories, private laboratories, and work-rooms, besides lecture-rooms, a museum, and a library. A special laboratory is equipped for experimental work on the central nervous system. In the pathological laboratories ample provision is made for the teaching of pathology and bacteriology and for the prosecution of original research. The Helen Swindells Laboratory is specially equipped for cancer research and investigation in general pathology. Ample facilities for investigation are provided in Anatomy, Physiology, and Materia Medica. In the public health department, which is lodged in a separate institute in York Place, near the Royal Infirmary, suitable laboratory accommodation is provided for the study of sanitary chemistry, physics, and practical bacteriology in the departments of chemistry and physics and in that of pathology.

Clinical Studies.—The clinical and practical departments of medical study are taught partly in the Medical School and partly in the Royal Infirmary and St. Mary's Hospitals for Women and Children, a fever hospital, a lunatic asylum, and a convalescent home, and other special hospitals. Medical and Surgical Clinical Classes are conducted in the Infirmary, which together with the associated hospitals at Cheadle contains 1109 beds, exclusive of those reserved for military cases, and separate instruction is afforded in the elements of Medical and Surgical Physical Diagnosis, in Obstetric Medicine, Ophthalmic Surgery, and Pathological Anatomy by the different members of the staff of the Medical School and Infirmary.

Clinical Instruction.—THE MANCHESTER ROYAL INFIRMARY.—The Royal Infirmary is built on the pavilion system, near the University, and has accommodation for 882 (including 510 temporary military beds). The remaining beds are allocated to civilians. The medical side consists of five units, each unit having a testing room for the scientific investigation of morbid products and a class-room. The surgical beds are also arranged in five units, each unit having its own operation theatre, with anæsthetising, recovery, sterilising, testing, and apparatus rooms, and its own class-room attached. Of these units all are occupied. The fine educational block provides very handsomely for the wants and comforts of the students, there being separate suites of rooms for the men and the women, and also a large common reading room, a lecture theatre, and a museum. The present annual average number of in-patients is 12,000, of out- and home-patients 32,000, and the list of casualties in the accident room has averaged 22,000 per annum. About 8000 operations are performed annually in the operation theatres. Associated with the infirmary are: (1) the Convalescent Hospital at Cheadle, containing 136 beds; (2) the Royal Lunatic Hospital at Cheadle, accommodating with its branches 430 patients; and (3) the Central Branch in the city for casualty and out-patient work, and 62 temporary military beds. The Associated Hospitals thus contain 1448 beds and are under the same management. Women students are admitted to the practice of the Infirmary on the same terms as men.

Fees.—Medical Practice: Three months, 5 guineas; six months, 8 guineas; 12 months, 12 guineas; full period required by the Examining Boards, 42 guineas.

Two Entrance Scholarships in Medicine of the value of £100 each are offered annually by the Council of the Manchester University and the Medical Board of the Manchester Royal Infirmary for proficiency in Arts and Science subjects respectively. Other scholarships and prizes are in the College Syllabus. Numerous annual appointments and junior appointments may be held by those who have attended the practice of the Infirmary.

The secretary to the Infirmary is Mr. F. G. Hazell.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury, Gartside-street, Manchester, and St. Anne's-on-the-Sea.—The hospital contains 188 beds and 24 in the Convalescent Home, St. Anne's-on-the-Sea. The medical staff visit the hospital daily at 10 A.M. Clinical instruction is given by the medical staff at the Hospital and Dispensary. Out-patients are seen daily at 9 A.M. at the new Out-patient Department, Gartside-street, Manchester. Secretary: Mr. W. M. Humphry.

THE MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road, Manchester.—The hospital contains 70 beds. Out-patients are seen daily from 8.30 to 10 A.M.

UNIVERSITY OF LEEDS.

Four degrees in Medicine and Surgery are conferred—viz.: Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), also Degrees and Diplomas in Dental Surgery and Diplomas in Public Health and in Psychological Medicine.

Degrees of Bachelor of Medicine and Bachelor of Surgery.—Candidates for these degrees are required to present certificates showing that they will have attained the age of 21 years on the day of graduation, and have attended courses approved by the University extending over not less than five years, two of such years at least having been passed in the University subsequently to the date of passing the First Examination. Candidates must also satisfy the examiners in the several subjects of the following examinations entitled respectively: the Matriculation Examination, or such other examination as may have been recognised by the Joint Matriculation Board in its stead; the First Examination; the Second Examination; and the Final Examination.

The First Examination.—The First Examination consists of: Part I., Physics and Chemistry; Part II., Biology. Candidates will be allowed to pass the two parts separately.

The Second Examination.—The Second Examination consists of: Part I., Anatomy and Physiology; Part II., Materia Medica and Pharmacy. Candidates will be allowed to pass the two parts separately.

The Final Examination.—The Final Examination consists of: Part I., Pathology and Bacteriology. Part II., Forensic Medicine and Public Health. Part III., Medicine: Systematic and Clinical, including Mental Diseases and Diseases of Children; Surgery: Systematic, Clinical, and Practical; Obstetrics, and Gynæcology: Systematic, Clinical, and Practical; Pharmacology and Therapeutics. Candidates will be allowed to pass Parts II. and III. separately or together, and they may present themselves for examination in Part I. at the end of the tenth term.

Degree of Doctor of Medicine.—Candidates are not eligible for the degree of Doctor of Medicine or Master of Surgery unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees. Candidates for the degree of Doctor of Medicine are required to present a dissertation and, if the dissertation be accepted, to pass an examination.

The first term commences on Sept. 30th. Prospectus, &c., can be obtained from the Dean of the Medical School.

Clinical Instruction.—THE LEEDS GENERAL INFIRMARY, in connexion with this medical faculty, has accommodation for 620 in-patients, including 88 beds at branch

hospitals in the country. During the last year 11,463 in-patients and 33,671 out-patients were treated. Clinical teaching takes place daily in the wards, and Clinical lectures are given in Medicine and Surgery by the Physicians and Surgeons. There are Medical, Surgical, Ophthalmic, Aural, Electro-therapeutic, and Radiographic Departments, in each of which special instruction is imparted to students. A Gynæcological and Extern Obstetric Department, together with Laryngeal and Skin Clinics, are in operation. Several valuable prizes are given at the end of each session. Numerous appointments at the Infirmary are annually open to students after qualification.

UNIVERSITY OF SHEFFIELD.

The Degrees in the Faculty of Medicine are Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). The courses and degrees in the Faculty of Medicine are open to men and women alike.

Candidates for a medical degree shall have matriculated in the University or have passed such other examination as may be recognised for this purpose by the University and sanctioned by the Joint Matriculation Board.

A candidate for the degrees of M.B., Ch.B., shall produce certificates that he will have attained the age of 21 years on the day of graduation; that he has pursued the courses of study required by the University regulations during a period of not less than five years subsequently to the date of his matriculation, three of such years at least having been passed in the University, one at least being subsequent to the passing of the First Examination.

Degrees of Bachelor of Medicine and Bachelor of Surgery.

The First Examination.—The subjects of the examination are Chemistry, Physics, and Biology. The Intermediate B.Sc. Examination in these subjects will, on payment of the required additional fee, be accepted instead of this examination. Candidates must, after matriculation and registration as medical students, have attended courses of instruction (lectures and laboratory work) in chemistry, physics, and biology for one year each.

The Second Examination.—The subjects of the examination are Anatomy and Physiology.

The Third Examination.—The subjects of the examination are Pathology and Pharmacology. A candidate entering for the first, second, or third examination, who shall pass creditably in one subject of either examination and obtain a certain minimum of marks in the other, may enter for such other subject separately in a subsequent examination. Candidates must have completed the fourth year of professional study.

The Final Examination.—The subjects of the examination are Medicine (including Forensic Medicine, Public Health, Mental Diseases, and Diseases of Children); Surgery; and Obstetrics (including Gynæcology). Candidates must satisfy the examiners in all subjects at the same examination. Candidates must have completed the fifth year of professional study.

Degree of Doctor of Medicine.—Candidates for the degree of Doctor of Medicine must have passed the examination for the degrees of M.B., Ch.B. at least one year previously, must present a thesis embodying observations in some subject approved by the professor of medicine, and must pass an examination in the Principles and Practice of Medicine.

Degree of Master of Surgery.—Candidates for the degree of Ch.M. must have passed the examination for the degrees of M.B., Ch.B. at least one year previously, and must, since taking the degrees of M.B., Ch.B., have held for not less than six months a surgical appointment in a public hospital or other public institution, affording full opportunity for the study of Practical Surgery.

The subjects of examination are Systematic, Clinical, and Operative Surgery, Surgical Anatomy, Surgical Pathology, and Bacteriology.

Scholarships, &c.—At this University, in addition to four Edgar Allen scholarships of £100 a year for three years, holders of which can take the courses in the Faculty of Medicine, there are 8 scholarships and a Town Trust Fellowship. Full particulars as to curriculum, scholarships, &c., may be had on application to the Registrar or to the Dean of the Medical Faculty.

The Medical School.—The new buildings of the University opened in 1905 are situated at the west end of the city, adjoining Weston Park, and the Medical Department occupies the entire north wing of the University quadrangle. The various athletic and other students' societies are under the management of a Students' Representative Council, elected annually. There are large and comfortable common rooms both for men and women students. A refectory is open daily at the University where students may obtain refreshments, lunch, dinner, &c., at extremely moderate prices. The University journal, *Floreamus*, edited by a committee of staff and students, is published each term. The University Hostel, "Oakholme," Clarkehouse-road, is recognised by the Senate as a residence for women students, full particulars of which may be obtained of the tutor for women students.

Clinical Instruction.—The University is within easy reach of the various hospitals with which it is connected for clinical purposes. These are as follows: The Royal Infirmary (Secretary, Mr. J. W. Barnes), containing 320 beds, with an annual average number of over 3800 in-patients, over 11,500 out-patients, and over 23,000 casualties; the Royal Hospital (Hon. Sec., *pro tem.*, to the medical and surgical staff, Mr. J. B. Ferguson Wilson), with 191 beds, and an annual number of 3000 in-patients, over 20,000 out-patients, and nearly 20,000 casualties; and the Jessop Hospital for Diseases of Women, with 80 beds, about 750 in-patients, and over 3000 out-patients; also a Maternity department, with about 450 in-patients per annum and about 700 out-patient cases attended. Special courses on Fevers are held at the City Fever Hospitals (570 beds) and on Mental Diseases at the South Yorkshire Asylum (1610 beds). For purposes of clinical practice the practices of the Royal Infirmary and Royal Hospital are amalgamated, giving a total of 511 beds for the treatment of medical, surgical, and special cases. There are special departments for the treatment of Diseases of the Eye at each institution, with wards assigned to them. In addition to these the Royal Infirmary has special departments for the treatment of Diseases of the Skin and Ear, with beds assigned to them, whilst at the Royal Hospital there are special out-patient departments for Diseases of the Throat, Ear, Skin, Orthopædics, and Mental Diseases. During the last year over 6000 patients passed through the wards of the two institutions, while those attending as out-patients numbered over 45,000. The department of Pathology and Bacteriology in the University is fitted with every requirement for the most advanced work in these subjects.

Fees.—The Composition Fee is £30 a year for each of the five years and entitles the student to attendance on *all* the Lectures, Laboratory Classes, and Hospital practice required for a Medical and Surgical Degree in the University or for the ordinary qualifying examinations of the various Examining Boards. The composition fees do not cover the cost of apparatus, instruments, parts for dissection in anatomy, &c., all of which must be provided by the student when and as required. The fees are payable in instalments extending over the five years of the curriculum.

UNIVERSITY OF BRISTOL.

In the Faculty of Medicine there are the following degrees:—Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), Bachelor of Dental Surgery (B.D.S.), and Master of Dental Surgery (M.D.S.). There are also the following diplomas: Diploma in Public Health (D.P.H.), Diploma in Dental Surgery (L.D.S.), and Diploma in Veterinary State Medicine.

All candidates for degrees in Medicine, Surgery, and Dentistry are required to pass an examination called the Matriculation Examination, or to pass such examination as may be regarded as equivalent by the Senate. All courses, degrees, and diplomas are open to men and women alike. The winter session commences on Tuesday, Oct. 1st, 1918.

Conjoined Degrees of Bachelor of Medicine and Bachelor of Surgery.—Candidates shall be not less than 21 years of age and shall have pursued the courses prescribed by University Regulations during not less than five and a half years, of which three shall have been passed in the University, and two of these three subsequent to pass in the second examination. All candidates for the degrees of M.B., Ch.B., are required to satisfy the examiners in the several subjects of three examinations.

The First Examination.—The subjects of examination are: Chemistry (Inorganic), Physics, and Biology, the courses pursued being those for the time being approved for the intermediate part of the B.Sc. curriculum. This part of the curriculum shall extend over one year. (Candidates who have passed the Higher School Certificate approved by the Board of Education in these subjects will not be required to sit for the first examination and will be regarded as having completed one year of study.)

The Second Examination.—The subjects of examination are: Organic Chemistry and Elementary Anatomy (Part I.) and Advanced Anatomy and Physiology (Part II.). Parts I. and II. may be passed separately or together.

The Final Examination.—The subjects of examination are: Materia Medica and Pharmacy, Pharmacology and Therapeutics, General Pathology, Morbid Anatomy, and Bacteriology (Part I.); Special Pathology, Forensic Medicine, Toxicology, and Public Health, Obstetrics (including Diseases of Women), Surgery (Systematic, Clinical, Practical, and Operative), Medicine (Systematic, Clinical, and Practical, including Mental Diseases) (Part II.). Candidates may pass I. and II. together, or separately, and Forensic Medicine and Toxicology may, at the option of the candidate, be taken either with Part I. or Part II.

Degree of Doctor of Medicine.—Candidates shall be Bachelors of the University of not less than two years' standing as such and may elect either (1) to pass an examination in General Medicine, or (2) to pass an examination in State Medicine, or (3) to present a Dissertation. The candidate who elects to pass the examination in State Medicine must hold a diploma in Public Health of some University or College, and the candidate who elects to present a Dissertation may be examined in the subject thereof.

Degree of Master of Surgery.—Candidates shall be Bachelors of not less than two years as such, during which period they shall have attended the Surgical Practice of an institution approved for the purpose. They shall pass an examination in Surgical Anatomy, Pathology, and Bacteriology, and Operative, Clinical, and General Surgery, and present to the University a Dissertation on some subject of Surgery.

Clinical Instruction.—The allied hospitals (Bristol Royal Infirmary and Bristol General Hospital) have between them about 600 beds and extensive out-patient departments, special clinics for Diseases of Women and Children and those of the Eye, Throat, and Ear, in addition to large and well-equipped departments for Dental work and large outdoor Maternity Departments.

At each of these institutions there are well-arranged pathological museums, post-mortem rooms, and laboratories for Morbid Anatomy. There are also laboratories for work in Clinical Pathology, Bacteriology, and Cytology, in which special instruction is given in these subjects. Departments are provided and well-equipped for X ray work, both for diagnosis and treatment, the various forms of Electrical treatment, including High Frequency Currents, Electric Baths, Finsen Light treatment, and Massage.

The students of the school also attend the practice of the Royal Hospital for Sick Children and Women, containing 140 beds, and that of the Bristol Eye Hospital, with 40 beds. The total number of beds available for clinical instruction is therefore about 750.

Further information as to scholarships, curricula, and fees can be obtained from the Dean of the Faculty of Medicine or the Registrar of the University.

UNIVERSITY OF WALES.

This University has the privilege of granting degrees in Medicine and Diplomas in Public Health. At the three constituent Colleges of Aberystwyth, Bangor, and Cardiff there are Professors of Chemistry, Botany, Zoology, and Physics, so that the students of the University can obtain proper instruction in the ancillary subjects. The foundation of a Medical Faculty has been laid at University College, Cardiff, where there is a recognised school of medicine.

University College, Cardiff: School of Medicine.—All classes are open to both men and women students who may spend three or four out of their five years of medical study at Cardiff. The courses of instruction given at Cardiff are recognised as qualifying for the examinations of the Universities, Royal Colleges, and other licensing bodies of Great Britain and Ireland, and they are specially adapted to meet the needs of those University students studying for Cambridge and London degrees. Students who are preparing for these examinations may compound for their courses by paying a fee of £63, while a composition fee of £41 10*s.* includes all the necessary courses for the first and second examinations for the Diploma of the Conjoint Board. In all cases the composition fees may be paid by instalments. Hospital instruction is given at the King Edward VII.'s Hospital, Cardiff. The attention of students about to matriculate is drawn to the numerous entrance scholarships offered for competition at University College, Cardiff, in April next, most of which may be held by medical students. Full particulars of the examination for these may be obtained by application to the Registrar. In the department of Public Health established in 1899 instruction is given qualifying for the D.P.H. examinations. Further information may be obtained from the Dean of the Faculty of Medicine.

Clinical Instruction.—KING EDWARD VII.'S HOSPITAL, CARDIFF.—Students can attend the practice of this Hospital, which contains 320 beds, 104 beds for military patients. Founded 1837. In-patients, 2717; out-patients, 13,746.——SWANSEA GENERAL AND EYE HOSPITAL AND SWANSEA HOSPITAL CONVALESCENT HOME.—Hospital, 188 beds; Convalescent Home, 25 beds. In-patients, 2177; out-patients, 7978.

ENGLISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGE OF PHYSICIANS OF LONDON AND THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Under this heading we give the regulations for the examinations enjoined by the Conjoint Examining Board of the Royal Colleges of Physicians of London and Surgeons of England and of the Society of Apothecaries upon students desiring their respective diplomas of qualification. We do not give any list of schools recognised by these bodies as eligible to prepare students for their examinations beyond mentioning that all the schools which we have already described (under the heading of the Universities to which they are attached) are recognised as suitable places of instruction by the corporations granting medical diplomas. The courses of study at the principal colonial medical schools are also recognised as qualifying for the examinations of these corporations.

Any candidate who desires to obtain both the Licence of the Royal College of Physicians of London and the diploma of Member of the Royal College of Surgeons of England is required to complete five years of professional study at recognised Medical Schools and Hospitals and to comply with the following regulations and to pass the examinations hereinafter set forth. Six months of the curriculum may be spent in an Institution recognised by the Board for instruction in Chemistry, Physics, Practical Chemistry, and Biology.

Professional Examinations.—There are three Examinations, called herein the First Examination, the Second Examination, and the Third or Final Examination, each being partly written, partly oral, and partly practical. These examinations will be held in the months of January, April, July, and September or October unless otherwise appointed. Every candidate intending to present himself for examination is required to give notice in writing to Mr. F. G. Hallett, secretary of the Examining Board, Examination Hall, Queen-square, Bloomsbury, W.C., 14 clear days before the day on which the examination commences, transmitting at the same time the required certificates.

The subjects of the *First Examination* are—Chemistry, Physics, Elementary Biology, and Practical Pharmacy. A candidate may take this examination in three parts at different times (Chemistry and Physics must be taken together until the required standard is reached in both or in one of these subjects, but a candidate will not be allowed to pass in one without obtaining at the same time at least half the number of marks required to pass in the other). A candidate will be admitted to examination in Chemistry and Physics, in Practical Pharmacy, and Elementary Biology on producing evidence of having

passed the required Preliminary Examination and of having received instruction in these subjects at a recognised institution, but he may take Pharmacy at any time during the curriculum. A candidate rejected in one part or more of the First Examination will not be admitted to re-examination until after the lapse of a period of not less than three months from the date of rejection, and he will be re-examined in the subject or subjects in which he has been rejected. If referred in Chemistry, Physics, or Biology he must produce evidence of further instruction at a recognised institution. Any candidate who shall produce satisfactory evidence of having passed an examination for a degree in Medicine on any of the subjects of this examination conducted at a university in the United Kingdom, in India, or in a British colony will be exempt from examination in those subjects in which he has passed.

The fees for admission to the *First Examination* are as follows: For the whole examination, £10 10*s.*; for re-examination after rejection in Parts I. and II., £3 3*s.*; and for re-examination in each of the other parts, £2 2*s.*

The subjects of the *Second Examination* are Anatomy and Physiology. Candidates will be required to pass in both subjects at one and the same time. Candidates will be admissible to the Second Examination on production of the required certificates of professional study. The study of Anatomy and Physiology before passing in two of the first three parts of the First Professional Examination is not recognised.

A candidate referred on the *Second Examination* will be required, before being admitted to re-examination, to produce a certificate that he has pursued, to the satisfaction of his teachers, in a recognised place of study, his Anatomical and Physiological studies during a period of not less than three months subsequently to the date of his reference.

The fees for admission to the *Second Examination* are: £10 10*s.* for the whole examination and £6 6*s.* for re-examination after rejection.

The subjects of the *Third* or *Final Examination* are: Part I. Medicine, including Medical Anatomy, Pathology, Practical Pharmacy, Therapeutics, Forensic Medicine, and Public Health. Candidates who have passed in Practical Pharmacy at the First Examination will not be re-examined in that subject at the Third Examination. Part II. Surgery, including Pathology, Surgical Anatomy, and the use of Surgical Appliances. Part III. Midwifery and Diseases Peculiar to Women. Candidates may present themselves for Parts I., II., and III. of the examination separately or together at the expiration of not less than two years (24 months) from the date of passing the Second Examination on production of the certificates of study required for the respective parts, provided that the examination is not completed before the expiration of five years from the date of passing the Preliminary Examination.

The fees for admission to the *Third* or *Final Examination* are as follows: For the whole examination, £21. Part I. For re-examination in Medicine, including Medical Anatomy, Pathology, Therapeutics, Forensic Medicine, and Public Health, £5 5*s.*; for re-examination in Practical Pharmacy (if taken at this examination), £2 2*s.* Part II. For re-examination in Surgery, including Pathology, Surgical Anatomy, and the use of Surgical Appliances, £5 5*s.* Part III. For re-examination in Midwifery and Diseases Peculiar to Women, £3 3*s.*

A candidate referred on the *Third* or *Final Examination* will not be admitted to re-examination until after the lapse of a period of not less than three months from the date of rejection and will be required, before being admitted to re-examination, to produce a certificate, in regard to Medicine and Surgery, of having attended the Medical and Surgical Practice, or the Medical or Surgical Practice, as the case may be, during the period of his reference; and in regard to Midwifery and Diseases Peculiar to Women a certificate of having received, subsequently to the date of his reference, not less than three months' instruction in that subject by a recognised teacher.

Students of recognised universities in England, Scotland, and Ireland, who have passed examinations for a degree in Medicine at their universities in the subjects of the First and Second Examinations of the Examining Board, may enter for the Final Examination at the expiration of two years from the date of passing in Anatomy and Physiology on production of the required certificates.

Members of certain recognised Indian, Colonial, and Foreign universities who have passed examinations for the Degree of Doctor or Bachelor of Medicine or Surgery in the subjects of the First and Second Examinations of the Examining Board may present themselves for the Final Examination under special conditions which can be ascertained on application to the Secretary.

ROYAL COLLEGE OF PHYSICIANS OF LONDON: THE MEMBERSHIP AND FELLOWSHIP.

In addition to the diplomas granted by the English Conjoint Board, the Royal College of Physicians of London and the Royal College of Surgeons of England grant honour diplomas, which no longer give the right to practise professionally if held separately. The Royal College of Physicians of London has two such diplomas, the *Fellowship* which is a purely honorary distinction and the *Membership* which is obtained by examination.

Membership.—Every candidate for the Membership of the College must furnish proof of having attained the age of 25 years. Candidates must not be engaged in trade, dispense medicine, make any arrangement with a chemist or any other person for the supply of medicine, or practise medicine or surgery in partnership, by deed or otherwise. Any candidate being already registered or having passed a qualifying examination in accordance with the Medical Act of 1886, who has obtained the degree of Doctor or Bachelor of Medicine at a University in the United Kingdom, in India, or a British colony, or who has obtained a foreign qualification entitling him or her to practise medicine or surgery in the country where such qualification has been conferred, wherein the courses of study and the examinations to be undergone previously to graduation have been adjudged by the Censors' Board to be satisfactory, will (if the Censors think fit) be admitted to the Pass Examination. The nature and extent of this examination will, in the case of each candidate, be determined by the Censors' Board. All other candidates must produce proof of having passed the examinations required for the Licence of the College. The examination is directed partly to pathology and partly to the practice of medicine and may be modified in circumstances to be ascertained by application to the Registrar. For example, candidates under 40 years of age are examined in an ancient and a modern language, a test from which their seniors are exempt. The fee for admission as a Member of the College is 40 guineas, except when the candidate for Membership is a Licentiate of the College, in which case the fee already paid for the Licence shall be deducted from the 40 guineas. The fee for the examination is £6 6*s.*

Fellowship.—The *Fellows* are selected annually from the ranks of the *Members* by the Comitia of the College.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: THE FELLOWSHIP.

The Royal College of Surgeons of England confers its diploma of Fellow upon a few distinguished persons in an honorary capacity. Two Members of long standing may also be elected to the Fellowship annually. But the bulk of the Fellows obtain the diploma as the result of examination.

Fellowship.—The examination for the Fellowship is divided into two parts—viz., the First Examination and the Second Examination. The subjects of the First Examination are Anatomy and Physiology, and the questions on these subjects may require an elementary acquaintance with Comparative Anatomy and Physiology. The examination is partly written and partly *vivâ voce*. The subjects of the Second Examination are Surgery, including Surgical Anatomy and Pathology. The examination is partly written and partly *vivâ voce* and includes the examination of patients and the performance of operations on the dead body. The examinations are held during the months of May and November of each year.

The fees for examination are:—First Examination, each admission, 5 guineas. Second Examination, each admission, 12 guineas. Of such examination fees 17 guineas will be reckoned as part of the fee payable upon admission to the Fellowship. The fee to be paid upon admission to the Fellowship is 30 guineas, except when the candidate is a Member of the College, in which case the fee is 20 guineas.

A Member of the College is admissible to the First Examination at any time after receiving his Diploma of Membership. A candidate who is not a member of the College is admissible to the first Professional Examination for the Fellowship on the production of evidence of having passed the First and Second Examinations of the Examining Board in England by the Royal College of Physicians of London and the Royal College of Surgeons of England (or, if a member of a University recognised by the College for the purpose, of having passed the Examinations in his University equivalent to the First and Second Examinations of the Board) and on the production of certificates of attendance upon certain courses of study described in the Regulations.

A Member of the College is admissible to the Second Examination at any time after having passed the First Examination, on producing satisfactory evidence of having been engaged not less than six years in the study (or study and practice) of the profession.

A candidate who is not a Member of the College must possess the registrable surgical and medical degrees of universities recognised by the Council and must have been engaged in the study (or study and practice) of the profession for not less than four years subsequent to the date of obtaining the recognised qualification, one year of which shall have been spent in attendance on the Surgical Practice of a recognised hospital. The diploma of Fellow is not conferred upon successful candidates until they have attained the age of 25 years.

The Regulations may be obtained on application to the Director of Examinations, Examination Hall, Queen-square, Bloomsbury, London, W.C. 1.

SOCIETY OF APOTHECARIES OF LONDON.

There are two examinations—Primary and Final. The Final examination is divided into Section I. and Section II. The Primary examination is held quarterly. Final examinations are held monthly. No examinations are held in the month of September.

The Primary examination consists of two parts. Part I. Elementary Biology; Chemistry, Chemical Physics, including the Elementary Mechanics of Solids and Fluids, Heat, Light, and Electricity; Practical Chemistry; and Materia Medica and Pharmacy. Part II. includes Anatomy, Physiology, and Histology. This examination cannot be passed before the completion of twelve months' Practical Anatomy with Demonstrations, and these subjects cannot be taken separately except in the event of the candidate having previously passed in one. A schedule for the Primary examination, to be obtained of the Secretary, must be signed by the Dean of the Medical School or other authority. Section I. of the Final examination consists of three parts. Part I. includes the Principles and Practice of Surgery, Surgical Pathology, and Surgical Anatomy, Operative Manipulation, Instruments, and Appliances. Part II. includes the Principles and Practice of Medicine, Pharmacology, Pathology, and Morbid Histology; Forensic Medicine, Hygiene, Theory and Practice of Vaccination; and Mental Diseases. Part III. includes Midwifery, Gynæcology, and Diseases of New-born Children and the Use of Obstetric Instruments and Appliances. Section I. of the Final examination cannot be passed before the expiration of 45 months from the date of commencement of medical study, during which time not less than three winter sessions and two summer sessions must have been passed at one or more of the medical schools connected with a general hospital recognised by the Society. Section II. of the Final examination consists of two Parts. Part I. Clinical Surgery; Part II. Clinical Medicine and Medical Anatomy. Section II. cannot be passed before the end of the fifth year.

The course of study for the *Primary examination* is as follows:—Elementary Biology, not less than three months; Chemistry and Chemical Physics, six months; Practical Chemistry, three months; Pharmacy and Dispensing, three months; Anatomy, six months; Practical Anatomy with Demonstrations, 12 months; Physiology, six months; Histology with Demonstrations, three months. The study of these subjects must be pursued at a Medical School recognised by the Society. Instruction in Pharmacy and Dispensing must be given by a registered medical practitioner or by a member of the Pharmaceutical Society by examination, or in a public hospital, infirmary, or dispensary.

The course of study for the *Final examination, Section I.*, includes attendance on the Surgical and Medical Practice (with Post-mortem Examinations) at a hospital connected with a medical school for a period of two winter and two summer sessions; lectures on the Principles and Practice of Surgery, six months; Practical Surgery, three months; Clinical Surgical Lectures, nine months; Dressership, six months; Performance of Surgical Operations on the Dead Body; lectures on Principles and Practice of Medicine, six months; Pathology, three months; Clinical Medical Lectures, nine months; Clinical Clerkship, six months; Forensic Medicine, Hygiene, and Insanity, three months; Midwifery and Gynæcology, three months; Clinical Instruction in the same, three months; a course of Practical Midwifery; attendance on 20 Midwifery cases. The course of medical study must extend over the above-mentioned period of 45 months, and the offices of dresser or clinical clerk must be held at a hospital or other institution recognised by the Society. Two years must elapse after a candidate has passed the examination in Anatomy and Physiology before he is eligible to sit for any part of the Final examination.

The course of study for the *Final examination, Section II.*, includes either attendance on the Practice of Medicine and Surgery at a hospital or other institution recognised by the Society for a further period of 12 months, or six months as above and six months as a pupil of a registered practitioner holding a public medical or surgical appointment, or attendance at two special hospitals for six months (three months at each hospital), and for six months at a general hospital, all such hospitals to be recognised by the Society. Evidence shall also be given of practical instruction in Infectious Diseases and in Mental Diseases (at a lunatic asylum or in the wards of an institution containing a special ward set apart for the treatment of mental diseases), and in any two of the following subjects: Ophthalmic Surgery, Laryngology with Rhinology and Otology, Dermatology, and Diseases of Children. No candidate is eligible for the Final examination who has not completed the curriculum prescribed by the Society, in evidence of which a schedule, to be obtained of the Secretary, must be produced, signed by the Dean of the Medical School or other authority. Prior to Section II. of the Final examination the candidate must produce certificates: (1) of being 21 years of age; (2) of moral character; (3) of the course of medical study; (4) of proficiency in vaccination signed by a teacher authorised by the Local Government Board; and (5) of instruction in the administration of anæsthetics. Candidates intending to present themselves for examination are required to give 14 days' notice. A form for this purpose will be sent on application.

Licentiates are eligible for the Membership of the Society of Apothecaries. Particulars may be obtained on application to the clerk.

The fee for the Licence is 20 guineas. Female candidates are admitted to examinations. The examination offices are open from 10 A.M. to 4 P.M.: on Saturdays from 10 A.M. to 1 P.M. All letters should be addressed to the Secretary, Court of Examiners, Society of Apothecaries of London, Blackfriars, E.C. 4.

METROPOLITAN ANCILLARY SCHOOLS AND HOSPITALS AFFORDING FACILITIES FOR CLINICAL OBSERVATION.

The institutions which follow provide to the medical student and medical graduate facilities for different forms of instruction and clinical observation. In each case further information can be obtained from the secretary of the hospital.

THE SEAMEN'S HOSPITAL SOCIETY possesses two hospitals—the *Dreadnought* Hospital at Greenwich, 250 beds, and the Branch Hospital in the Royal Victoria and Albert Docks, E., 50 beds; and the Angas Home 30 beds. It has also two Dispensaries—one in the East India Dock-road and the other at Gravesend—from which the patients are transferred to the hospitals. The London School of Clinical Medicine is attached to the *Dreadnought* Hospital. For the present the services of the School have been placed

at the disposal of the War Office in connexion with special Courses which are being given to Medical Officers belonging to the Army, who are going abroad. Secretary: Mr. P. J. Michelli, C.M.G.

WEST LONDON HOSPITAL, Hammersmith, W. — This hospital has 160 beds, all of which are constantly in use. 2440 in-patients and 30,322 out-patients, whose attendances numbered 155,870, were treated last year. Attached to the hospital is the West London Post-Graduate College. The practice of the hospital is reserved exclusively for qualified men, no junior students being admitted. Instruction is given in the medical and surgical out-patient rooms and demonstrations are given in the wards every morning and afternoon. Lectures and demonstrations are in abeyance during the war. Special Classes are held in Diseases of the Throat and Nose, Skin, and Eye, and in Gynæcology, Medical Electricity, Operative Surgery, Bacteriology, Anæsthetics, Intestinal Surgery, Medical and Surgical Diseases of Children, Blood and Urine, Clinical Microscopy, Tropical Medicine, Cystoscopy, Venereal Diseases, and Operative Ophthalmology. The accommodation for post-graduates consists of a large lecture room, together with reading, writing, and class rooms, &c. The hospital has a fully equipped pathological laboratory at which instruction is given in elementary bacteriology, a class being held every month. The fees for hospital practice, including lectures, are £6 6*s*. for three months or £15 15*s*. for one year. The certificate of the hospital is accepted by the Admiralty, War Office, Colonial Office, and India Office in cases of study leave. Further information can be obtained on application to the Dean, Mr. Donald Armour, or Vice-Dean, Mr. Bishop Harman, at the hospital. Secretary of the Hospital: Mr. A. Betteridge.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, N. —This hospital is recognised by the Examining Board in England of the Royal Colleges of Physicians and Surgeons as a place of study during the fifth year of the medical curriculum. Besides the Honorary Staff there are six Anæsthetists, Pathologist, Resident Medical Officer, two resident House Physicians, and three resident House Surgeons. The hospital contains 350 beds (including emergency beds), which are fully occupied. There is also a ward for children under five years of age. The large rectangular and circular wards, each of which contains 35 beds, the observation wards, the two operation theatres, general and special out-patient and pathological departments, are specially designed with a view of offering the greatest facilities for clinical work. There is also a well-appointed electrical department. The Pathological Department has been extended and is under the control of a Director of Clinical Pathology. The Reckitt Convalescent Home at Clacton-on-Sea belongs to the hospital. It contains 60 beds. Medical practitioners are cordially invited to see the general and special practice of the hospital. Demonstrations are given daily in the wards and out-patient departments. Clinical assistants (qualified), clinical clerks, and pathological clerks are appointed in the general and special departments and may receive certificates at the end of their terms of office. Further particulars from the Secretary of the Medical Committee at the Hospital.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.— This general hospital is in the midst of a densely populated neighbourhood of more than half a million inhabitants. It contains medical, surgical, gynæcological, and children's wards, having 125 beds. There are special departments for gynæcological cases, diseases of the eye, ear, throat, and nose, skin diseases, medical electricity, radiography, and dentistry. Operations are performed every afternoon of the week (except Saturday) at 2.30 P.M. Clinical instruction, ordinarily including laboratory classes, and lectures are given in the wards and out-patient departments, laboratories, and lecture hall in connexion with the North-East London Post-Graduate College attached. There are four Resident Medical Officers, and Clinical Assistants are appointed under certain conditions. Further particulars in regard to the hospital may be obtained from Mr. H. W. Carson, Secretary to the Medical Committee, 111, Harley-street, W.; or from Dr. A. J. Whiting, Dean of the North-East London Post-Graduate College, 19A, Cavendish-square, W. Secretary: Mr. F. W. Drewett.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. (Established 1873; Incorporated 1917).—The hospital contains 120 beds. The in-patients in 1917 were 1155, and the out-patients and casualties numbered 14,064 new cases. The medical and surgical practice of the hospital is open to students and practitioners. Operations: Mondays at 2 P.M., Tuesdays, Wednesdays, and Fridays at 9 A.M.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.—The Hampstead General Hospital (Haverstock Hill) and the North-West London Hospital (formerly at Kentish Town) have been amalgamated since 1907. The Hampstead General Hospital (137 beds—viz., 118 free, 6 isolation, &c., and 13 paying or contributory; out of these, 53 beds are reserved for soldiers) accommodates the in-patients from the districts hitherto served by both hospitals. The out-patients, with the exception of Hampstead casualty and emergency cases, attend exclusively at the Out-patients Department, Bayham-street, Camden Town. Further particulars from the secretary at the hospital (Haverstock Hill, N.W.).

ELIZABETH GARRETT ANDERSON HOSPITAL, 144, Euston-road, N.W.—A considerable number of the students work in the E.G.A. Hospital under the visiting staff, and in return for much valued clinical teaching they perform the duties assigned to students in the wards of a general hospital. Secretary: Miss Imogen H. Murphy.

THE SOUTH LONDON HOSPITAL FOR WOMEN, 103, South Side, Clapham Common, S.W.; Out-patient Department: 86–90, Newington Causeway, S.E.—This hospital, officered entirely by medical women, is a general hospital for women, girls, and small children of both sexes, and provides accommodation for 80 patients. All diseases are treated with the exception of acute infectious fevers and mental disease. There are Ophthalmic, X Ray, and Pathological Departments. The provision of additional facilities for post-graduate training for medical women is one of the special objects of the hospital. The number of in-patients treated during the year 1917 was 976. At the Out-patient Department in Newington Causeway 7095 new cases were treated during the past year, the total number of out-patient attendances amounting to 28,248. Clinical assistants (qualified women only) are from time to time appointed in the Out-patient Department. Secretary: Miss M. E. Ridler.

FRENCH HOSPITAL AND DISPENSARY, Shaftesbury-avenue, W.C.—This hospital, which was founded in 1867 to afford medical treatment for poor foreigners who speak the French language, has 87 beds, of which 48 are now occupied by British wounded soldiers. The French (Convalescent Home and Retreat for Aged French People at Brighton) contains 91 beds, of which 60 are now occupied by British wounded soldiers. Secretary: Mr. G. Pondepeyre.

ITALIAN HOSPITAL, Queen-square, W.C.—This institution was established in 1884 for the maintenance and medical treatment of Italian and Italian-speaking people, irrespective of their religious and political opinions, who may be suffering from sickness or bodily infirmity, but the sick poor of any nationality are also admitted for treatment. The institution also provides surgical and medical relief to Italians and others not being inmates of the hospital. It has 50 beds normally, now increased to 85, of which 60 are devoted to British wounded.

GERMAN HOSPITAL, Dalston, N.E.—This hospital was founded in 1845 with the object of supplying medical aid to poor people speaking the German language and for cases of emergency and of accident. It has 154 beds, including a sanatorium with 12 beds and a convalescent home at Hitchin with 40 beds.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Albany Memorial), Queen-square, Bloomsbury, W.C.—The hospital, with the Finchley branch, contains 210 beds and cots. The physicians attend every Monday, Tuesday, Thursday, and Friday at 2 P.M. In- and out-patient practice at that hour. Clinical Clerks are appointed under the in-patient and out-patient physicians. Lectures are given on Tuesdays and Fridays at 3.30. The hospital has been recognised by the Conjoint Board for England as a place where part of the fifth year may be devoted to clinical work. All communications concerning clinical appointments, lectures, hospital practice, and fees should be addressed to the Secretary at the hospital.

HOSPITAL FOR EPILEPSY AND PARALYSIS, &c., Maida Vale, W. (85 beds), and Golder's Green (100 beds for invalided soldiers).—Both in-patient and out-patient departments of this hospital are open free to students as well as to medical graduates. Secretary and General Superintendent: Mr. H. W. Burleigh.

WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, PARALYSIS, AND EPILEPSY, 73, Welbeck-street, W.—Graduates in medicine and senior students may attend demonstrations in the Out-patient Department. No fees are charged. The Savill Prize and Medal are at present in abeyance. Owing to the war, routine demonstrations by the staff have been discontinued for the present.

BETHLEM ROYAL HOSPITAL, St. George's Circus, S.E.—This hospital is open for the admission of two Resident House Physicians who have recently obtained their diplomas to practise Medicine and Surgery. They are permitted to reside in the hospital for a term generally not exceeding six months, commencing May 1st and Nov. 1st, and are provided with apartments, complete board, attendance, laundry, and a salary at the rate of £100 per annum. They are under the direction of the Physician Superintendent and are elected by the Committee from candidates whose testimonials appear to be most satisfactory. The students of certain specified London Medical Schools receive Clinical Instruction in the wards of the hospital and qualified practitioners and other students may attend for a period of three months on payment of a fee.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton (333 beds).—The hospital contains 333 beds. The Sanatorium at Frimley contains 100 beds and 50 beds for paying patients. Six House Physicians reside in the hospital for a term of six months; their duties include attendance in the out-patient department. Pupils are admitted to the practice of the hospital: terms, £1 1*s.* for one month; three months, £2 2*s.*; perpetual, £5 5*s.* Clinical Demonstrations are given throughout the year by members of the medical staff. Lectures have been suspended for the duration of the war. Clinical Assistants are appointed to the Assistant Physicians in the out-patient department and Clinical Clerks to the Physicians in the wards. The hospital has been recognised by the Conjoint Board for England as a place where six months of the fifth year may be spent in clinical work. The medical practice of the hospital is also recognised by the University of London, the Apothecaries' Society, and the Army and Navy and Indian Medical Boards. Dean of the Medical School: Dr. Cecil Wall.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—During the past year 783 in-patients have been treated in the wards. The out-patients treated during 1917 numbered 9730. Address "Secretary of the Medical Committee."

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City road, E.C. (80 beds.)—This hospital provides accommodation for 80 in-patients. Expenditure for 1917 £14,198. income £28,442. The attendance of out-patients averages 25,000 annually. Secretary: Mr. A. T. Mays.

THE MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, NORTHWOOD, CENTRAL OUT-PATIENT DEPARTMENT, Fitzroy-square, W.—The hospital contains 110 beds. Number of in-patients, 461; out-patients, 3279. Resident Medical Staff. Clinical Demonstrations are given by the Visiting Medical Staff at the hospital at Northwood. Clinical assistants are appointed to physicians in the wards and in the out-patient department. Secretary: Mr. W. J. Morton. Offices: 7, Fitzroy-square, W.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL AND MIDWIFERY TRAINING SCHOOL, Marylebone-road, N.W.—This hospital receives about 2000 patients annually, besides having a large out-patient department. Medical pupils are received at all times of the year. Pupils have unusual opportunities of seeing obstetric complications and operative midwifery, on account of the very large number of primiparous cases—nearly one-half of the total admissions. Clinical instruction is given on the more important cases which present themselves. Certificates of attendance at this hospital are recognised by all the Universities, Colleges, and licensing bodies. Pupil midwives and monthly nurses are received and specially trained. A Residential College provides accommodation for five men at a time, students and qualified practitioners, and is opposite the hospital, with which it is in telephonic communication. Arrangements have been made for Medical Students to receive the preliminary instruction in Practical Midwifery recommended by the General Medical Council. Women students are received, and the Resident Medical Officers are women at present. For further particulars application should be made to Mr. Arthur Watts, Secretary, at the hospital.

THE HOSPITAL FOR WOMEN, Soho-square, W.—In connexion with the out-patient department there has been for some years a well-organised Clinical Department. The appointments are open to qualified medical men and women. Every facility is afforded them by the gynæcologists in the out-patient department of obtaining experience in diagnosis and treatment and the practical use of instruments. Fee for one month £2 2*s.*; for each subsequent month the same. The hospital contains 67 beds. In the out-patient department there were over 4000 new cases during the past year, the total number of out-patient attendances being 14,500. This large number affords exceptional opportunities for examining and studying most of the varieties of the diseases of women. Applications should be made to the Secretary, Mr. Alfred Hayward.

SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Qualified practitioners are admitted as clinical assistants to both the in- and out-patient departments. Demonstrations are given daily in both departments. The fees, payable in advance, are £3 3*s.* for three months. Full particulars may be obtained on application to the Secretary at the hospital. There are 70 beds. Secretary: Mr. G. H. Hawkins.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Glamis-road, Shadwell, E.—The hospital maintains 126 cots, and on an average 245 out-patients are seen daily. Clinical instruction is given by the physicians and surgeons to the hospital, which is recognised by the Conjoint Board for England as a school of medical teaching for students in the fifth year of the curriculum. All particulars may be obtained on application to the Secretary. Two clinical clerkships for qualified or unqualified students are open every three months subject to reappointment if desired. Clinical assistants (qualified men only) are from time to time appointed in the out-patient department. Any additional information may be obtained on applying to Mr. W. M. Wilcox, the Secretary, at the hospital.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. 1, contains 210 beds, besides 30 beds at the Branch Hospital, Highgate. The hospital having been recognised by the Conjoint Board for England as a place where, under the new curriculum, six months of the fifth year may be spent in clinical work, the practice is arranged to meet this need and is open to students of both sexes who have completed four years of medical study and also to qualified medical men and women. The medical staff are recognised by the University of London as teachers in Diseases of Children. Arrangements have been made with University College Hospital for the routine admission of their students of both sexes to clerkships and dresserships in the wards. Appointments are made every three months to six medical clerkships, which are open to students of the hospital. Clinical instruction is given daily by members of the visiting staff. Fees for hospital practice, one month, £2 2*s.*; three months, 5 guineas; perpetual ticket, 10 guineas. Clinical Clerks, 1 guinea for three months. Ophthalmological Clerkships.—Clinical Clerks are appointed once a month. Fees £1 1*s.* for one month's attendance. Pathological Clerkships.—Facilities are afforded for obtaining theoretical and practical instruction in Clinical Pathology and Bacteriology in the Pathological Laboratories. Clerks attend for about four hours daily. Fees: For one month, £3 3*s.*; for two months, £5 5*s.*; for three months, £6 6*s.* A reduction is made in the case of those already holding tickets for general attendance at the hospital. Secretary: Mr. Stewart Darmady.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, S.E.—This hospital contains 76 cots and a very extensive Out-patient Department. About ten clinical assistants (either sex), to work with the Honorary Medical Staff for Out-patients, are appointed quarterly for a period of three months; there is no salary attached to these posts; but, on the other hand, no fees are charged. Secretary: H. C. Staniland Smith.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—The hospital contains 104 beds and has a large out-patient department (over 1200 weekly); the home at Broadstairs has 50 beds, and the home at Biggin Hill, Kent, has 14 beds. Out-patients are seen as under:—Diseases of the Eye: Tuesday, 2 P.M. Diseases of the Skin: Wednesday, 1.30 P.M. Whooping-cough Cases: Friday, 2.30 P.M. Dental Cases: Thursday, 1.30 P.M. Medical and Surgical Cases: Mornings at 9.30. Accidents and urgent cases are admitted at any time. Secretary, Mr. H. G. Evered.

THE QUEEN'S HOSPITAL FOR CHILDREN (*late North-Eastern Hospital for Children*), Hackney-road, Bethnal Green, E. (Telephone 305 Dalston.) For the sick children of the poor under 14 years of age. Established 1867. 134 beds in London and 30 at the seaside branch, "Little Folks" Home, Bexhill. —During the past year 2029 in-patients and 42,225 out-patients (attendance 98,346) were relieved, 736 of the in-patients being infants under two years of age. The surgeons attend on Tuesdays and Wednesdays at 1.45 P.M. and Fridays and Saturdays at 9.30 A.M.; the physicians daily at 1.45 P.M., except Saturday, 9.30 A.M., and Wednesday and Friday, 9.30 A.M., as well as 1.45 P.M. A course of clinical demonstrations and lectures, open free to medical practitioners and students of medicine of both sexes, is usually given during the winter session. Secretary, Mr. T. Glenton-Kerr.

THE BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Clinical Assistants (men or women) are from time to time appointed to the members of the Visiting Staff attending in the Out-patient Department at this hospital, and facilities are given for attendance in the wards.

ALEXANDRA HOSPITAL FOR CHILDREN WITH HIP DISEASE, Queen-square, W.C.—At this hospital students who have obtained a recommendation from their teachers can attend to see the practice. The out- and in-patients' clinic is held on Mondays at 2.30 P.M., subject to alteration during the war.

ROYAL LONDON OPHTHALMIC HOSPITAL (Moorfields, 1804–1899), City-road, E.C. 138 beds.—This hospital, known as Moorfields Eye Hospital, was moved in 1899 to larger buildings in City-road. In 1917 there were 2248 in-patients, the out-patients were 45,770, of whom 40,055 were new out-patients, and the attendances were 109,364. Operations are performed daily from 10 A.M. to 1 P.M., and four surgeons attend on each day. Students are admitted to the practice of the hospital. Fee for six months, £3 3*s.*; perpetual, £5 5*s.* A special Clinical demonstration is given by a member of the staff in the out-patient department every morning. Courses of instruction on the following subjects are given at the hospital periodically: (1) examination of the eye; (2) the use of the ophthalmoscope; (3) errors of refraction; (4) external diseases of the eye; (5) surgical anatomy of the eye; (6) motor anomalies; (7) pathology of the eye; (8) practical pathology; (9) bacteriology; (10) operative surgery; and (11) X ray work. A composition fee of £10 10*s.* will entitle students of the hospital to a perpetual ticket, and will admit them once to all the above lectures and demonstrations except the classes on practical pathology, bacteriology, operative surgery, and X ray work. Students of the hospital are eligible for the offices of house surgeon or clinical and junior assistants. Junior assistants are appointed every three months. Any further information will be furnished by Mr. Robert J. Bland, Secretary.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, King William-street, West Strand.—The hospital contains 40 beds. Out-patients, who number over 15,000 annually, are seen at 1 P.M., and operations are performed daily at about 3 P.M. The practice of the hospital is open to practitioners and students, men and women. Fees for six months, £3 3*s.*; perpetual, £5 5*s.*; shorter periods by arrangement. Students of the hospital are eligible for the posts of house surgeon, assistant house surgeon, pathologist, and clinical assistants. Secretary: Mr. John Hy. Johnson.

ROYAL EYE HOSPITAL, St. George's-circus, Southwark, S.E.—There are 40 beds and 2 cots. There were 56,097 attendances in the Out-patient Department last year, and the new patients numbered 19,198. Out-patients are seen daily 1.30 to 2.30 P.M. Dean: Mr. A. D. Griffith.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd-street, St. Pancras, W.C.—This hospital, which has lately been rebuilt, has 40 beds and possesses a well-equipped laboratory and every facility for clinical teaching daily. Last year there were 412 in- and 10,364 out-patients (entailing 28,097 attendances). The out-patient work begins at 1 o'clock, and operations are performed daily between 1 and 4. A scheme has lately been constituted and has received the recognition of the London University whereby students of the University College Hospital and other general hospitals in the neighbourhood will receive their ophthalmic training at the Central London Ophthalmic Hospital. Secretary: Mr. H. R. S. Druce.

HOSPITAL FOR DISEASES OF THE THROAT, Golden-square, London, W., with which is amalgamated THE LONDON THROAT HOSPITAL, Great Portland-street.—The hospital contains 60 beds. There is an out-patient attendance of over 50,000 yearly. Clinical Instruction in the Diagnosis and Treatment of Disease is given in the out-patient department from 2 to 5 P.M., on Tuesdays and Fridays from 6.30 to 9 P.M. From amongst the students Junior Clinical Assistants are selected, whose duty it is to assist the member of the staff to whom they are appointed. For terms and further information apply to the Dean, Mr. Geo. W. Dawson.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road.—In addition to the new In-patient Department and operation theatre the hospital has a very extensive out-patient department, which is open to all medical practitioners and students for the purpose of clinical demonstration and instruction during the hours of the surgeons' visits. During the past year 10,248 out-patients (involving 40,000 attendances) and 616 in-patients were treated. The fee for three months' attendance is 5 guineas; for six months, 8 guineas. The post-graduate teaching consists of successive series of practical demonstrations by the members of the staff delivered twice weekly during the winter and summer sessions. They are so arranged that practitioners joining at any part of the course are enabled to complete the group of subjects. A special Operative Surgery class is held at intervals. The fee for each course is 2 guineas, with daily attendance at the out-patient department during the period of the course. Details of subjects, &c., will be afforded by the Dean. Considerable attention is given to scientific work, particularly with regard to Bacteriology of the ear and respiratory passages. Operation days: in-patients, Monday, Tuesday, Wednesday, Thursday, and Friday, at 2 P.M.; out-patients, daily at 9 A.M. The following appointments are open to qualified members of the profession:—Six Registrars, tenable for twelve months; and sixteen Clinical Assistants, tenable for three or six months. Secretary: Mr. Richard Kershaw.

THE METROPOLITAN EAR, NOSE, AND THROAT HOSPITAL (1838) (incorporated).—The hospital was founded in 1838, and is situated in Fitzroy-square, W. The Out-patient Department is opened daily at 2.30 P.M. to all medical practitioners and senior students for acquiring clinical instruction and technical knowledge. Operations upon in-patients are performed on Tuesdays, Wednesdays, Thursdays, and Fridays at 10 A.M. Fee for one month's attendance at the hospital £1 1*s.*, and for three months £2 2*s.* Clinical Assistants are appointed as vacancies occur, and have responsible duties.

ROYAL EAR HOSPITAL, Dean-street, Soho. (Founded 1816.)—This hospital is at present handed over to the British Red Cross Society and will probably be retained by that society for the duration of the war.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM, City-road, E.C. (Founded 1835.)—The hospital contains 52 beds for men and women. Operations are performed on Mondays, Wednesdays, and Thursdays at 2.30 P.M. Medical practitioners and students are invited to the operations and to the clinical instruction in the wards and in the out-patient department. The number of out-patient attendances per year is 5000, and the average number of in-patients 670.

ST. PETER'S HOSPITAL FOR STONE AND OTHER URINARY DISEASES, Henrietta-street, Covent Garden. Established 1860. New Hospital opened 1882.—The hospital contains 30 beds for men and 2 beds for women and children. Medical practitioners and students are invited to the clinical instructions which are given in the wards and out-patient depart-

ment daily, and to the operations in the theatre on Wednesdays and Fridays at 2 P.M. Average beds occupied daily, 30; average out-patients seen daily, 125.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C. 2.—The in-patient department, 40 beds, is at 262, Uxbridge-road, W. The out-patient practice is open to the medical profession every day at 2 and every evening (except Saturday) at 6. At the afternoon clinics demonstrations on the different diseases presenting themselves are given. Venereal Diseases, under the Government scheme, are admitted at all clinics. The X ray department is open every afternoon except Saturday. The Chesterfield Lectures are given on Thursdays at 6 P.M., October to March, commencing Oct. 10th. At the end of the course the Chesterfield medal may be competed for by those who have attended three-fourths of the lectures. Special laboratory courses in Pathology and Bacteriology of the Skin may be arranged for.

LONDON LOCK HOSPITAL AND RESCUE HOME.—In the Female Hospital at Harrow-road, W., there are 159 beds, and 679 patients were admitted in 1917. In the Male Hospital and Out-patient Department in Dean-street, Soho, W., there are 43 beds, which during 1917 accommodated 435 patients. 36,500 out-patients were treated. 10,010 injections of the substitutes for salvarsan were made in 1917. Male patients are seen at Dean-street on Mondays from 1 to 2 P.M. and from 6 to 8 P.M.; on Tuesdays and Wednesdays from 6 to 8 P.M.; on Thursdays at 11.30 A.M. and 5.30–7 P.M. (female patients); on Fridays from 2 to 3 P.M. (female patients); and on Saturdays from 2 to 4 P.M. (males). Secretary: Henry J. Eason. Head office: 283, Harrow-road, W. 9.

ENGLISH PROVINCIAL ANCILLARY SCHOOLS AND HOSPITALS.

Under this heading we include all the hospitals which are recognised by the English Royal Colleges for a part of the required attendance on medical and surgical practice, for medical clerkships, and surgical dresserships. The list includes nearly every hospital of a general character in the country having more than 150 beds, though occasionally a large hospital is admitted because equally good opportunities are afforded to students at other institutions in its neighbourhood, while a small hospital may be included because no such facilities for study are present elsewhere. The list is arranged alphabetically as to the town where the hospital is located.

BATH ROYAL UNITED HOSPITAL, Bath.—This hospital contains 130 beds, and possesses a fine library. Secretary: Mr. J. M. Sheppard.

BEDFORD COUNTY HOSPITAL, Bedford.—This hospital has 100 beds, with X Ray and Pathological Departments. Secretary: Mr. Beauchamp Wadmore.

BRADFORD ROYAL INFIRMARY, Bradford.—This hospital contains 215 beds. The material passing through the Surgical wards consists of major operations, chiefly abdominal, and gynæcological work, and affords excellent facilities for either students or post-graduates. Plans for a new hospital of 382 beds have been adopted, and the building operations will be commenced as soon as the funds in hand will allow.

THE ROYAL SUSSEX COUNTY HOSPITAL, Brighton (265 beds).—This hospital affords ample facilities for students, possessing a large out-patient department, a library, and a well-appointed clinical research and bacteriological department. The hospital does not take resident pupils, but out-pupils may attend the practice of the hospital for any period not exceeding two years on payment in advance of such a fee, not exceeding 20 guineas, as the Board of Management shall direct.

KENT AND CANTERBURY GENERAL HOSPITAL, Canterbury.—The hospital contains 110 beds. Pupils of the staff are admitted to the practice of the hospital and have the use of the library of the East Kent and Canterbury Medical Society for £7 7*s*. An X-ray apparatus has recently been given to the hospital. Operation day, Thursday, 11 A.M. Secretary: Mr. Arthur J. Lancaster.

DERBYSHIRE ROYAL INFIRMARY, Derby.—This hospital contains 260 beds. It was founded in 1810, and was entirely rebuilt and enlarged 1892–1915 on the most modern lines at a cost of over £144,000. There is a separate ophthalmic block of 33 beds, a separate children's block of 34 beds, and a special department for gynæcological cases. There are three resident house surgeons and a resident house physician. There is also a well-equipped Finsen light and X ray department. Registered medical students are admitted to witness the medical and surgical practice on payment of 10 guineas annually.

ROYAL DEVON AND EXETER HOSPITAL, Exeter.—The hospital contains 200 beds (including special children's ward) and has a good library, museum, dissecting room, and post-mortem room. Attendance on the practice of this hospital qualifies for all the examining boards. There is also a Private Nursing Staff attached to the hospital. For particulars as to fees, &c., apply to the Matron. A new wing was added in 1897. Arrangements may be made by which gentlemen in practice desiring to increase their qualifications may have the use of the museum and library and other facilities and by which students may attend midwifery. A new Operating Theatre was opened in 1906 (the gift of Mrs. Nosworthy of Newlands, Dawlish, Devon). The Electrical Treatment Department (the gift of Mrs. M. A. Sanders) was opened in 1907 by Lady Duckworth-King. A department was opened in 1917 for the treatment of genito-urinary diseases; there are three sessions per week, two for men at 4 P.M. and 7 P.M., and one for women at 4 P.M.

WEST OF ENGLAND EYE INFIRMARY, Exeter.—Secretary: Mr. W. W. Beer. The infirmary contains 64 beds. Students of the Exeter Hospital can attend the practice of the Eye Infirmary. Patients for the year ending Michaelmas, 1917, 2537.

THE GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION, Gloucester.—This hospital, which was granted the title of "Royal" on the occasion of King Edward VII.'s visit to Gloucester in the year 1909, has 140 beds. Secretary: Mr. H. P. Pike. In-patients, 1780; out-patients, 7018.

NORTH STAFFORDSHIRE INFIRMARY, Hartshill, Stoke-on-Trent.—The New Infirmary, opened in 1869, is built on the pavilion plan, has accommodation for about 240 patients, including Children's wards, and a special department for the treatment of Diseases of the Eye, a special X Ray and Electrical Department, and a special department for the treatment of Diseases of the Ear, Nose, and Throat, so that there are excellent facilities for acquiring a practical knowledge of the profession. During the last six years the sum of £35,000 has been spent on new buildings and alterations. A new Out-patient Department, costing £12,000, a new Children's Ward of 30 beds, a new Pathological Department, and a second large Operation Theatre are amongst the structural improvements already completed. The whole institution is now equipped in a thoroughly up-to-date manner. Secretary and House Governor: Mr. W. Stevenson.

HULL ROYAL INFIRMARY, Hull.—This hospital contains 256 beds.

LEICESTER ROYAL INFIRMARY, Leicester.—Instruction in the infirmary for first-year students is duly recognised by the various examining bodies. At the General Infirmary there are 230 beds, and at the Children's Hospital in connexion 70; total 300. 126 beds have been placed at the disposal of the War Office for wounded soldiers. A new wing containing 100 beds was recently opened by H.R.H. the Duchess of Argyll, and a new Nurses' Home containing separate accommodation for 100 nurses has also been opened. A reconstruction scheme has been carried out, and £120,000 spent on bringing the accommodation of the institution to a modern standard of efficiency. This scheme has included the provision of two modern operating theatres, and a self-contained out-patients' department. The Children's Hospital has been reconstructed and enlarged by the addition of a third ward at a cost of £14,500. Open-air balconies on all three floors are a feature. A central sterilising department has been provided. Plans have been passed for a new Pathological Laboratory and post-mortem rooms at an estimated cost of £5000. There are eight resident medical officers—viz., two house surgeons, one house physician, two assistant house surgeons, one assistant house physician, and two dressers. All receive salaries. The dressers are given an honorarium. House Governor and Secretary: Mr. Harry Johnson.

NORTHAMPTON GENERAL HOSPITAL, Northampton.—Two new wings were opened in 1904 and the old buildings entirely renovated and rearranged. The number of beds is 298, 120 of which are occupied by wounded soldiers. Non-resident pupils are received and have every opportunity of acquiring a practical knowledge of their profession. The fee is £10 10*s*. Pupils can be received at any time.

NORFOLK AND NORWICH HOSPITAL, Norwich.—This hospital has at present 425 beds (150 civilian, 275 military). Non-resident pupils admitted. Fees: For three months. £3 3s.; for six months, £5 5s.; as permanent pupil, £8 8s. Secretary: Mr. F. Inch.

NOTTINGHAM GENERAL HOSPITAL.—At the present time there are 233 beds available for civilian patients, and 300 for the accommodation of sick and wounded soldiers from overseas, including 200 in temporary buildings which have been erected within the hospital grounds for this purpose.

SOUTH DEVON AND EAST CORNWALL HOSPITAL, Plymouth.—This hospital contains 189 beds (25 of which are allocated for wounded soldiers). A new mortuary chapel has been recently erected.

THE ROYAL HOSPITAL, Portsmouth (founded 1847).—The number of beds is 160. The hospital has X Ray and Massage Departments. The hospital is a preparatory School of Medicine and Surgery; the attendance of pupils at this hospital is recognised by the Examining Boards. Particulars of the Secretary at the hospital.

ROYAL BERKSHIRE HOSPITAL, Reading.—This hospital, which contains 264 beds, with military wards, has been recently enlarged, the additions including a new Out-patient Department, a Casualty Department, an X Ray Department, a Laboratory, an Eye Theatre, and Eye Wards.

SALISBURY GENERAL INFIRMARY, Salisbury.—This hospital contains 200 beds. In-patients, 169 daily average; out-patients, 644, including ophthalmic cases 208 and X ray cases 943; attendances on 3728 casuals. Secretary, Mr. S. B. Smith.

ROYAL SALOP INFIRMARY, Shrewsbury.—This hospital has 160 beds. In-patients, 1264; out-patients, 981; out-patients' attendances for the year, 16,326. Secretary: Mr. Alfred Sugden.

ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL, Southampton.—This hospital contains 130 beds. In-patients, 2310; out-patients, 8297. Secretary: Mr. T. A. Fisher Hall.

STAFFORDSHIRE GENERAL INFIRMARY, Stafford.—This hospital has 77 beds. In-patients, 880; out-patients, 2614. Secretary: Mr. R. Battle.

ROYAL HANTS COUNTY HOSPITAL, Winchester.—This hospital has 108 civilian and 240 military beds. Secretary: Mr. Edwin J. Pearce.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL, Wolverhampton.—There are 262 beds. Special departments for Children, Gynæcology, Ear, Throat, and Nose Diseases, Electro-therapeutic and X ray and Pathological departments. There is an excellent library. The resident officers are a resident medical officer and three house surgeons. Pupils are allowed to witness the whole of the practice of the hospital and to be present at operations and have every opportunity of acquiring a practical knowledge of their profession. Fees: £3 3s. a quarter, £10 10s. the first year, and £5 5s. subsequent years. A course of Practical Pharmacy is given by the dispenser. Fee £3 3s. for three months. Applications should be made to the Secretary of the Medical Committee.

WORCESTER GENERAL INFIRMARY, Worcester.—This hospital has 132 beds (temporarily reduced to 70). Pupils are taken by members of the Honorary Medical and Surgical Staff. Number of operations last year 1308. New X Ray and Electrical Departments have been recently erected and are now in use. Additional accommodation for the Honorary Staff and Out-patients and also an Outdoor Shelter in connexion with the Children's Ward have been built as a memorial to King Edward VII. In-patients, 1014; out-patients, 3098. Secretary: Mr. E. J. Holland.

YORK COUNTY HOSPITAL, York.—This hospital contains 230 beds, of which 110 are reserved for military patients. There are balconies for outdoor treatment and two installations of X Ray apparatus.

SCHOOL OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—The subjects of the Minor examination of the Pharmaceutical Society (for registration as "chemist and druggist") are botany, chemistry and physics, practical chemistry, materia medica, pharmacy, practical pharmacy and dispensing, and prescription reading. Fee, 10 guineas; for each subsequent examination after failure, 3 guineas. The advanced or Major examination (for registration as "pharmaceutical chemist") includes botany, chemistry and physics, practical chemistry, and materia medica. Fee, 3 guineas. The inaugural address will be delivered on Wednesday, Oct. 2nd. Medical students are admitted to the lectures and laboratory work in any or all the courses. Certificates of instruction in this school are received by the Conjoint Board of the Royal Colleges and by the University of London. Application for admission to the school, or for further information, may be made to the Dean, Professor Greenish, 17, Bloomsbury-square, London, W.C. 1.

II.—SCOTLAND.

THE UNIVERSITIES.

UNIVERSITY OF EDINBURGH.

Four Degrees in Medicine and Surgery are conferred by the University of Edinburgh—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). The degree of Bachelor of Surgery cannot be conferred on any person who does not at the same time obtain the degree of Bachelor of Medicine, and similarly the degree of Bachelor of Medicine is not conferred on any person who does not at the same time obtain the degree of Bachelor of Surgery.

No one is admitted to the degrees of *Bachelor of Medicine* and *Bachelor of Surgery* who has not been engaged in Medical and Surgical study for five years. No course of lectures will be allowed to qualify unless the lecturer certifies that it has embraced at least 100 lectures, or 50 lectures, as may be required by the regulations, and that the student has also duly performed the work of the class.

Candidates for the degrees of M.B. and Ch.B. must have attended for at least three academic years the medical and surgical practice either of the Royal Infirmary, Edinburgh, or of a general hospital elsewhere which accommodates not fewer than 80 patients and possesses a distinct staff of physicians and surgeons. They must have attended Clinical Surgery during a course or courses extending over not less than nine months, and courses of instruction in all the subsidiary subjects. They must have personally conducted, under the superintendence of a registered medical practitioner, 20 cases of labour at least.

With respect to the places and institutions at which the studies of the candidate may be prosecuted the following regulations have effect:—Two of the five years of medical study must be spent in the University of Edinburgh. The remaining three years may be spent in any University of the United Kingdom, or in any Indian, Colonial, or Foreign university recognised for the purpose by the University Court, or in such medical schools or under such teachers as may be recognised for the purpose by the University Court. Of the subjects of study—viz., Anatomy, Practical Anatomy, Chemistry, Practical Chemistry, Materia Medica, Physiology, Practical Physiology, Practice of Medicine, Surgery, Midwifery and Diseases of Women, Pathology, Practical Pathology, Physics, Botany, Zoology, Medical Jurisprudence, and Public Health—not less than one-half must be taken in the University of Edinburgh, which corresponds to the two years above referred to.

Women are admitted to graduation in medicine under practically the same conditions as men.

The fee to be paid for the degrees of Bachelor of Medicine and Bachelor of Surgery is £23 2s., and the proportion of this sum to be paid by a candidate at each division of the examination shall be as follows—viz.: For the First Division of the Examination (Botany, Zoology, Physics, and Chemistry), £6 6s.; for the Second Division (Anatomy and Physiology), £5 5s.; for the Third Division (Pathology and Materia Medica and Therapeutics), £4 4s.; and for the Final Division (Surgery and Clinical Surgery, Medicine and Clinical Medicine, Midwifery, Clinical Gynæcology, and Forensic Medicine and Public Health), £7 7s.

Bachelors of Medicine and *Bachelors of Surgery* may proceed to the degrees of *Doctor of Medicine* and *Master of Surgery* after they have spent one year in the medical or surgical wards respectively of a hospital, or the Military or Naval Medical Services, or in scientific work bearing directly on their profession, or two years in practice. In each case an examination must be passed and a thesis

submitted for approval of the Faculty. The fee to be paid for the degree of M.D. is £15 15*s*., and the fee to be paid for the degree of Ch.M. is £15 15*s*.

A diploma in Tropical Medicine and Hygiene (D.T.M. and H.) is granted to graduates in Medicine and Surgery of the University of not less than six months' standing, and to Registered Medical Practitioners who, having resided in a tropical country, may be approved by the Senatus, on the recommendation of the Faculty of Medicine.

Diploma in Psychiatry.—Courses of instruction have also been instituted for a Diploma in Psychiatry, open to all legally qualified Medical Practitioners who conform with the Regulations. There shall be two examinations for the Diploma, the first comprising the subjects of Anatomy of the Nervous System; Physiology, Histology, and Chemistry of the Nervous System; Pathology of the Brain and Nervous System; and Practical Bacteriology in its relation to Mental Diseases; and the second examination comprising the subjects of Psychology with Experimental Psychology, Clinical Neurology, and Psychiatry (systematic and clinical). The fee for each examination shall be £5 5*s*.

The University of Edinburgh is especially rich in scholarships and prizes in medical subjects. Full particulars can be obtained from the Dean of the Medical Faculty.

SCHOOL OF MEDICINE OF THE ROYAL COLLEGES, Edinburgh.—The number of students varies much in the classes and subjects. It is within the limit to say that before the war about 1000 students availed themselves each session of the opportunity of attending the school. The lectures qualify for the University of Edinburgh and other Universities, the Royal Colleges of Physicians and Surgeons of London, Edinburgh, and Dublin, the Faculty of Physicians and Surgeons of Glasgow, and other Medical and Surgical and Public Boards.

The anatomy rooms and laboratories will open and the lectures commence on Oct. 9th.

In accordance with the statutes of the University of Edinburgh one-half of the qualifying classes required for graduation may be attended in this school. The regulations require that the fee for any class taken for graduation in Edinburgh shall be the same as that for the corresponding class in the University. The whole education required for graduation at the University of London may be taken in this school.

The courses on special non-qualifying subjects have for the last quarter of a century formed a marked feature of the school. Indeed, such medical subjects could be studied in Edinburgh only in this school until lately, when the University of Edinburgh appointed from the school lecturers on Diseases of the Eye, Insanity, and Diseases of Children to take charge of classes intra-murally. Special courses of instruction for dental students and for women are also included in the curriculum of this school.

The minimum cost of the education in this School of Medicine for the Triple Qualification of Physician and Surgeon from the Royal Colleges of Physicians and Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow, including the fees for the Joint Examinations, is about £120, payment of which is distributed over the period of study. There is no composition fee.

Further particulars regarding the school, also its calendar, may be had on application to the Dean of the School, 11, Bristo-place, Edinburgh.

Clinical Instruction.—ROYAL INFIRMARY, Edinburgh.—This hospital has 921 beds and 42 cots for children. Courses of Clinical Medicine and Surgery are given by the physicians and surgeons to male and female students. Special instruction is given on Diseases of Women, Physical Diagnosis, Diseases of the Skin, Diseases of the Eye, the Ear, the Larynx, and the Teeth. Separate wards are devoted to Venereal Diseases, Diseases of Women, Diseases of the Eye, the Ear, Throat and Nose, and the Skin, and also to cases of Incidental Delirium or Insanity. There are also large and complete Medical-Electrical and X Ray and Bathing Departments. Post-mortem examinations are conducted in the anatomical theatre by the pathologist and his assistants, who also give practical instruction in Pathological Anatomy and Histology. The fees for hospital attendance are as follows—viz.: Perpetual ticket, in one payment, £12; annual ticket, £6 6*s*.; six months, £4 4*s*.; three months, £2 2*s*.; monthly, £1 1*s*. Separate payments amounting to £12 12*s*. entitle the student to a life ticket. No fees are paid for any medical or surgical appointment. The appointments are as follows: 1. Resident physicians and surgeonsare appointed and live in tha house free of charge. The appointment is for six months, but may be renewed at the end of that period by special recommendation. 2. Non-resident house physicians and surgeons and clinical assistants are appointed for six months. The appointment may be renewed for a like period by special recommendation. 3. Clerks and dressers are appointed by the physicians and surgeons. These appointments are open to all students and junior practitioners holding hospital tickets. 4. Assistants in the Pathological Department are appointed by the pathologist.

ROYAL HOSPITAL FOR SICK CHILDREN, Sciennes-road, Edinburgh.—This hospital contains 120 beds, and is fitted with every modern improvement. A fully equipped out-patient department (medical and surgical) is conducted daily in a building adjoining the hospital. Systematic courses of instruction, which qualify for graduation in the Edinburgh University and elsewhere, are given from time to time throughout the year by the staff. Students may enter at any time. Full particulars can be obtained from the Registrar at the hospital.

EYE, EAR, AND THROAT INFIRMARY OF EDINBURGH, 6, Cambridge-street, Lothian-road.—Clinical Lectures and Instruction are given in this institution, which is open at 1 o'clock daily for outdoor patients for Eye Diseases; Mondays, Thursdays, and Saturdays at 12 noon, and Tuesdays and Fridays at 4 P.M. for outdoor Ear, Nose, and Throat Patients. Special Practical Ophthalmoscopic Classes by arrangement. Patients whose diseases require operations or more than ordinary care are accommodated in the house. Secretary: Mr. J. P. Watson, W.S., 32, Charlotte-square.

UNIVERSITY OF GLASGOW.

The University of Glasgow is both a teaching and a degree-granting body, but admits to graduation only candidates whose preliminary examination and course of study conform to its own regulations. Within certain limits instruction given by recognised medical schools and teachers may be accepted, but not less than one-half of the subjects other than clinical must be taken in this or some other recognised university, and at least two years of the course must be taken in Glasgow University. Six degrees, open both to men and women, are conferred: M B. and Ch.B. (always conjointly), M.D. and Ch.M.; B.Sc. in Public Health; D.Sc. in Public Health; and B.Sc. in Pharmacy. A Preliminary Examination must be passed in (1) English, (2) Latin, (3) Elementary Mathematics, and (4) Greek, or French, or German, or Italian, with possible options to students whose native language is not English. Candidates taking the University preliminary examination are not obliged to pass in all the four subjects at one examination, but must do so at not more than two occasions.

For the degrees of M.B. and Ch.B. a curriculum of five years is required. The candidate must, during his curriculum, have attended a course or courses of instruction in each of the following subjects of study, extending over not less than the number of terms specified in each case, and including such class examinations as may be prescribed in connexion with the several courses:—Chemistry (including Organic Chemistry), two terms; with Practical Chemistry, one term; Physics (with practical work), one term; Botany (with practical work), one term; Zoology (with practical work), one term; Anatomy and Practical Anatomy, five terms; Physiology and Practical Physiology, three terms; Materia Medica and Therapeutics (together or separately), each subject, one term; Pathology and Practical Pathology, three terms; Medical Jurisprudence and Public Health (together or separately), each subject, one term; Midwifery and Diseases peculiar to Women and to Infants, two terms; Surgery, two terms; Medicine, two terms. Candidates must attend at least three years the Medical and Surgical Practice of a recognised hospital accommodating at least 80 patients and having a distinct staff of physicians and surgeons. At least nine months' hospital attendance is required on both Clinical Surgery and Clinical Medicine, and the student must have acted for six months as clerk in medical and dresser in surgical wards, and must have had six months' outdoor practice; he must

also have attended a course of Mental Diseases and of Practical Pharmacy (25 meetings), must have been properly instructed in Vaccination at a public vaccination station, and must have attended at least 20 cases of labour and the Practice of a Lying-in Hospital. The University also requires further study in various special subjects.

There are four Professional Examinations, the first comprising Botany, Zoology, Physics, and Chemistry; the second comprising Anatomy and Physiology; the third comprising Materia Medica and Therapeutics and Pathology; and the fourth or final, comprising Medical Jurisprudence and Public Health, Surgery and Clinical Surgery, Practice of Medicine and Clinical Medicine, and Midwifery and the Diseases peculiar to Women and to Infants.

The degrees of M.D. (Doctor of Medicine) and Ch.M. (Master of Surgery) are higher degrees in Medicine and Surgery respectively, and candidates (not under 24 years of age) who have previously obtained the double bachelorship may be admitted to either M.D. or Ch.M. on completing the after course prescribed, including an examination in Clinical Medicine for M.D. and an examination in Surgical Anatomy, operations on the dead body, and Clinical Surgery for Ch.M.

Fees.—The Fees for M.B. and Ch.B. are £23 2*s*. The class fee in each subject of the curriculum for M.B. and Ch.B. is £2 2*s*., £3 3*s*., or £4 4*s*., and the present fee for hospital attendance is £7. The fee for M.D. is £15 15*s*., and for Ch.M. £15 15*s*.

The great majority of the students take their hospital course at the Western Infirmary, or the Royal Infirmary, where clinical instruction is given by professors of the University and others. Clinical instruction on Fevers is given at Ruchill and Belvidere Hospitals, while special courses, largely of a practical nature and embracing work in Hospital or Asylum wards, are conducted by University Lecturers on the Ear, the Throat and Nose, Dermatology, Ophthalmology, Venereal Diseases, and Insanity. Queen Margaret College, sometime conducted as a separate institution for the higher education of women, was made over to the University in 1892, and in it medical classes for women are conducted under University professors and other lecturers appointed by the University Court, whilst for clinical instruction female students are admitted to the Royal Infirmary.

In this University Bursaries and Prizes to the annual amount of over £1000 are appropriated to students in the Medical Faculty, and there are also several Scholarships and Fellowships which may be held by medical students who have gone through the Arts course. A full list will be found in the University Calendar.

THE ANDERSON COLLEGE OF MEDICINE, Dumbarton-road, Glasgow, W.—Courses are given which qualify for all the licensing boards and for the Universities of London, Durham, Edinburgh, and Glasgow (the latter two under certain conditions). Candidates for the Licence in Dental Surgery can obtain the full medical curriculum in Anatomy, Chemistry, Physiology, Surgery, Practice of Medicine, and Materia Medica. The courses special to Dentistry are also conducted in the Anderson College of Medicine.

The buildings are situated in Dumbarton-road, immediately to the west of the entrance to the Western Infirmary, and adjoining the University. Extensive accommodation is provided for Practical Anatomy, Practical Chemistry, Practical Botany, Practical Zoology, Practical Physiology, Practical Pharmacy, Operative Surgery, and Public Health. Ample provision has also been made for the comfort of students.

Women students are admitted on the same terms as men.

The Carnegie Trust extends its benefactions to students of the Anderson College of Medicine. Full particulars may be obtained from Sir W. S. McCormick, the Carnegie Trust Offices, Merchants' Hall, Edinburgh.

Communications relating to the College to be addressed to the Secretary of the Medical Faculty, The Anderson College of Medicine, Glasgow, W. Communications relating to the Preliminary Examination in General Education to be addressed to Mr. Hugh Cameron, M.A., F.E.I.S., Educational Institute Office, 34, North Bridge-street, Edinburgh. Communications relating to the Triple Qualification to be addressed to Mr. Walter Hurst, Royal Faculty Hall, 242, St. Vincent-street, Glasgow.

The Winter Session will open on Monday, Oct. 14th, 1918, and will close on Thursday, March 20th, 1919.

The Summer Session will open on Wednesday, April 23rd, 1919, and will close on Wednesday, July 2nd, 1919.

ST. MUNGO'S COLLEGE AND GLASGOW ROYAL INFIRMARY.—The classes in St. Mungo's College qualify for the English, Scotch, and Irish Conjoint Boards and, under certain conditions, for the various universities, including the University of London. Students who have fulfilled the conditions of the Carnegie Trust as regards Scottish birth or extraction, age (16 years), and Preliminary Examination, are eligible for the benefits of this Trust during the whole course of their studies at St. Mungo's College. The classes are open to male and female students equally. The minimum fees for all the lectures, including hospital attendance, necessary for candidates for the Diplomas of the English or Scotch Colleges of Physicians and Surgeons, amount to £65. Further particulars can be obtained from a syllabus which may be procured free on application to the Secretary of the Medical Faculty, 86, Castle-street, Glasgow.

GLASGOW WESTERN MEDICAL SCHOOL.—This School is closed during the war.

QUEEN MARGARET COLLEGE, University of Glasgow (Women's Department of the University).—The classes are taught by professors of the University and other lecturers appointed by the University Court, and it is governed by the University Court and Senate. The curriculum, regulations, and fees are the same as those of the male students, and the University degrees are open to women on the same conditions as to men. They have access to the University Museum and can borrow books from the University Library, besides having a library of reference in Queen Margaret College. The School of Medicine is a special feature of the College, and gives full preparation for the medical degrees of the University. In July, 1894, for the first time in the history of any Scottish University, women students graduated in medicine in Glasgow University. 253 women have now taken the degree of M.B., C.M., or M.B., Ch.B. of the University of Glasgow and 24 the degree of M.D. The women students attend classes in the various University Buildings at Gilmore-hill, Queen Margaret College, and the Royal Infirmary. Excellent facilities for clinical work are given in the Royal Infirmary, in the Maternity, and other hospitals. The Arthur Scholarship is open every third year to students of first year; other Bursaries are open in Arts and Medicine; and by an ordinance of the Universities Commissioners women are admitted to certain University bursaries, scholarships, and fellowships. There is a house of residence for the students of the College coming from a distance. The Winter Session will open on Oct. 15th.

ROYAL INFIRMARY, Glasgow.—The ancient connexion between the University of Glasgow and the Royal Infirmary was revived in 1911, when four University Chairs and several University Lectureships were established at the infirmary. St. Mungo's College is situated in the infirmary grounds. The infirmary has, including the Ophthalmic Department, 835 beds. There are special beds and wards for diseases of women, of the throat, nose, and ear, skin, venereal diseases, burns and septic cases. The wards are open to Women Students. At the Out-door Department the attendances in 1917 numbered almost 136,000. In addition to the large medical and surgical departments there are departments for special diseases—viz., diseases of women, of the throat and nose, of the ear, of the eye, of the skin, and of the teeth. Five house physicians and 12 house surgeons, having a legal qualification in medicine and surgery, who board in the hospital free of charge, are appointed every six months. Clerks and dressers are appointed by the physicians and surgeons. As a large number of cases of acute diseases and accidents of a varied character are received these appointments are very valuable and desirable. There is a modern and fully equipped Electrical Pavilion, and year by year the latest and most approved apparatus for diagnosis and treatment has been added. The fees are as follows: (*a*) For hospital practice, including attendance at the out-door department, at the pathological department, post-mortem examinations, and the use of the museum: Perpetual ticket, £7; six months, £2 2*s*.; three months, £1 1*s*.; separate payments amounting to £7 7*s*. entitle the student to a perpetual ticket, on return of previous season tickets;

(*b*) for Clinical Lectures, six months, £3 10*s.*; three months, £1 15*s.*; (*c*) Vaccination, £1 1*s.*; Pathology, £4 4*s.*; Bacteriology, £2 2*s.*

GLASGOW WESTERN INFIRMARY.—This hospital adjoins the University of Glasgow. Number of beds upwards of 600. Special wards are set apart for Diseases of Women and for Affections of the Skin. In the out-patient department there are special cliniques for Diseases of Women and for Diseases of the Throat, Ear, Teeth, and Skin. The Clinical Courses are given by the physicians and surgeons, each of whom conducts a separate class, and students require to enter their names at the beginning of the session for the class which they propose to attend. Special instruction is given to junior students by tutors or assistants, and clinical clerks and dressers are selected from the members of the class. All the courses of clinical instruction are recognised by the University of Glasgow and the other boards in the kingdom. In the Pathological Department the course is both systematic and practical, also post-graduate courses, and extends through the winter and following summer; these are likewise recognised by the University for graduation. Fifteen resident assistants are appointed annually, without salary, from those who have completed their course. The fee for hospital attendance is £7, and the fees for clinical instruction are £3 3*s.* for the Winter Session and £2 2*s.* for the Summer Session. A Clinical Laboratory has been opened, and students receive laboratory instruction from the lecturer on clinical methods. Secretary: J. Matheson Johnston, C.A., 87, Union-street.

A School of Massage, Medical Electricity, and Swedish Remedial Exercises has been established to qualify for the Certificate of the Incorporated Society of Trained Masseuses.

ROYAL HOSPITAL FOR SICK CHILDREN, Yorkhill, Glasgow.—This institution, which was founded in 1882, consists of: (1) a hospital at Yorkhill containing 204 cots built on an elevated and central site close to the University and opened in July, 1914; (2) a Dispensary, or Out-patient Department, in West Graham-street, opened in October, 1888; and (3) a country branch at Drumchapel, Dumbartonshire, containing 24 cots, opened in 1903. Children treated must be under 12 years of age and suffering from non-infectious diseases. In the hospital, part of which is at present used as a military hospital for officers, about 5000 children are treated annually. In the Out-patient Department over 12,000 are treated annually, involving nearly 50,000 attendances. Information with regard to clinical instruction, lectures, demonstrations, &c., may be obtained from the Medical Superintendent.

GLASGOW ROYAL MATERNITY AND WOMEN'S HOSPITAL, Rotten-row.—The new hospital which was opened in 1908 is in point of size the largest of its kind in Britain and has accommodation for 108 patients. A Maternity and Child Welfare Centre has been established in connexion with the hospital, consisting of a complete In-door and Out-door Ante-natal Department and an Infant Consultation Clinic. In 1917 2222 normal cases and 1291 abnormal cases were treated by the hospital in the In-door and Out-door Departments. Secretary: Mr. William Guy, 146, Buchanan-street. Full particulars as to fees and accommodation may be obtained from the House Superintendent at the Hospital.

GLASGOW LOCK HOSPITAL, Rotten-row.—The Hospital contains 83 beds. During 1917 786 patients were admitted to the wards; 5768 visits were made by out-door patients at the Dispensary. Classes are held for the clinical instruction of medical students and practitioners.

GLASGOW OPHTHALMIC INSTITUTION, 126, West Regent-street (29 beds and six cots).—Clinical and systematic course of lectures for students during the winter and summer sessions. In-patients, 825; out- or dispensary patients, 12,859; total attendances, 46,691. Operations on Wednesdays and Saturdays. This institution is the Ophthalmic Department of the Royal Infirmary. Clinical instruction is given during both summer and winter sessions to men and women students attending the University. Secretary and Cashier: R. Morrison Smith, C.A., 135, Buchanan-street, Glasgow.

GLASGOW EYE INFIRMARY, Berkeley-street and Charlotte-street.—This institution, the largest of its kind in Scotland, was founded in 1824. The average number of new patients for the last ten years has been 26,402 and the total number of cases in 1917 was 26,937. The wards and dispensary are recognised by the University of Glasgow for the purpose of instruction in ophthalmology for graduation in medicine. Secretary and Acting Treasurer: Harold John Black, 88, West Regent-street, Glasgow. Superintendent: James H. Archibald. The medical session opens in October. A Post-graduate Class will be held.

GLASGOW HOSPITAL FOR DISEASES OF THE EAR, NOSE, AND THROAT, 27, and 28, Elmbank-crescent.—12 beds and two cots. New patients, 3888. Attendances at out-patient department 14,956. Admitted to in-door department 325. Clinical instruction is given in connexion with Dr. Connal's course on Diseases of the Ear at Anderson's College and Dr. Syme's course on Diseases of the Throat and Nose at the Western Medical School.

UNIVERSITY OF ST. ANDREWS (UNITED COLLEGE, ST. ANDREWS AND UNIVERSITY COLLEGE, DUNDEE).

Four degrees in Medicine and Surgery are conferred by the University of St. Andrews—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), a Diploma in Public Health, and Diploma in Dental Surgery (L.D.S.). The whole curriculum may be taken at University College, Dundee, or the first two years of the course may be taken at St. Andrews and the remaining three years in Dundee. The degrees of M.B. and Ch.B. shall always be conjoined. Before commencing his medical studies each student shall pass a Preliminary Examination in (*a*) English, (*b*) Latin, (*c*) Elementary Mathematics, and (*d*) one of the following optional subjects: (α) Greek, (β) French, (γ) German, (δ) Italian, (ε) any other approved Modern Language. A degree in Arts or in Science in any of the Universities of the United Kingdom and in some colonial and foreign universities shall exempt from the Preliminary Examination. The Preliminary Examination for graduation in Medicine and Surgery, Arts or Science, of the University of St. Andrews is accepted as equivalent to the Registration Examination required by the General Medical Council (the certificate to include the required subjects). Also the Final Examination for a degree in Arts or Science and the Final Examination for the Diploma of LL.A.

Degree of Bachelor of Medicine and Bachelor of Surgery.—Candidates must have been engaged in medical study for at least five years. In each of the first four years the candidate must have attended at least two courses of instruction in one or more of the subjects of study specified below, each course extending over a session of not less than five months, either continuous or divided into two terms, or, alternatively, one such course along with two courses, each extending over a session of not less than two and a half months. During the fifth or final year the candidate shall be engaged in clinical study for at least nine months at the Infirmary of Dundee or at one or more of such public hospitals or dispensaries, British or foreign, as may be recognised for the purpose by the University Court. The candidate must have received instruction in each of the following subjects of study, including such examinations as may be prescribed in the various classes—viz.: Anatomy, Practical Anatomy, Chemistry, Materia Medica, Physiology, or Institutes of Medicine, Practice of Medicine, Surgery, Midwifery and the Diseases peculiar to Women and Infants. Pathology, Practical Chemistry, Physics (including the Dynamics of Solids, Liquids, and Gases, and the Rudiments of Sound, Heat, Light, and Electricity), Elementary Botany, Elementary Zoology, Practical Physiology, Practical Pathology, Forensic Medicine, and Public Health. The candidate must have attended for at least three years the Medical and Surgical Practice either of the Infirmary of Dundee or of a General Hospital elsewhere which accommodates not fewer than 80 patients and possesses a distinct staff of physicians and surgeons and is recognised for the purpose by the University Court. Additional subjects of study are Practical Pharmacy, Mental Diseases, Practical Midwifery, Operative Surgery, Vaccination, Children's Diseases, Fevers, Ophthalmology, Diseases of the Ear, Throat, and Nose, Anæsthetics, and Post-mortem Examinations.

With respect to the places and institutions at which the studies of the candidate may be prosecuted the following regulations shall have effect:—1. Two of the five years of medical study must be spent in the University of St. Andrews. 2. The remaining three years may be spent in any University of the United Kingdom or in any Indian, Colonial, or Foreign University recognised for the purpose by the

University Court, or in such medical schools or under such teachers as may be recognised for the purpose by the University Court. Women are admitted to graduation in Medicine, subject to certain provisions.

Professional Examinations for the Degrees of Bachelor of Medicine and Bachelor of Surgery.—Each candidate will be examined both in writing and orally, and also clinically where the nature of the subject admits, in the following divisions—viz., first, in Botany, Zoology, Physics, and Chemistry; second, in Anatomy and Physiology; third, in Materia Medica and Pathology and Forensic Medicine and Public Health; and fourth, in Surgery, Clinical and Operative Surgery, Practice of Medicine and Clinical Medicine, and Midwifery and Gynæcology (Systematic and Clinical).

The fee to be paid for the degrees of Bachelor of Medicine and Bachelor of Surgery shall be 22 guineas, and the proportion of this sum to be paid by a candidate at each division of the examination shall be regulated from time to time by the University Court. The fee to be paid for the degree of Doctor of Medicine shall be 15 guineas, and for the degree of Master of Surgery 15 guineas. The whole medical curriculum can be taken in University College, Dundee, or the first two years in United College, St. Andrews.

For further particulars and details as to scholarships and bursaries application should be made to Professor Kynoch, Dean of the Medical Faculty, University College, Dundee.

UNIVERSITY COLLEGE, Dundee.—This College is one of the constituent colleges of the University of St. Andrews. In the medical buildings there are spacious and well-equipped laboratories. The complete medical curriculum can be taken in Dundee. For classes, fees, &c., see under University of St. Andrews.

ROYAL INFIRMARY, Dundee.—The Infirmary contains 408 beds, including special wards for the Diseases of Women, Children, Eye, Ear, and Throat, Skin, and for Obstetric cases. There is in addition an Extern Obstetric Department. There were during last year 13,464 out-patients and 354 home (maternity) patients. The Royal Infirmary offers exceptional facilities for practical work to students. Appointments: Six qualified Resident Medical Officers (Male or Female) are appointed every six months and one non-resident Obstetric Assistant. Clinical Clerks and Dressers are attached to the Physicians and Surgeons, and students are appointed as assistants in the Pathological Department. There are in connexion with the clinical courses Tutorial Classes in Medicine and Surgery. Instruction is also given in Practical Pharmacy and Materia Medica. Further information can be obtained from the Medical Superintendent.

UNIVERSITY OF ABERDEEN.

The University of Aberdeen grants four degrees in Medicine and Surgery—viz., Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), Bachelor of Medicine (M.B.), and Bachelor of Surgery (Ch.B.).

Degrees of M.B. and Ch.B.—Before commencing his medical studies each student must pass a Preliminary Examination in (1) English, (2) Latin, (3) Mathematics, and (4) Greek, or French, or German. The curriculum for the degrees extends over a period of five years, during which attendance is required in the following subjects: Botany, Zoology, Physics, Chemistry (Systematic and Practical), Anatomy (Systematic and Practical), Physiology (Systematic and Practical), Materia Medica and Therapeutics, Practical Pharmacy, Pathology (Systematic and Practical), Medical Jurisprudence, Public Health, Surgery, Medicine, and Midwifery.

Candidates must attend for at least three years the medical and surgical practice of a recognised hospital; they must have attended courses of at least nine months in clinical medicine and clinical surgery, and have acted as clerk in the medical and dresser in the surgical wards of a hospital. Attendance is required on the practice of a dispensary or the out-practice of a hospital and also on courses in Mental Diseases, Fevers, Ophthalmology, Post-mortem examinations, Venereal Diseases, and other special subjects. The candidate is also required to have been properly instructed in Vaccination and to have attended at least 20 Midwifery cases.

The fee for the degrees of M.B. and Ch.B. amounts to £23 2*s*.

Besides the Royal Infirmary (270 beds), students have the opportunity of attending the following institutions: City Fever Hospital, Sick Children's Hospital, General Dispensary, and Lying-in and Vaccine Institutions, Royal Lunatic Asylum, Ophthalmic Institution, &c.

Degrees of M.D. and Ch.M.—Candidates for either of these degrees must already hold the degrees of M.B. and Ch.B. of Aberdeen. A thesis has to be presented and an examination has to be passed in Clinical Medicine (or in some special Department of Medical Science) or Clinical Surgery, as the case may be.

A diploma in Public Health is granted by the University to graduates in Medicine of a University in the United Kingdom, after a special examination.

Application for further information should be addressed to the Secretary of the Medical Faculty.

Scholarships and Prizes.—In the Faculty of Medicine of the University of Aberdeen there are the following Bursaries, Scholarships, and Prizes:—Bursaries: about 15 Bursaries (competition and presentation) are open each year, of £15 to £30 per annum in value, most of them being tenable for three years. Scholarships: five Post-Graduate Scholarships, value £36 to £160 per annum. Prizes and Medals: 13 Gold Medals and Prizes for proficiency in special departments, &c.

Clinical Instruction is given in the Aberdeen Royal Infirmary (270 beds) by the physicians and surgeons on the staff.

ABERDEEN ROYAL ASYLUM.—Contains, with hospital attached to main institution and agricultural branch, about 986 beds. Clerk and Treasurer, Mr. A. Scott Finnie, 343, Union-street, Aberdeen. Clinical instruction is given to students during three months in summer.

SCOTTISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

These Colleges have made arrangements by which, after one series of examinations, held in Edinburgh or Glasgow, or both, the student may obtain the diplomas of the three Bodies.

The three Bodies grant their Single Licences only to candidates who already possess legal qualifications in Medicine or Surgery. Copies of the Regulations for the Single Licence of any of the Bodies may be had on application to the respective secretaries.

Professional Education.—The candidate must produce certificates or other satisfactory evidence of having attended the following separate and distinct courses of instruction: Physics, three months; Elementary Biology, three months; Chemistry, six months; Practical or Analytical Chemistry, three months; Anatomy, during at least six months; Practical Anatomy, twelve months; Physiology, six months; Practical Physiology, three months; Materia Medica, three months; Pathology (including Practical Pathology), nine months; Practice of Medicine, six months; Clinical Medicine, nine months; Principles and Practice of Surgery, six months; Clinical Surgery, nine months; Midwifery, three months; Gynæcology, one course of not less than 13 meetings; Diseases of Children, one course of not less than 13 meetings. Medical Jurisprudence and Public Health, three months. The certified attendance on lectures, demonstrations, and practical work must not be less than three-fourths of the total number of roll-calls. Every student undergoes a course of Practical Midwifery, but before attending at labours he is required to attend a course of lectures on Surgery and Midwifery and to hold the offices of Clinical Medical Clerk and Surgical Dresser. He must also attend for two and a half months instruction in Practical Pharmacy; the certificate to be signed by the teacher, who must be a member of the Pharmaceutical Society of Great Britain, or the superintendent of the laboratory of a public hospital or dispensary, or a registered practitioner who dispenses medicines to his patients, or a teacher of a class of Practical Pharmacy.

The student must attend for 27 months the Medical and Surgical practice of a public general hospital containing on an average at least 80 patients available for clinical instruction and possessing distinct staffs of physicians and of surgeons. He must act as Surgical Dresser and Medical Clinical Clerk for not less than six months in the wards in each case, and receive practical instruction in administration of anæsthetics. He must attend for six months the practice of a public dispensary especially recognised by any of the above authorities, or the out-patient practice of a recognised general hospital or act for six months as pupil to a registered practitioner who either holds such a public appointment, or has such opportunities of imparting practical knowledge as shall be satisfactory to the coöperating authorities; this attendance should be made after the student has passed the First and Second examinations.

Candidates are also required to attend the following courses: Diseases and Injuries of the Eye, three months; Insanity, three months; Infectious Diseases, three months; Gynæcology, three months; Diseases of Children, three months.

The curriculum lasts for five years, the fifth year being devoted to clinical work.

There are four professional examinations:—

First Examination includes Physics, Chemistry, and Elementary Biology.

Second Examination includes Anatomy and Physiology and Histology; and candidates may be admitted to this examination at the end of the second year of medical study.

Third Examination includes Pathology and Materia Medica with Pharmacology.

Final Examination.—The Final examination shall not be taken earlier than the end of the fifth year of study and shall embrace the following subjects:—Medicine, including Therapeutics, Medical Anatomy, and Clinical Medicine; Surgery, including Surgical Anatomy, Clinical Surgery, and Diseases and Injuries of the Eye; Midwifery and Diseases of Women; and, if not passed previously, Medical Jurisprudence and Public Health, but it is optional to candidates who have passed the Third Examination to be admitted to the subject of Medical Jurisprudence and Public Health on lodging certificates of having attended the necessary course in that subject at any time; but the subjects of Medicine, Surgery, and Midwifery shall be taken together at any time after the end of the fifth Winter Session, provided that a period of 24 months has elapsed since passing the Second Examination. All candidates shall be subjected, in addition to the written and oral examinations, to clinical examinations in Medicine and Surgery, which shall include the Examination of Patients, Physical Diagnosis, the Clinical use of the Microscope, Examination of the Urine and Urinary Deposits, Surgical Appliances, Bandages, Surface Markings, &c. The fees payable for the Final Examination shall be—for the whole examination, £15, for re-entry after rejection, £5, and for the subjects of Medical Jurisprudence and Public Health when taken separately, £5, with £3 for re-entry in that subject.

There are four periods of examination annually during the period of the war, three in Edinburgh and one in Glasgow, in 1918–19. The Registrar in Edinburgh is Mr. D. L. Eadie, 50, George-square, and the Registrar in Glasgow, Mr. Walter Hurst, 242, St. Vincent-street, to whom fees and certificates must be sent for the respective examinations, and from whom further particulars concerning fees can be obtained.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH: THE MEMBERSHIP AND FELLOWSHIP.

In addition to the diplomas granted by the Scottish Conjoint Board the Royal College of Physicians grants its Single Licence to candidates already possessing legal qualifications for professional practice.

The Royal College of Physicians of Edinburgh grants a *Membership* and a *Fellowship*.

Membership.—A candidate, who must be a Licentiate of a British or Irish College of Physicians, or a graduate in medicine of a University within the British Empire, approved by the Council and 24 years of age, is examined in medicine, therapeutics, and in any branch of the departments of medicine specially professed, such as general pathology, psychology, public health, obstetrics, gynæcology, diseases of children, tropical medicine, or medical jurisprudence. The fee for the Membership is £36 15*s*., 15 guineas of which will be returned to any successful candidate who was already a Licentiate of the College at the time of qualifying for the Membership.

Fellowship.—The Fellows are selected from the ranks of the *Members*. The fee is £64 18*s*.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH: THE FELLOWSHIP.

The Royal College of Surgeons of Edinburgh also admits to the examination for its Single Licence any candidates who hold a Diploma in Medicine of any British, Indian, or Colonial university or of any British or Colonial College of Physicians, or of the Society of Apothecaries of London or Apothecaries' Hall, Dublin, granted under the provisions of the Medical Act, 1886, whose preliminary examination and course of professional study is proved to be sufficient to fulfil the requirements of the College, or to those who have passed a full examination for any of the above. Female practitioners are now admitted to the Licence of the College but not to the Fellowship, and the regulations for the Licence apply to practitioners of either sex.

The Royal College of Surgeons of Edinburgh grants a diploma of Fellowship after examination to the holders of the surgical degrees of diplomas of such British examining bodies, as well as of the holders of such surgical degrees of the Universities of Canada, Australia, New Zealand, and the Indian Empire as are recognised by the College.

The Fellowship.—Candidates for the examination must be 25 years of age and must have been engaged in practice for at least two years. The examination is of a practical nature, partly written and partly *viva voce*, and must include surgery and surgical anatomy, operative surgery, and clinical practice. One optional subject must also be taken, the range of these specialisms covering nearly every branch of medicine. The fee to be paid on entering for examination for Fellowship is £45, £10 of which is remitted to those who already hold the Licentiateship of the College. Candidates rejected at the examination obtain repayment of fee less £10 retained for examination expenses. One month's notice of intention to present himself for examination must be given by the candidate to Mr. D. L. Eadie, 50, George-square, Edinburgh, clerk to the College, together with credentials signed by two Fellows of the College, one of whom must be a resident in Edinburgh, unless a special application be made to the President and the Council of the College.

THE ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

Like the preceding corporations, the Royal Faculty of Physicians and Surgeons of Glasgow grants a Fellowship and a Licence to be held as separate qualifications.

Fellowship.—The Fellowship of the Faculty is granted after examination in medicine or surgery, together with an optional subject, which may be anatomy or physiology or be selected from any special branch of medicine or surgery, or in one subject to medical practitioners who serve in the present war. 14 days' notice must be given by the candidate of his intention to present himself to Mr. Walter Hurst, the Faculty Hall, 242, St. Vincent-street, Glasgow. The fee for the Fellowship is £30, £10 of which sum are returned to any successful candidate who already holds the Licence of the Faculty. An additional sum of £20 is required in the case of candidates resident within seven miles of Glasgow. In certain circumstances Fellows may be elected as a mark of distinction. Special regulations are in force for medical practitioners serving in the present war.

Licence.—The Licence of the Royal Faculty is granted as a separate qualification to qualified practitioners in Medicine after examination in surgery, including surgical anatomy and clinical surgery. The fee is 15 guineas.

SCOTTISH PROVINCIAL ANCILLARY SCHOOLS AND HOSPITALS.

The hospitals which are recognised by the Scottish Conjoint Board, as places where professional study for their diplomas can be pursued are all those institutions which feed the medical faculties of the universities. In addition the Scottish Boards recognise all the places which are recognised by the English Conjoint Board (see p. 284) and the Irish Conjoint Board (see p. 295).

III.—IRELAND.

THE UNIVERSITIES.

UNIVERSITY OF DUBLIN, TRINITY COLLEGE (SCHOOL OF PHYSIC).

Matriculation.—All students intending to join the School of Physic must pass a matriculation examination. University students take the Entrance of Trinity College and a Junior Freshman Term or a special Medical Preliminary; Extern Students, any examination recognised by the General Medical Council. The winter courses begin on Oct. 1st.

Degrees in Medicine (M.B.), Surgery (B.Ch.), and Midwifery (B.A.O.).—Candidates for these degrees must be of B.A. standing and must be for at least five academic years on the books of the Medical School, reckoned from the date of matriculation. The Arts course may be taken concurrently with the Medical course, and the B.A. degree need not be taken before the final medical examinations, but the Medical degrees are not conferred without the Arts degree. The following courses must be attended:—(1) Lectures—Systematic, Descriptive and Applied Anatomy, Chemistry and Practical Chemistry, Surgery and Operative Surgery, Histology, Botany, Zoology, Physics and Practical Physics, Physiology and Practical Physiology, Practice of Medicine, Midwifery, Pathology, Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene; (2) three courses of nine months' attendance on the Clinical Lectures of Sir Patrick Dun's or other recognised Hospital; (3) Practical Vaccination, one month's instruction; (4) Mental Disease, three months; (5) Practical Midwifery with Clinical Lectures, including not less than 30 cases, six months; (6) Ophthalmic Surgery, three months. Three groups of examinations have to be passed. Preliminary Scientific Examination, including Physics and Chemistry, Botany, and Zoology. The Intermediate Medical, Part I., including Anatomy and Physiology. The Intermediate Medical, Part II., including Applied Anatomy and Applied Physiology; and the Final Examination, which is divided into Part I., Materia Medica, Hygiene and Jurisprudence, and Pathology; and Part II., Medicine, including Clinical, Surgery, Midwifery, Gynæcology, Mental Diseases, Operations, and Clinical Ophthalmology. Part I. may be passed in the fourth year and Part II. completed at the end of the fifth year.

Doctor in Medicine.—A Doctor in Medicine must have passed all the qualifying examinations and must be a B.A. of three years' standing. He must also read a thesis before the Regius Professor of Physic.

Master in Surgery.—A Master in Surgery must be a Bachelor in Surgery of the University of Dublin of not less than three years' standing, and must produce satisfactory evidence of having been engaged for not less than two years from the date of his registration in the study, or study and practice, of his profession. He must then pass a special examination.

Master in Obstetric Science.—A Master in Obstetric Science must be a Bachelor of two years' standing and produce evidence of having been engaged in the study of Obstetric Medicine and Surgery during two years. He is then required to pass a special examination.

A post-graduate diploma in Gynæcology and Obstetrics is conferred upon registered medical practitioners who take a six months' course at the Rotunda Hospital and a six months' course in Trinity College when they have passed a special examination.

University Diplomas.—Candidates for the diplomas in Medicine, Surgery, or Obstetric Science must be matriculated in Medicine and must have completed two years in Arts and five years in Medical Studies. The Course and Examination necessary for the diplomas are the same as for the degrees. A diploma in Medicine, Surgery, and Midwifery is a registrable qualification conferred upon candidates who have completed a full five years' course in Medicine and two years in Arts. A diplomate, on completing his course in Arts and proceeding to the degree of B.A., may become a Bachelor by paying the degree fees.

Bachelor in Dental Science and Master in Dental Science.—The regulations under which these degrees are awarded can be obtained by application to the Registrar of the School of Physic.

All Degrees and Courses of Instruction are open to women students.

Clinical instruction.—The hospital facilities for clinical instruction available in Dublin will be described below.

THE NATIONAL UNIVERSITY OF IRELAND.

Matriculation.—All students intending to proceed to the medical degree of the University of Ireland must pass a matriculation examination, the examination taking place in June and September in Dublin and at certain local centres. All students must pass in five subjects. All students must pass in the following subjects[1] except students not born in Ireland, and other students whose home residence shall have been outside Ireland during the three years immediately preceding their matriculation; but all such students will be expected to attend a course of instruction in Irish Literature and History prior to obtaining any degree in the University:—1. Irish. 2. Latin or Greek. 3. French, German, Italian, Spanish, Portuguese, Welsh, or any other language approved by the Senate. 4. English. 5. Mathematics. 6. Latin, Greek, French, German, Welsh, Spanish, Italian, Portuguese, or any other modern language approved by the Senate, History and Geography (*as a composite subject*), Natural Philosophy, or Physics as an alternative, Chemistry, Botany, and for women candidates only, Physiology, and Hygiene. Candidates who under the regulations are exempted from the necessity of presenting Irish as one of their subjects may present as their fifth subject either a second language or a second science subject. Students entering for degrees in Medicine or Dentistry, if already registered by the General Medical Council, may be accepted as matriculated students of the Faculty of Medicine on passing the matriculation examination in any faculty of the University.

The medical degrees granted are:—

M.B., B.Ch., and B.A.O.; and M.D., M.Ch., and M.A.O.—Printed forms of application for admission to any medical examination may be had from "The Registrar, The National University of Ireland, Dublin."

The Constituent Colleges of the National University of Ireland at which the full curriculum for medical degrees can be obtained are University College, Dublin; University College, Cork; and University College, Galway.

UNIVERSITY COLLEGE, DUBLIN.—The University and the College were created by the Irish University Act, 1908, and by Charters issued in December, 1908. Former students of the Cecilia-street School of Medicine who graduated in the Royal University may become graduate members of the new College. The constitution of the College, like that of the Constituent Colleges of Cork and Galway, provides for a governing body, an academic council consisting of professors and coöpted lecturers, a body of graduate members, and a body of student members matriculated in the University. The first professors and lecturers were appointed by the Dublin Commissioners Irish Universities Act, 1908.

Matriculation.—Almost all the students of the College are matriculated students of the National University of Ireland.

University Examinations in Medicine.—The First Examination includes Physics, Chemistry, Botany, and Zoology. The examination may be taken in two parts: Part I., Physics and Chemistry; Part II., Botany and Zoology. Honours may be obtained only when both parts are taken as one examination. The Second Examination includes Anatomy and Physiology. Both must be passed at the same

[1] The Senate has directed that candidates who presented themselves for the Matriculation Examination and who passed in certain subjects in 1912 or any previous year, may, when presenting themselves in 1919, in the remaining subjects necessary to complete the examination, select such completing subjects in accordance with the regulations as to groups of subjects which were in force in 1912. Such candidates will not be obliged to present themselves for examination in Irish. Such candidates, however, while they may select the completing subjects as above, must present themselves for examination in these subjects on the courses prescribed in each by the Regulations in 1913. Candidates who presented themselves for the Matriculation Examination, and who passed in certain subjects in 1913, when presenting themselves in 1919 in the remaining subjects necessary to complete the examination, must select such completing subjects in accordance with the regulations as to groups of subjects which were in force in 1913. The courses in such completing subjects will be the courses prescribed in those subjects respectively for 1919.

time. The Third Examination includes Pathology, Medical Jurisprudence and Hygiene, and Materia Medica.

Degrees of M.B., B.Ch., and B.A.O.—The Examination in Medicine, Midwifery, Surgery, and Ophthalmology includes both the theoretical and the clinical branches. No student can enter for the M.B., B.Ch., or B.A.O. until the end of the fifth year when the curriculum has been completed. The course of study is as follows:—First year.—Winter: Anatomy and Practical Anatomy (required for the Second Examination),[2] Chemistry, Practical Chemistry, and Experimental Physics (with Laboratory Course). Summer: Zoology, Practical Zoology, Botany, and Practical Botany. Second year.—Winter: Anatomy, Practical Anatomy, Physiology, and Practical Physiology (physical and chemical). Summer: Anatomy, Practical Anatomy, Physiology, and Practical Histology. Third year.—Winter: Pathology, Surgery or Medicine, Hygiene, Medical Jurisprudence, and Practical Pharmacy. Summer: Materia Medica and Therapeutics, and Practical Pathology. Candidates are also required to attend a General Hospital for nine months (winter and summer). Fourth year, or fourth and fifth years.—Winter: Medicine or Surgery (the subject to be that not taken in the third year), and Midwifery and Gynæcology. Summer: Operative Surgery, Applied Anatomy, and Ophthalmology and Otology. Candidates are also required to attend a General Hospital for nine months (winter and summer), and to take instruction in Vaccination, and three months Fever Hospital. Fifth year.—If the Academic (Collegiate) Courses are taken as above, the Courses of the fifth year will be the following: Hospital Attendance, General Hospital, nine months; Clinical Ophthalmology and Otology, three months; Practical Midwifery and Gynæcology, six months; Mental Diseases, to be attended at a Lunatic Asylum, three months. (Note.—Practical Midwifery and Gynæcology may be taken in the fourth year after the Systematic Course of Midwifery, but it must not be taken concurrently with the period of attendance at Fever Hospital.) The degree of M.D. may be obtained either by examination or on published work.

Fees.—The fees for Courses are similar to those of the other Dublin Medical Schools.

Information concerning these, and the numerous scholarships and exhibitions of the College can be obtained from the Dean of the Faculty, Professor E. P. McLoughlin.

UNIVERSITY COLLEGE, CORK: THE SCHOOL OF MEDICINE.—The building is provided with a very large, well-ventilated dissecting room supplied with electric light, with physiological, toxicological, pathological, and pharmaceutical laboratories, materia medica, anatomical and pathological museums, as well as a collection of surgical and obstetrical instruments and appliances. There are well-appointed physical, chemical, and biological laboratories, and a large natural history museum in the adjoining building, and part of the College ground is laid out as a botanical garden. The plant houses are well filled with plants and are open to the students in the class of Botany. The Library contains over 50,000 volumes and is open daily during term time to students. The Medical Museum occupies a large room erected at the northern end of the medical buildings. There are Students' Clubs for men and women students of the College and various athletic clubs, the last of these holding a public meeting once in each year in the Mardyke grounds.

All students who have been admitted as matriculated students are required to attend before the President and sign the Roll of Matriculated Students. Students who may be candidates for degrees in the National University of Ireland must have passed the Matriculation Examination of that University or other recognised examination, and medical students must have passed a preliminary examination recognised by the General Medical Council. Candidates will be examined in Irish, Greek, or French or German, Latin, History, Geography, English, and Mathematics.

Admission of Medical Students.—Students in the Faculty of Medicine who have passed the First Professional Examination of the Conjoint Examinations of the Royal College of Physicians and the Royal College of Surgeons in Ireland, or of the Royal College of Physicians and Royal College of Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow, or of the Royal College of Physicians, London, and Royal College of Surgeons, England, may be admitted to the rank of second-year students on making application to the Council and submitting a certificate of having passed the examination. Similarly, students who have passed the Second Professional Examination of the same Colleges may be admitted to the rank of third-year students; and those who have passed the Third Professional Examination of the Dublin Colleges, or of the Edinburgh Colleges and Glasgow Faculties, may be admitted to the rank of fourth-year students.

Residence of Students.—There is no accommodation for the residence of students within the College, but students not living at home, or with relatives or friends, sanctioned by their parents or guardians, are required to live in a hostel or in recognised lodgings, a list of which can be obtained from the Secretary. All students are required to register their addresses each session in the book kept for that purpose in the hall porter's office, and to notify immediately to the Registrar any change of address during the session. The Honan Hostel, adjoining the College, is equipped by private endowment. A number of sets of rooms, together with recreation and common rooms, are provided for lay students who may desire to live there. For full particulars apply to the Warden. The Ursuline Convent, Blackrock, has a house of residence, quite separate from their Secondary School, for Catholic women students.

Clinical Instruction.—Students may attend the South Infirmary, Cork North Charitable Infirmary, the Mercy Hospital, the Cork District Lunatic Asylum, the Victoria Hospital for Diseases of Women and Children, the County Lying-in Hospital, the Cork Maternity, the Cork Fever Hospital, the Cork District Hospital, and the Cork Ear, Eye, and Throat Hospital.

Complete information with regard to class fees, scholarships, and prizes can be obtained from the Dean of the College, Professor A. E. Moore.

South Infirmary and County of Cork General Hospital (100 beds).—Clinical instruction is given daily in the wards. Special instruction on Diseases of Women and Children will be given in the special wards for such cases. Fee for perpetual ticket, £22 1*s.*; for nine months, £9 9*s.*; for six months, £6 6*s.*; for three months, £3 3*s.* Two resident pupils will be appointed by competitive examination. Honorary Secretary: Dr. N. I. Townsend.

Cork North Charitable Infirmary and County and City of Cork General Hospital (112 beds).*—Clinical instruction is given daily in the wards by the physicians and surgeons. Special instruction is given to Junior Students on two days weekly. Fee for perpetual ticket, £22 1*s.*; for 12 or nine months, £9 9*s.*; for six months, £5 5*s.*; and for three months, £3 3*s.* Two resident pupils are appointed quarterly by the medical staff. All resident pupils are required to be registered pupils of the hospital. There is a special department for treatment of the eye, ear, throat, and nose, and a special dental department. Honorary Secretary: Mr. R. B. Dalton.

Mercy Hospital.—This hospital contains 130 beds for medical and surgical cases. There is also a daily extern for medical and surgical cases, as well as for diseases of the eye, ear, and throat. Extern medical attendances, 3371; surgical attendances, 2361; eye, ear, nose, and throat attendances, 7200; intern patients, 1354. Major operations, 254; minor operations, 567. Two resident students. Honorary Secretary to the Staff: Dr. D. J. O'Connor.

Cork District Lunatic Asylum.—Psychological Medicine: A course of Clinical Lectures on Mental Disease and Allied Neuroses will be delivered in the Cork District Lunatic Asylum on Mondays and Thursdays, commencing the first Thursday in May, by the Resident Medical Superintendent. All students wishing to enter for the course are expected to attend at the Asylum at 4 P.M. on that day. All information may be had at the Asylum from the resident medical superintendent.

Victoria Hospital (Incorporated) (Cork).—There are 75 beds. Clinical instruction on Diseases Peculiar to Children is given. The extern department is open daily at 9.30.

County and City of Cork Lying-in Hospital (Erinville, Western-road; founded 1798).—This hospital contains 20 beds, and an Extern Midwifery Department. Fee for six months' attendance, including clinical lectures, £3 3*s.* For further particulars apply to N. H. Hobart, honorary secretary to staff.

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[2] These courses are not required for the First Examination in Medicine, but must be taken in the first year to permit a candidate to qualify for admission to the Second Examination in Medicine at the end of the second year.

* No returns.

Cork Maternity (Batchelor's Quay).—Three resident pupils are taken into the Maternity. Poor women are attended at their own homes. Clinical lectures are delivered during the session. There is an extern department for the treatment of women's and children's diseases. Fee for attendance at clinical lectures and certificate, £3 3*s*. Honorary secretary to staff, Dr. Henry Corby.

Cork Fever Hospital.—Upwards of 500 cases of various forms of fever and zymotic disease are treated yearly in this hospital. The Resident Medical Officer gives instruction in Practical Pharmacy, a certificate of which is necessary for the National University and Colleges of Physicians and Surgeons of Edinburgh.

Cork District Hospital (Douglas-road; 1200 beds).—This hospital includes special buildings for fever and other infectious diseases (100 beds); for children's diseases (100 beds); and a Lock hospital, the only one in the South of Ireland (80 beds). It affords an extensive field for the study of all classes of diseases, acute and chronic, including special departments for gynæcology and diseases of the skin and nervous system. The physicians and surgeons visit the hospitals every morning at 10 o'clock. Lectures and clinical instruction are given daily in the wards by the physicians and surgeons. Further particulars may be obtained from Dr. W. E. Ashley Cummins, 17, St. Patrick's-place, honorary secretary, medical staff.

Cork Eye, Ear, and Throat Hospital (Western-road).—This hospital is open to students attending the University College and others. Certificates of attendance for three or six months can be obtained. The hospital contains 35 beds. Over 4000 cases are treated during the year. A course of Lectures on Ophthalmic Surgery is delivered during the session. For further information apply to Dr. Arthur Sandford, 13, St. Patrick's-place, Cork.

UNIVERSITY COLLEGE, GALWAY: SCHOOL OF MEDICINE.—The College contains well-lighted and ventilated dissecting-room and anatomical lecture theatre; physiological, pathological, pharmaceutical, chemical, and physical laboratories; anatomical, pathological, gynæcological, and materia medica museums; as well as a large natural history and geological museum and an extensive library in which students can read and from which they can borrow books. There are 12 Entrance Scholarships, value £25 each, for which Medical Students compete with other Students on the Entrance Course. In the Second, Third, and Fourth Years two Scholarships in each year, value £25 each, are reserved for Medical Students. Exhibitions of £10 and £5 are awarded on results of 1st, 2nd, 3rd, and Degree Examinations in Medicine. H. H. Stewart Scholarships (£10 a year for three years) are awarded by the University in Anatomy and Physiology at Second Medical Examination amongst Students of the three constituent Colleges. Travelling Studentships (£200 a year for two years) are offered by the University for competition amongst Medical Graduates of the three Colleges of not more than two years' standing. Women students are eligible for all College and University Degrees, Distinctions, and Prizes. There are extensive grounds, a portion of which is occupied by a Botanic Garden and a portion is at the disposal of the College Athletic Union. There are several student societies in the College, including a Biological Society. There are abundant facilities for research and Post-graduate work in the Chemistry, Physiology, and Pathology departments. There are ample facilities for Women Students. Further information can be obtained from the Registrar of the College.

Clinical Instruction is given in the Galway Hospital and in the Galway Union and Fever Hospitals, containing on an average 200 patients.

Galway County Hospital (62 beds).—Founded by Act of Parliament.

Galway Union and Fever Hospitals (150 beds).—Clinical instruction is given in these hospitals to the Medical Students of University College, Galway. The regulations for Scholarships tenable in the College, and the regulations for degrees and for courses can be obtained from Messrs. O'Gorman and Co., Galway.

QUEEN'S UNIVERSITY OF BELFAST.

There are six degrees in the Faculty of Medicine of the University—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (B.Ch.), Bachelor of Obstetrics (B.A.O.), Doctor of Medicine (M.D.), Master of Surgery (M.Ch.), and Master of Obstetrics (M.A.O.). The University also grants a Diploma in Public Health, particulars of which will be found in the University Calendar. The degrees of M.B., B.Ch., and B.A.O. are the primary degrees in the Faculty of Medicine, and are conferred at the same time and after the same course of study. No student is admitted to the final examination for these degrees until he has shown: (1) that he is a matriculated student of the University; (2) that he has completed the prescribed course of study in the Faculty of Medicine extending over a period of not less than five academic years from the date of his registration as a student of Medicine by the General Council of Medical Education and Registration of the United Kingdom; (3) that he has passed the several examinations prescribed; (4) that he has attended in the University during three academic years at least the courses of study prescribed for such degrees (the Senate may accept, for not more than two academic years of the required five, courses of study pursued in any other University or School of Medicine approved by the Senate); and (5) that he has attained the age of 21 years. Every candidate for admission as a matriculated student of the University shall pass such Matriculation Examination or fulfil such other test of fitness as may be prescribed by the Senate, which may prescribe the conditions under which students who have passed the Matriculation or Entrance Examination of any other University or College approved for that purpose (or who have fulfilled such other test of fitness as may be prescribed) may be exempted from passing the Matriculation Examination of the University. For information as to Scholarships and Prizes inquiry should be made of the Secretary of the University.

Primary Degrees of M.B., B.Ch., B.A.O.—All candidates for these degrees must satisfy the examiners in the subjects of four examinations known as the First, Second, Third, and Fourth Medical Examinations respectively.

The First Medical Examination.—The subjects of this examination are Chemistry (Inorganic and Organic), Experimental Physics, Botany and Zoology. The examination will be divided into two parts which may be taken separately: I., Chemistry and Physics; II., Botany and Zoology.

The Second Medical Examination.—The subjects are Anatomy and Practical Anatomy, Physiology and Practical Physiology. Candidates who have previously passed the First Medical Examination may present themselves for this examination at the close of their second year.

The Third Medical Examination.—The subjects are: (1) Pathology and Practical Pathology; (2) Materia Medica, Pharmacology and Therapeutics; (3) Medical Jurisprudence; (4) Hygiene. Candidates who have previously passed the Second Medical Examination may present themselves for this examination at the close of the third year. Attendance on a course in any subject of the Third Medical Examination shall not entitle a student to a certificate of attendance unless he has previously passed in all the subjects of the First Medical Examination.

The Fourth Medical Examination.—The subjects are: (1) Medicine; (2) Surgery; (3) Midwifery; (4) Ophthalmology and Otology. This examination may be taken in two parts: I., Systematic; II., Clinical, Practical and Oral. Candidates who have previously passed the Third Examination may present themselves for Part I. of the Fourth Examination at the close of the fourth year, provided that they have fulfilled the necessary requirements as to attendance, &c., on the courses of instruction in the subjects of examination. Candidates who have passed Part I. of this examination may present themselves for Part II. at the close of the fifth year, provided that they have fulfilled the necessary requirements as to hospital attendance on the various clinical courses in the subjects of examination. Parts I. and II. may be taken together at the close of the fifth year. Attendance on a course in any subject of the Fourth Medical Examination shall not entitle a student to a certificate of attendance unless he has previously passed in all the subjects of the Second Medical Examination.

Degrees of M.D., M.Ch., and M.A.O.—These degrees are not conferred until the expiration of at least three academic years, or in the case of graduates of the University in Arts or Science of at least two academic years, after admission to the primary degrees in the Faculty of Medicine. Every candidate must show that in

the interval he has pursued such courses of study, or been engaged in such practical work as may be prescribed. These degrees may be conferred by the Senate either (*a*) after an examination, which includes written, oral, clinical, and practical examinations; or (*b*) on the submission of a thesis or other evidence of original study or research, to be approved by the Faculty of Medicine after an oral or other examination of the candidate on the subject thereof.

The Medical School.—The Donald Currie Chemical Buildings contain a lecture theatre, a preparation room, a chemical museum, a large class-room for elementary practical chemistry, laboratories for qualitative and quantitative analysis, rooms for water and gas analysis, dark room for photographic purposes and balance room, provided with all modern appliances. The Anatomical Department contains a large and well-lighted dissecting-room, a lecture-room, a professor's and demonstrator's room, a bone-room, and a laboratory for microscopic and photographic work. The Medical Museum is in the same building. The Jaffé Laboratories for Physiology comprise a lecture theatre, laboratories for practical work in chemical physiology, histology, and experimental physiology, and in addition small private research rooms, including balance, galvanometer, and centrifuge rooms. The Musgrave Pathological Laboratory.—In this department opportunity is afforded for research in pathology and bacteriology. The department is in touch with most of the hospitals in Belfast, and there is an ample supply of material for investigation by graduates in morbid histology, clinical pathology, and the bacteriology of infectious diseases. A course in pathology or bacteriology is given to graduates, and members of this class have an opportunity of seeing the methods employed in the various investigations carried out in the department for the Public Health Committee of the corporation in connexion with water-supply, sewage disposal, meat- and milk-supply, the diagnosis of cases of infectious diseases, &c. The certificate issued to members of the class in bacteriology qualifies for the D.P.H. degree. The Pharmaceutical Laboratory is fitted and equipped for the work of practically instructing students in the compounding and dispensing of medicines.

Clinical instruction.—The following institutions are recognised by the University as affording proper opportunities for clinical instruction: the Royal Victoria Hospital, the Mater Infirmorum Hospital, the Union Hospitals, the Belfast Hospital for Sick Children, the Belfast Maternity, the Ulster Hospital for Women and Children, the Ulster Eye, Ear, and Throat Hospital, the Belfast Ophthalmic Hospital, the Purdysburn Fever Hospital, and the Belfast District Lunatic Asylum.

The Royal Victoria Hospital (300 beds).—Many of the staff are on active service. Women students are now admitted as resident medical pupils the same as men.

Mater Infirmorum Hospital (200 beds).—Honorary Secretary Medical Staff: Mr. J. B. Moore.

Belfast Union Infirmary and Hospital (1700 beds).—Four Resident Medical Officers.

Hospital for Sick Children, Queen-street (52 beds).—Honorary Secretary, Medical Staff: John McCaw, M.D.

Maternity Hospital, Townsend-street (32 beds).

Ulster Hospital for Children and Women (44 beds).

Benn Ulster Eye, Ear, and Throat Hospital (30 beds).

Belfast Ophthalmic Hospital, Great Victoria-street (30 beds).—Practical demonstrations by the staff and occasional clinical lectures in the subjects of Ophthalmology, Otology, Laryngology, and Neurology. Clinical instruction is given daily. Fee for three months £2 2*s*.

City Fever Hospitals, Purdysburn (330 beds).—Clinical Classes are held during the winter and summer sessions.

Belfast District Lunatic Asylum (1250 beds).

IRISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

The College issues its Licences in Medicine and in Midwifery to practitioners whose names appear on the Medical Register of the United Kingdom.

The Licence in Medicine.—The subjects of examination are: Practice of Medicine, Clinical Medicine, Pathology, Medical Jurisprudence, Midwifery, Hygiene, and Therapeutics.

The Licence in Midwifery.—Candidates must produce certificates of registration. A registered medical practitioner of five years' standing may be exempted from the examination by printed questions.

The Membership.—Examinations for Membership are held in February, June, and November. The fee for the examination is £21 to Licentiates of the College, or £36 15*s*. to non-Licentiates. Further particulars can be obtained from the Registrar of the Royal College of Physicians of Ireland, Kildare-street, Dublin.

The Fellowship.—Fellows are elected by ballot. Applicants must have been a Member of the College for at least one year and must have attained the age of 27 years. There is a fee of £35 in addition to a stamp duty of £25.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

The Licence in Surgery.—A candidate whose name is entered either on the Medical Register for the United Kingdom, the Colonial Medical Register, or the Foreign Medical Register of the year in which he presents himself for examination, and who satisfies the Council that he has passed through a course of study and Examinations equivalent to those required by the Regulations of the Conjoint Board of the Royal College of Physicians of Ireland and the Royal College of Surgeons in Ireland, preceded by the passing of an Examination in Arts recognised by the General Medical Council, may, at the discretion of the Council, be admitted to the Examination.

Candidates are examined in Surgery, Clinical Surgery, Operative Surgery on the subject, Surgical Appliances, and Ophthalmic Surgery.

Diploma in Midwifery.—A diploma in Midwifery is granted after examination to persons possessing a registrable qualification.

Fellowship Examinations.—Candidates for the Fellowship shall make application to the President and Council to be admitted to examination. They are required to pass two examinations—Primary and Final. Candidates may present themselves for the Final Examination immediately after passing the Primary part, provided they have complied with the necessary regulations. The subjects for the Primary Examination are (*a*) Anatomy, including Dissections; and (*b*) Physiology and Histology. The subjects for the Final Examination are Surgery, including Surgical Anatomy and Pathology. For admission to the Final Examination the candidate must have passed the Primary Examination, and must be a Licentiate or Graduate in Surgery of a university or licensing body recognised by the General Medical Council; all such candidates must not be less than 25 years of age.

Further particulars as to fees and conditions of examination can be obtained from the Registrar of the College, Stephen's-green, West Dublin.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND AND ROYAL COLLEGE OF SURGEONS IN IRELAND.

Every candidate for the Conjoint Examinations of the Colleges shall produce evidence of having before entering on medical studies passed a Preliminary Examination in general education recognised by the Royal Colleges. Each candidate before receiving his diplomas must produce a registrar's certificate or other satisfactory evidence that he has attained the age of 21 years.

Preliminary Examination.—The subjects for examination are identical with those prescribed for the Preliminary Examination by the General Council of Medical Education and Registration.

Professional Examinations.—Every candidate must pass four Professional Examinations—at the end of the first, second, third, and fifth years respectively of his professional studies. No candidate shall be admitted to the Final or Qualifying Examination within three months of his rejection at the Final or Qualifying Examination by any other licensing body.

First Professional Examination.—Every candidate is required, before admission to the First Professional Examination, to produce evidence—(1) of having passed in the subjects of the Preliminary Examination; and (2) of having attended a course of—(*a*) lectures on Theoretical Chemistry, six months; (*b*) Practical Chemistry, three months; (*c*) Biology, three months; and (*d*) Physics.

The subjects of the First Professional Examination are the following:—1. (*a*) Chemistry; (*b*) Physics. 2. Biology. The fee for this examination is £15 15*s*.

Second Professional Examination.—Candidates are not admissible to this examination till they have passed in the subjects of the First Professional Examination, and they must produce evidence of having attended (*a*) anatomical dissections, six months; and Lectures on (*b*) Anatomy, six months; (*c*) Physiology, six months; (*d*) Practical Physiology and Histology, three months.

The subjects of the Second Professional Examination are the following:—(1) Anatomy; and (2) Physiology and Histology. The fee for this examination is £10 10*s*.

Third Professional Examination.—Every candidate is required, before admission to the Third Professional Examination, to produce evidence of having passed the Second Professional Examination, and certificates of having attended courses of instruction in (*a*) the practice of a medico-chirurgical hospital for nine months; (*b*) Pathology—(1) Systematic, (2) Practical, three months each; (*c*) Materia Medica, Pharmacy, and Therapeutics, three months; (*d*) Forensic Medicine and Public Health, three months. The subjects for the Third Professional Examination are the following:—(1) Pathology; (2) Materia Medica, Pharmacy, and Therapeutics; (3) Public Health and Forensic Medicine. The fee for this examination is £9 9*s*.

Final Professional Examination.—Before admission to the Final Examination candidates must have passed the Third Professional Examination and produced evidence of having attended in Division I. the practice of a medico-chirurgical hospital for two periods of nine months each (unless such evidence has been previously produced for admission in Division II.); the practice of a recognised fever hospital or the fever wards of a recognised clinical hospital, three months; clinical instruction in Mental Diseases, one month (12 attendances); lectures on Medicine, six months at a recognised medical school; of having performed the duties of medical clinical clerk in a recognised hospital for three months; of having attended a course of instruction in post-mortem examinations and demonstrations during one session. In Division II. of having attended the practice of a medico-chirurgical hospital for two periods of nine months each (unless such evidence has been previously produced for admission to Division I.); clinical instruction in Ophthalmic and Aural Surgery, three months; lectures on Surgery, six months at a recognised medical school; instruction in Operative Surgery, three months at a recognised medical school; of having performed the duties of surgical dresser in a recognised hospital for three months; of having attended a course of instruction in the practical administration of general anæsthetics. In Division III. of having attended a midwifery hospital or maternity and having been present at 20 labours, six months; instruction on vaccination, six attendances to be certified by a public vaccinator; lectures on midwifery (including diseases peculiar to women and to new-born children), six months at a recognised medical school. Candidates are recommended to present themselves in all the subjects of the Final Examination at one time, but a candidate at or after the end of the fourth year may present himself in any one of the Divisions I., II., or III., provided he has completed his curriculum as far as concerns the division in which he presents himself. The examination in at least one of the divisions must be deferred till the end of the fifth year.

The subjects of the Final Examination are: (1) Medicine, including Fevers, Mental Diseases, and Diseases of Children; (2) Surgery, Operative and Ophthalmic; and (3) Midwifery and Gynæcology, Vaccination, and Diseases of New-born Children. The fee is £6 6*s*. Further particulars can be obtained from Alfred Miller, the Secretary of the Committee of Management, Royal College of Surgeons, Stephen's-green, Dublin.

ROYAL COLLEGE OF SURGEONS IN IRELAND (SCHOOLS OF SURGERY).—The schools of surgery are attached by Charter to the Royal College of Surgeons and have existed as a department of the College for over a century. They are carried on within the College buildings and are specially subject to the supervision and control of the Council, who are empowered to appoint and remove the professors and to regulate the methods of teaching pursued. The buildings have been reconstructed, the capacity of the dissecting-room nearly trebled, and special pathological, bacteriological, public health, and pharmaceutical laboratories fitted with the most approved appliances in order that students may have the advantage of the most modern methods of instruction. There are special rooms set apart for lady students. The entire building is heated by hot-water pipes and lighted throughout by the electric light. Winter Session commences in October; Summer Session in April. Scholarships and Prizes: Carmichael Scholarship, £15; Mayne Scholarship, £8; Stoney Memorial gold medal; Operative Surgery, gold and silver medals; Barker Prize, £26 5*s*.; H. Macnaughton-Jones gold medal; and class prizes and medals. Prospectuses and guide for medical students can be obtained post free on written application to the Registrar, Royal College of Surgeons, Stephen's-green, W., Dublin.

APOTHECARIES' HALL OF IRELAND.

The Licence of this Hall is granted to students who present certificates of having fully completed the course of study as laid down in the curriculum and who pass the necessary examinations. The diploma of the Apothecaries' Hall of Ireland entitles the holder to be registered as a practitioner in medicine, surgery, and midwifery, with also the privileges of the Apothecary's Licence. There are three professional examinations, the total fees for which amount to 30 guineas. Women are eligible for the diploma.

There are four examinations—primary, intermediate, Parts I. and II., and final. They are held three times a year, in March, June, and December. The primary examination comprises biology, physics, theoretical and practical chemistry (with an examination at the bench). Candidates holding a Pharmaceutical licence are exempt from this subject. Intermediate, Part I., Anatomy and Physiology. Intermediate, Part II., Pathology, Medical Jurisprudence, and Materia Medica and Pharmacy. The intermediate examination comprises anatomy of the whole body (including practical dissections), physiology, practical histology, and materia medica. The final examination comprises medicine, surgery, and midwifery.

Each candidate before receiving his diploma must produce evidence that he has attained the age of 21 years. The details of the course of education required and syllabus of the examinations will be supplied on application to the Registrar at 40, Mary-street, Dublin.

HOSPITALS AFFORDING PRACTICE RECOGNISED BY THE IRISH UNIVERSITIES AND CORPORATIONS.[1]

ADELAIDE HOSPITAL, Peter-street, Dublin.—Fee for nine months' hospital attendance, £12 12*s*.; six months, £8 8*s*. Summer, three months, £5 5*s*. Two resident surgeons are elected yearly and four resident pupils half-yearly. At the termination of the session prizes in Clinical Medicine and Surgery and in Dermatology will be awarded.

Hudson Scholarship.—In addition to the junior prizes the Hudson Scholarship, £30 and a gold medal, as well as a prize of £10, together with a silver medal, will be awarded at the end of the session for proficiency in medicine, surgery, gynæcology, and pathology.

The certificates of attendance are recognised by all the Universities and licensing bodies in the United Kingdom. Further particulars may be obtained from Dr. H. Bewley.

COOMBE LYING-IN HOSPITAL AND GUINNESS DISPENSARY FOR THE TREATMENT OF DISEASES PECULIAR TO WOMEN, Dublin.—This hospital contains nearly 70 beds and consists of two divisions, one of which is devoted to lying-in cases and the other to the treatment of diseases peculiar to women. The practice of this hospital is one of the largest in Ireland. Lectures are delivered, practical instruction given, and gynæcological operations are performed in the theatres daily. There is a general dispensary held daily, at which instruction is given on the Diseases of Women and Children. There is a special afternoon dispensary held by the Master and his assistants, at which practical instruction in gynæcology is given. There is no extra charge for attendance at this dispensary. There is accommodation for intern pupils who enjoy exceptional advantages

[1] This list of the institutions recognised by the Conjoint Board of Ireland is supplemented in the regulations of the Colleges by those hospitals mentioned as recognised institutions in Scotland and England. The recognised facilities for clinical instruction in Belfast, Cork, and Galway have been described in connexion with the Belfast and National Universities.

of acquiring a thorough knowledge of this branch of their profession. Lady medical students can reside in the hospital. The residents' quarters are comfortable. Clinical assistants are appointed from amongst the pupils as vacancies occur. Certificates of attendance at this hospital are accepted by all licensing bodies. Fees: Extern pupils for full course of six months, £8 8*s.*; three months, £4 4*s.* Intern pupils, one month, £4 4*s.*; each consecutive month, £3 3*s.*; six months, £18 18*s.*; board and lodging in the hospital, 25*s.* per week. Lady students, intern, one month, £4 4*s.*; each consecutive month, £3 3*s.* Registration fee, in advance, 10*s.* 6*d.* Students can enter for attendance at any time, but preference is given to those entering from the first day of the month. Further particulars may be had on application to the Master or the Registrar at the hospital.

SIR PATRICK DUN'S HOSPITAL, Grand Canal-street, Dublin.—Classes both in Medicine and Surgery are held each morning from 9 o'clock from Oct. 1st till the end of June. Special classes for junior students will be held in the wards during the months of October, November, and December. A Resident Surgeon, with salary, is appointed annually. Six Resident Pupils are appointed each half-year. Six Surgical Dressers and six Clinical Clerks are appointed each month. There are facilities for women students.

Prizes and Medals.—Clinical medals and prizes amounting to about £15 each will be awarded in Medicine and in Surgery respectively in accordance with the will of the late Rev. Samuel Haughton, M.D., S.F.T.C.D. Candidates who fail to obtain these medals and prizes will be awarded special certificates in Medicine and in Surgery provided they show sufficient merit.

Fees.—Winter and summer session, £12 12*s.*; winter session (six months), £8 8*s.*; and summer session (three months), £5 5*s.* Special certificate in anæsthetics, £1 1*s.* The practice of this hospital is open to all students, and the certificates are recognised by Dublin University, the National University and Royal Colleges of Surgeons of England, Ireland, and Scotland.

Further information will be supplied by the Hon. Secretary to the Medical Board, Dr. C. M. Benson.

JERVIS-STREET HOSPITAL, Dublin.—Founded 1718; rebuilt 1886. 130 beds. A new out-patient department has been completed and contains all modern requirements. Secretary: Mr. Kieran O'Dea.

MATER MISERICORDIÆ HOSPITAL, Dublin.—This hospital, the largest in Ireland, containing 345 beds, is open at all hours for the reception of accidents and urgent cases. Clinical instruction will be given by the Physicians and Surgeons at 9 A.M. daily. Ophthalmic Surgery will be taught in the Special Wards and in the Dispensary. Surgical Operations will be performed daily. Connected with the hospital are extensive Dispensaries, which afford valuable opportunities for the study of general Medical and Surgical Diseases, and Accidents. Instruction will be given on Pathology and Bacteriology. Three House Physicians, six House Surgeons, and 16 resident pupils will be elected annually. Dressers and Clinical Clerks will also be appointed, and certificates will be given to those who perform their duties to the satisfaction of the staff. Leonard Prizes will be offered for competition annually. For further particulars see prospectus. Certificates of attendance upon this hospital are recognised by all the Universities and licensing bodies in the United Kingdom. A Private Hospital has been opened for the reception of Medical and Surgical cases. A Training School and a Home for Trained Nurses have been opened in connexion with the Hospital.

Terms of attendance.—Nine months, £12 12*s.*; six winter months, £8 8*s.*; three summer months, £5 5*s.* Entries can be made with any of the physicians or surgeons, or with the Registrar, Dr. Martin Dempsey, 35, Merrion-square. A prospectus containing in detail the arrangements for Clinical Instruction, Prizes, &c., may be obtained from the Secretary, Medical Board, Mr. A. Blayney, 15, Merrion-square.

MEATH HOSPITAL AND COUNTY DUBLIN INFIRMARY.—This hospital was founded in 1753 and now contains 166 beds available for clinical teaching. A building containing 40 beds for the isolated treatment of fevers is attached to the hospital. The certificates of this hospital are recognised by all the universities and licensing bodies of the United Kingdom. Six Medical Clinical Clerks and 12 Surgical Resident Pupils and Dressers are appointed every six months, and House Surgeons and Clinical Assistants are elected annually. A prospectus giving the complete arrangements for the coming session may be obtained from the Honorary Treasurer of the Medical Board, Sir L. H. Ormsby, 92, Merrion-square, Dublin.

MERCER'S HOSPITAL.—This hospital, founded in 1734, is situated in the centre of Dublin, in the immediate vicinity of the Schools of Surgery of the Royal College of Surgeons, the Catholic University School of Medicine, and within five minutes' walk of Trinity College. It contains 120 beds for medical and surgical cases, and arrangements have been made with the medical officers of Cork-street Fever Hospital whereby all students of this hospital are entitled to attend the clinical instruction of that institution and become eligible for the posts of Resident Pupil, &c. There is a large dispensary for out-patients. Students of the hospital are permitted to attend the gynæcological department, where they receive practical instruction. There are special wards for the treatment and study of children's diseases. During the past few years the hospital has undergone extensive alterations in order to bring it up to modern requirements.

Appointments.—A House Surgeon is appointed annually. There are Five Resident Pupils, and Clinical Clerks and Dressers are appointed monthly from amongst the most deserving members of the class. Women students are admitted.

Fees.—Winter, six months, £8 8*s.*; Summer, three months, £5 5*s.*; nine months, £12 12*s.*

For further particulars apply to Dr. Bethel Solomons, Hon. Sec., Medical Board, 42, Fitzwilliam-square, Dublin.

NATIONAL MATERNITY HOSPITAL, Holles-street, Dublin.—Established 1894. Masters: Sir Andrew J. Horne and Dr. R. J. White. The Hospital consists of an Intern and Extern Maternity. 1000 cases are annually admitted. The large number of cases at the hospital give great opportunities for practical work. Arrangements are made for post-graduate and special courses. Certificates of attendance at the hospital are recognised by all the licensing bodies. For further particulars apply to the Masters.

RICHMOND, WHITWORTH, AND HARDWICKE HOSPITALS, North Brunswick-street, Dublin.—These hospitals contain 317 beds—130 for Surgical cases, 70 for Medical cases, 77 for Fever and other Epidemic Diseases, and an Auxiliary Wing of 40 beds for sick soldiers. A Resident Physician and a Resident Surgeon are appointed each half year and are paid for their services. 12 Resident Clinical Clerks are appointed each quarter and provided with furnished apartments, fuel, &c. These appointments are open not only to advanced Students but also to those who are qualified in Medicine and Surgery. The Dressers are selected from among the best qualified of the pupils without the payment of any additional fee. Women students are eligible for election as residents and special apartments are reserved for their use. For prospectuses apply to Mr. Adams McConnell, F.R.C.S.I., Hon. Secretary, 69, Fitzwilliam-square, Dublin.

ROTUNDA HOSPITAL, Dublin.—This institution is the largest combined gynæcological and maternity hospital in the British Empire. Nearly 4000 confinements attended annually. Students can take out their necessary gynæcological and midwifery practical courses. Appointments open to qualified practitioners as Assistant to the Master and Extern Assistants. Women students can reside in the hospital on terms similar to those for men. For further particulars apply to the Master.

ROYAL CITY OF DUBLIN HOSPITAL.—Founded 1832; enlarged 1851; rebuilt 1893. 150 beds. Secretary: Mr. Edw. B. Armstrong.

ROYAL VICTORIA EYE AND EAR HOSPITAL, Dublin.—Established 1844. Incorporated 1897. 102 beds. In-patients, 1527; out-patients, 9236. Two house surgeons appointed annually.

DR. STEEVENS' HOSPITAL, Dublin.—Established 1720. 250 beds. Patients, 1581. Secretary: Mr. R. J. Ogden.

ST. VINCENT'S HOSPITAL AND DISPENSARY, Dublin.—Established 1834. 160 beds.

WE have received from the Deans and Secretaries of the various centres the corrected lists of the teachers at the schools and of the medical staffs of the hospitals at which clinical education is being carried on. We take the opportunity of thanking these officers for their valuable coöperation, as it enables us to keep the lists revised for reference and future issue.

THE COLONIAL MEDICAL SERVICE.

IN the self-governing dominions, Canada, Australia, New Zealand, the Union of South Africa, and Newfoundland, medical appointments are made concerning which information can be obtained from the High Commissioners or Agents-General in London; appointments in Egypt and the Soudan are regulated from the Foreign Office; in Aden and adjacent territories the appointments are under the control of the Government of Bombay; in Rhodesia the appointments are made by the British South Africa Company, London Wall Buildings, E.C.; in North Borneo application should be made to the British North Borneo Company, 37, Threadneedle-street, E.C., for appointments; and those in Sarawak are in the hands of H.H. the Rajah.

But in addition to all these there are a large number of important posts under the patronage of the Secretary of State for the Colonies. These concern East Africa (the East Africa, Uganda, Nyasaland, Somaliland, and Zanzibar Protectorates); Eastern (Ceylon, the Straits Settlements, and Federated Malay States, Hong-Kong, Weihaiwei, Mauritius, and Seychelles); West India (British Guiana, Jamaica, Trinidad, the Windward Islands, the Leeward Islands, Barbados, British Honduras, and the Bahamas); Fiji and the Western Pacific, Cyprus, Malta, Gibraltar, St. Helena, Bermuda, and the Falkland Islands; and West Africa (Nigeria, the Gold Coast, Sierra Leone, and the Gambia). As a general rule, each Colony or Protectorate has its own public service distinct from that of every other, and it is usually only the higher officers who are transferred by the Secretary of State from one Colony to another; but there are two exceptions to this rule. The West African Medical Staff, which serves Nigeria, the Gold Coast, Sierra Leone, and the Gambia, form one service, and in practice the medical services of the Straits Settlements and the Federated Malay States may be regarded as one, as the officers may be and frequently are transferred from the Colony to the States, or *vice versa*. In Ceylon, Mauritius, Jamaica, Barbados, the Bahamas, and Bermuda vacancies are almost always filled locally by the appointment of qualified native candidates, or—in the case of some of the higher posts—by transfer from other Colonies. Appointments in Malta are all filled locally. Vacancies in the Hong-Kong Medical Department are generally filled by transfer from other Colonies. In most cases the duties of a colonial medical officer are of a very general character, including medical, surgical, and often public health work. It is only occasionally that a specialist is required. All applicants must be between the ages of 23 and 35, but in the case of East Africa, Uganda, Nyasaland, Somaliland, and Zanzibar preference will be given to candidates who are over 25 years of age, while in the case of Fiji and the Western Pacific preference will be given to candidates who are under 30. Candidates must be doubly qualified, and the choice will usually fall, other things being equal, on those who have held hospital appointments. Before being definitely appointed candidates will be medically examined by one of the consulting physicians of the Colonial Office: Sir J. Rose Bradford, K.C.M.G., 8, Manchester-square, London, W.; Sir J. Hawtrey Benson, 57, Fitzwilliam-square, Dublin; Lieutenant-Colonel J. Arnott, I.M.S., 8, Rothesay-place, Edinburgh; and W. T. Prout, Esq., C.M.G., 14, Rodney-street, Liverpool.

East African Protectorates.—Medical Officers in the East Africa, Uganda, Nyasaland, Somaliland, and Zanzibar Protectorates are appointed on probation in the first instance for three years, at the end of which period their appointments are made permanent if their service has been satisfactory, but special arrangements are now in force in Uganda. The salary of a Medical Officer during probation is £400 per annum fixed, but as soon as he has been confirmed in the permanent appointment his salary rises by annual increments of £20 to £500 per annum. There are 17 appointments of this nature in the East Africa Protectorate, 18 in Uganda, 11 in Nyasaland, 5 in Zanzibar, and 3 in Somaliland. In the East Africa Protectorate there are certain special appointments—viz., Deputy Principal Medical Officer (£600–25–700 and £60 duty allowance), Bacteriologist (£600–25–700), Assistant Pathologist and Assistant Bacteriologist (£400), two Senior Medical Officers (£500–25–600 with £50 duty allowance), Analyst (£400–20–450), Chief Sanitation Officer (£600–25–700 and £60 duty allowance), and three Medical Officers of Health (one at £500–25–600 with £50 duty allowance, and two at £400–20–500 with £40 duty allowance). In Uganda there is a Deputy Principal Medical Officer (£500–25–600 and £50 duty allowance), a Bacteriologist (£500 and £50 duty allowance), a Sanitary Officer (£500–25–600 and £50 duty allowance), two Senior Medical Officers with the same emoluments, and a Medical Officer of Health (£400–25–500 and £40 duty allowance). In Zanzibar there is a Medical Officer of Health (£500–25–600, duty allowance £50) and an Assistant (£400–20–500). The salary attached to the appointment of Principal Medical Officer in the East Africa Protectorate is £700 per annum rising to £900 per annum by annual increments of £25, and duty allowance £70. In Uganda the salary of the Principal Medical Officer is £700 per annum, rising to £800 per annum by annual increments of £25, with duty allowance £70; and in Nyasaland and Zanzibar £600 per annum, rising to £700 by annual increments of £25. Medical Officers are permitted to take private practice on the understanding that they give precedence to their official duties. There are also at present in Uganda certain temporary Medical Officers whose appointments (at a salary of £400 a year) have been created in order to cope with the work in connexion with special measures to control sleeping sickness, venereal disease, and plague. A candidate for the Uganda service will in general be offered one of these temporary appointments in the first instance and will be considered for absorption, if he wishes, when an opportunity occurs, provided that his service is approved. Temporary Medical Officers are engaged for three years, and free passages are provided. If a temporary Medical Officer is subsequently appointed to the permanent staff of the Protectorate in which he has been employed on a temporary footing his temporary service will ultimately be reckoned for pension.

Straits Settlements.[1]—Medical Officers are appointed as House Surgeons or Assistant Health Officers at a salary of £350. After one year's satisfactory service House Surgeons are appointed Medical Officers with salary rising from £400 to £600. Above this class there are nine senior appointments carrying salaries ranging from £600 (rising to £720) to £750 (rising to £900). The Principal Civil Medical Officer receives £1050, rising to £1200. Duty allowances are attached to all appointments and free quarters, or an additional allowance in lieu thereof, are given to House Surgeons. The authorised establishment is at present 32 officers.

Federated Malay States.[1]—Appointments are graded as follows:—Principal Medical Officer, £1050 to £1200; Senior Medical Officer, Perak, £750, rising to £900; Senior Medical Officer, Selangor, £800, rising to £1000; seven Medical Officers, Grade I., £600, by £20 annually to £720; 18 Medical Officers, Grade II., £350, and after one year's satisfactory service £400, rising to £600, with free furnished quarters, without private practice. A Medical Officer is attached to the Regiment of Malay States Guides, his salary being £360 to £480. The Senior Medical Officers in Perak and Selangor and the two Grade I. Medical Officers in charge of Negri Sembilan and Pahang are allowed consulting practice only. Other Medical Officers are prohibited from private practice except in very special cases where the Chief Secretary is satisfied that, owing to the absence of private practitioners, it is absolutely necessary to allow the Government Medical Officer to attend to private patients. The posts of Medical Officer, Grade II., in the Federated Malay States and the corresponding appointments in the Straits Settlements are filled by the promotion of officers who have entered the service as House Surgeons. A non-pensionable allowance, varying with the appointment, is attached to all medical posts in the Straits Settlements and Federated Malay States. In the case of House Surgeons the allowance is at the rate of £40 a year.

Seychelles.—There are four medical appointments. The Government Medical Officer receives Rs.4500. The Assistant Government Medical Officers receive Rs.3000. The holders of these latter appointments have free quarters. Private practice is allowed.

Weihaiwei.—There are two non-pensionable Medical Officers on £300, rising to £400, with free quarters.

British Guiana.—There are 35 appointments. Candidates must have held for at least six months a resident medical appointment in some public institution. Officers are appointed on two years' probation as assistant medical officers, and are paid a salary at the rate of £300 per annum, with quarters, without the right to private practice. The permanent staff, to which officers may be appointed at the expiration of the probationary period, includes the following appointments: Surgeon-General, £900, with travelling expenses and consulting practice; Bacteriologist and Pathologist, £300 to £600; two Medical Officers at £600 to £700; 12 Medical Officers at £500 to £600 and 12 Medical Officers at £400 to £500; and five Medical Officers at £300 to £400; two at £300. Officers, on the completion of two years' service in the fixed £300 class, automatically rise to the £300–£400 class. Medical officers appointed to districts receive travelling allowances varying with the nature of the district. They are also allowed private practice. Medical Officers attached to public institutions are, in general, allowed free quarters. A deduction of 4 per cent. is made from their salaries for the payment of the premiums on an insurance of the officer's life for the benefit of the widow or orphans.

Trinidad and Tobago.—In Trinidad and Tobago there are over 40 appointments. Officers are appointed in the first instance on two years' probation as supernumeraries and are eligible for appointment as Government Medical Officers at the end of this period. Applicants must be unmarried and must remain unmarried whilst supernumerary Medical Officers. Supernumeraries receive a salary of £250 per annum with furnished quarters, and are usually attached to the Government hospital. Government Medical Officers receive salary at the rate of £250 per annum with quinquennial increments of £50 accruing from the date of first appointment as supernumerary Medical Officers. Most are employed as District Medical Officers, with private practice, a residence or a rent allowance of £50, a horse allowance, except in one district, and in some cases other allowances for institution work. All officers are required to contribute 4 per cent. of their salaries towards the pensions of the widows and orphans of public officers.

Windward Islands (Grenada, St. Lucia, St. Vincent).—The 25 appointments are, with few exceptions, district appointments with the right to private practice attached; the salaries paid by Government vary from £250 to £350, with allowances in certain cases. The Governor has the power to transfer a medical officer from one island to another at his discretion. The appointments are pensionable.

Leeward Islands (Antigua, St. Christopher and Nevis, Dominica, Montserrat, Virgin Islands).—The 24 appointments are of the same nature as in the Windward Islands, but are not pensionable. An officer when first sent out is not appointed to a particular island but to the service of the Leeward Islands, with a salary of £250, and the Governor decides as to the district which is to be allotted to him. In

[1] In the Straits Settlements and Federated Malay States all permanent Government servants are required to contribute 4 per cent. of their salaries towards the provision of pensions for the widows and orphans of public officers.

certain districts he may be required to perform magisterial duties. The medical officers receive fees for successful vaccinations, post-mortem examinations, attendance and giving evidence at courts of justice, certificates of lunacy, and, in the larger islands, for burial certificates. They are also, as a rule, allowed private practice.

British Honduras.—There are seven medical appointments (besides the principal post of Colonial Surgeon) each carrying a salary of $1701 per annum. Unless they already possess a Diploma of Public Health, medical officers are liable to be required before they join the colony to undergo a course of instruction at a laboratory of public health or analogous institution. The dollar = about 4s. 2d.

Fiji and the Western Pacific.—In Fiji the Government Medical Officers receive a salary of £350, rising by annual increments of £25 to £500, with partly furnished quarters, or a house allowance of £50. In some districts a medical officer is also a magistrate with a combined salary of £500, rising to £600, with free quarters. They are allowed private practice, so far as is consistent with the proper discharge of their duty to the Government, but in most districts the private practice is very small. They are required either to take charge of hospitals or of districts, at the discretion of the authorities. The posts are pensionable. There are at present 15 Medical Officers, in addition to a Chief Medical Officer (£700 a year, rising to £800). The medical services of Fiji and the Western Pacific are interchangeable. While serving in the Western Pacific Protectorates their duties may be of a quasi-magisterial nature, and they draw an extra non-pensionable allowance of £50 per annum.

Cyprus.—There is a Chief Medical Officer paid at the rate of £500 per annum, and three District Medical Officers paid at the rate of £275 per annum, all enjoying private practice (except the Chief Medical Officer, who is allowed consulting practice only) and receiving 2*s.* per diem forage allowance; these are the only medical appointments in the island which are open to English candidates.

Gibraltar.—There is a surgeon of the Colonial Hospital receiving £400 with fuel and light allowances, and private practice. He also receives £50 for medical examination of school children. There are also two Assistant Surgeons with a salary of £350 per annum, who are allowed private consulting practice only. Free quarters, unfurnished, are provided for all three officers.

St. Helena.—The Colonial Surgeon at present receives £270 per annum £20 fees as Health Officer, and £27 horse allowance. Private practice is allowed. The Assistant Colonial Surgeon receives £350 a year and a horse, with forage allowance; but no private practice is allowed without special permission.

Falkland Islands.—There are two appointments. The Colonial Surgeon is paid at the rate of £350 per annum, with £25 as Health Officer. The Assistant Colonial Surgeon is paid at the rate of £400 per annum without quarters. Part of the salary is provided from private sources. Private practice is allowed to the Colonial Surgeon, and to a lesser extent to the Assistant Colonial Surgeon.

Leave and Passages.—In the East African Protectorates leave of absence on full salary is granted in the normal case after a tour of residential service (of not less than 20 nor more than 30 months) to an amount of five days for each completed month of residence (or 2½ days when for any reason the officer is not returning to East Africa) exclusive of the periods of the voyages to and fro. Officers serving in Uganda, Zanzibar, or in certain stations in the East Africa and Nyasaland Protectorates are allowed six or three days' leave respectively in respect of each month of service. In Somaliland special leave regulations exist which provide for an officer taking leave approximately every year. Free first-class passages are provided for the officer only. In the Malay Peninsula two months' leave of absence with full salary may be granted in respect of each year's service, and this leave may be accumulated up to a maximum of eight months. Additional leave on half pay may be granted on special grounds. If an officer on the occasion of his first leave is in receipt of a pensionable salary of less than £500 a year, he is granted a free return passage to the United Kingdom. In Hong-Kong leave of absence on half salary may be granted after 4½ years' service, and a portion of such leave may be commuted, if the Governor agrees, for half the amount on full pay. Leave of absence in excess of 10 months at a time will not be granted, but an extension may be allowed for ill-health or very urgent private affairs.

Subject to the necessities of the service, leave of absence on half salary may be granted to officers in other Colonies outside tropical Africa after a period of six years' resident service without any special grounds. Officers of the Fiji and Western Pacific service proposing to spend their leave in Europe may receive a grant in aid of passage expenses of £60. Leave may be given before the expiration of the due period in case of serious indisposition, or of urgent private affairs. In the absence of special grounds, the leave must not exceed one-sixth of the officer's resident service; on special grounds it may exceed that period by six months. In addition to the above, vacation leave on full pay may be granted, if no inconvenience or expense is caused thereby, not exceeding three months in any two years. In the case of Fiji and the Western Pacific and the Falkland Islands, 4½ months' leave may be granted in any three years.

On first appointment an officer whose salary and fees together do not exceed £500 a year will, except in the case of a few Colonies possessing Representative Assemblies, be provided by the Crown Agents for the Colonies with free passages to the Colony for himself and his wife and children, if any, not exceeding four persons besides himself. The officer so appointed will be required to execute an agreement binding him to repay the cost of the passage or passages so obtained in the event of his leaving the Government service within three years. This rule applies also to officers appointed to the Malay Peninsula and Hong-Kong. An officer taking leave out of the Colony has to provide his own passages.

Pensions.—Officers on the pensionable establishment in the East African Protectorates are at liberty to retire on attaining the age of 50 years. Earlier retirement in the event of ill-health is also provided for. Pensions are computed on the scale of one-sixtieth of the average annual salary of the retiring officer's fixed appointments for three years prior to retirement, but for purposes of calculating pensions two years' service is reckoned as service for three years. In most of the other Colonies an officer holding a pensionable appointment may be allowed in the case of ill-health to retire on a pension after ten full years' resident service; otherwise he must have attained the age of 55. For ten full years' resident service fifteen-sixtieths of the average annual salary of the retiring officer's fixed appointments for three years prior to retirement may be awarded, to which one-sixtieth may be added for each additional year's service; but no addition will be made in respect of any service beyond 35 years. For pension purposes absence on vacation leave counts as full service, and leave on half pay as half service. In a few cases the retiring age is 60, and the pension after ten years' service is ten-sixtieths instead of fifteen.

West African Medical Staff.

The medical services of the West African Colonies and Protectorates—namely, the Gambia, Sierra Leone, the Gold Coast (including Ashanti and the Northern Territories), and Nigeria—form one service under the above name. All the medical officers for the service are selected by the Secretary of State for the Colonies, and are on one list for employment and promotion. As in other Colonies, applicants must be between 23 and 35 years of age and possess a double qualification, but preference is given to those over 25. The higher grades are usually filled by promotion from the lower.

The grades and emoluments of officers of the staff are as follows:—

The Director of the Medical and Sanitary Service in Nigeria receives a salary of £1400 a year, with a duty allowance at the rate of £280 a year.

Principal Medical Officer: The Principal Medical Officers receive salaries as follows: In the Gold Coast and the Southern Provinces of Nigeria £1200 a year, with a duty allowance at the rate of £240 a year. In Nigeria (Northern Provinces), £1100 a year, with a duty allowance at the rate of £220 a year. In Sierra Leone, £1000 a year, with a duty allowance at the rate of £200 a year. There is no Principal Medical Officer in the Gambia.

Deputy Principal Medical Officer: There are four appointments of this grade, three in Nigeria and one in the Gold Coast. Salary at the rate of £900 a year, rising by annual increments of £25 to £1000 a year, is attached to these appointments, together with a duty allowance at the rate of £180 a year.

Senior Sanitary Officer: There are four appointments of this grade, two in Nigeria, one in the Gold Coast, and one in Sierra Leone. Salary at the rate of £900 a year, rising by annual increments of £25 to £1000 a year (in Sierra Leone to £950 only), is attached to these appointments, together with a duty allowance at the rate of £180 a year.

Provincial Medical Officer: There are seven appointments bearing this title (four in Nigeria, two in the Gold Coast, and one in Sierra Leone), with salary at the rate of £800 a year, rising by annual increments of £25 to £900 a year, and duty allowance at the rate of £160 a year.

Senior Medical Officer: There are 20 appointments of this grade, with salary at the rate of £600 a year, rising by annual increments of £25 to £750 a year, and a duty allowance at the rate of £120 a year.

The Senior Medical Officer of the Gambia draws staff pay at the rate of £120 a year, in addition to duty pay, but is not allowed private practice.

Sanitary Officer: There are seven appointments of this grade, with salary at the rate of £700 a year, rising by annual increments of £25 to £800 a year, and a duty allowance at the rate of £140 a year.

Medical Officer: The salary attached to this grade is at the rate of £400 a year, rising by annual increments of £20 to £500 a year, with duty allowance at the rate of £80 a year. Medical Officers who have served for five years and are recommended for a higher rate of salary are required to take a special course of study for three months. If they obtain satisfactory certificates at the end of the course they are placed, on completing six years' service, on a scale of salary at the rate of £525 a year, rising by annual increments of £25 to £600 a year, with duty allowance at the rate of £100 a year. A Medical Officer who has served for three years on the maximum salary of this scale (£600) without obtaining promotion is eligible for the grant of further annual increments of £25 up to a total maximum salary of £750 a year.

Special appointments: The Director of the Medical Research Institute, Lagos, receives a salary of £600 a year, rising by annual increments of £25 to £800 a year, with a duty allowance of £120 a year. Salary at the rate of £500, rising by annual increments of £25 to £600 a year, is attached to about ten posts (those of Pathologist at Accra, Assistant at the Medical Research Institute, Lagos, and Medical Officers of Health at various places), irrespective of the seniority of the officer holding the appointment. In addition to the duty pay (£100 a year), staff pay at the rate of £100 a year is also attached to these posts; and the holder of the appointment draws half of the staff pay during leave of absence, the remainder being drawn by his locum tenens.

Leave and Passages.—The ordinary tour of residential service is one year, followed by leave with full pay during the voyages to and from England, and for four or two months clear in England, according as the officer is returning for further service in West Africa or not. If an officer is detained beyond the year, additional leave is given with full pay for ten days in respect of each completed month beyond twelve, whether he is returning or not. If he is invalided before the end of the year, the leave with full pay is for the voyages and for ten or five days in respect of each completed month, according as he is returning or not. Leave granted on the understanding that an officer will return is known as "return leave," and any pay drawn in respect of such leave is liable to be refunded if he does not return. Leave may be extended with half pay for a period not exceeding four months on the ground of ill health, or without pay on that or other grounds. Free passages are given to all officers who are granted leave, and free passage is also given on first appointment, subject to the officer signing an agreement under which he is liable to refund its cost if he relinquishes his appointment for any other reason than physical or mental infirmity, or is removed for misconduct, within three years from the date of his arrival in West Africa. Half pay is given during the voyage out on first appointment.

All officers of the Staff, except Principal Medical Officers, Deputy Principal Medical Officers, Provincial Medical Officers, Sanitary Officers, and a few other officers holding special appointments, are at present allowed to take private practice, provided that it does not interfere with the efficient performance of their official duties, but it is within the power of the Governor to withdraw or suspend the privilege in such places and for such periods as he may consider desirable. Private practice does not exist at the majority of stations, and as a general rule, subject to the exigencies of the service, stations where there is private practice are allocated to senior members of the staff.

Pensions and Gratuities.—On attaining the age of 50 years, or after 18 years' service (of which at least 12 must have been residential), an officer is qualified for a pension calculated at one-fortieth of the last annual [2] salary for each year of service. If invalided after a minimum

[2] Except that the pension of an officer who has been promoted within three years of his retirement is calculated on the average of his salary for the last three years.

of seven years' service, he is qualified for a pension calculated at the same rate. If invalided before completing seven years' service, he is qualified for a gratuity not exceeding three-quarters of a month's salary for each six months of service; provided that he has been confirmed in his appointment. For the purpose of calculating the amount of these pensions and gratuities, leave of absence without salary is not counted, while leave with half salary is counted at the rate of one month for every two months of such leave. An addition, representing the value of free quarters, is made to the officer's salary. This addition is as follows: To salaries of £400 a year, an addition of £40; to salaries above £400, but not exceeding £500, an addition of £50; to salaries above £500, but not exceeding £700, an addition of £60; to salaries above £700, but not exceeding £900, an addition of £70; to salaries exceeding £900, an addition of £80. In addition to the ordinary regulations, an officer of the West African Medical Staff enjoys the following special privilege. At the end of nine years (of which not less than six must have been residential) he will be permitted to retire with a gratuity of £1000, or at the end of 12 years (of which not less than eight must have been residential) with a gratuity of £1250. All claims to pensions are, however, forfeited on the receipt of such a gratuity. In the event of an officer dying in the service after completing the period of residence qualifying him for the smaller or the larger of these gratuities, a sum equal to the gratuity in question will be paid to the credit of his estate. Officers are not allowed to take their wives out with them until they have acquired experience of the local conditions, and have obtained the sanction of the Governor. Passages for wives and children are not provided.

Candidates for medical appointments in West Africa are allowed to express a preference for any particular Colony or Protectorate, and their wishes in this respect will be borne in mind and met as far as possible, but they are liable to be posted in the first instance, or transferred afterwards if necessary, to any other West African Colony or Protectorate at the discretion of the Secretary of State. Candidates who wish to be posted to the Northern Provinces of Nigeria should be able to ride. Candidates should on no account apply for, or accept, a West African appointment in the expectation of ultimately being transferred elsewhere, as the number of such transfers is exceedingly small. No applications for transfer can be entertained until an officer has served for five years in the West African Medical Staff, and officers desiring to be transferred must be prepared to find that medical salaries in other Colonies are lower than in West Africa. Only a small proportion of applicants succeed in obtaining a transfer. Officers who may be transferred to pensionable appointments under the Crown elsewhere than in West Africa do not forfeit their claim to pension in respect of their West African service on final retirement, provided they have been members of the Staff for at least 12 months.

Instruction in Tropical Medicine.—Every candidate selected for appointment will, unless the Secretary of State decides otherwise, be required to undergo a course of instruction for two or three months either at the London School of Tropical Medicine, Royal Victoria and Albert Docks, E. (near Connaught Road Station), or at the Liverpool School of Tropical Medicine at the University of Liverpool. The cost of the tuition fees, board, and residence during such instruction, amounting to a maximum of £48 8s. 10d., for three months, will be borne by the Government in the case of the London School; at Liverpool the cost of tuition will be borne by the Government, but candidates must make their own arrangements for board and lodging; an allowance of £2 a week will be paid to them monthly in arrear for this purpose. A daily allowance of 5s. (but no salary) will be paid to each candidate, monthly in arrear, during the course, and may be continued subsequently up to the date of embarkation. These payments must be refunded by the candidate if he declines to accept an appointment in any of the Colonies or Protectorates for which he may be selected, if he fails to obtain a certificate showing that he has satisfied the school authorities, or if he relinquishes the West African service for any other reason than mental or physical infirmity, or is removed for misconduct, within three years of the date of his arrival in West Africa. If at the end of the session there exist no vacancy in the staff to which a candidate can be appointed, he will be placed in a Reserve and granted an allowance at the rate of £200 a year until the occurrence of a vacancy.

Course of study for higher scale of salary.—The approved course of study is the three months' course of the West London Post-Graduate College or the London School of Clinical Medicine, Greenwich, in clinical medicine, clinical surgery, and pathology. Officers are allowed to substitute for this course either the course of study and examination for a recognised diploma or degree in public health, sanitary science, or State medicine; the course of study and examination for a further medical or surgical diploma or degree; or if the Governor, on the recommendation of the Principal Medical Officer, approves—a course of study in some special branch of medical or surgical practice (e.g., ophthalmology, dermatology, genito-urinary diseases), or an advanced course at the London or Liverpool School of Tropical Medicine. Whichever of these courses of study is selected, the necessary tuition and examination fees will be paid by the Colonial Government except in the event of an officer's deciding to enter for a further medical or surgical diploma or degree.

In conclusion it should be added that the West African Medical Staff, from which many British medical officers have been lent to serve with the Allied forces, receive terms and emoluments which compare favourably with other medical services of the Crown. Since the outbreak of war it has been the policy of the Secretary of State for the Colonies to refrain from calling the attention of the medical profession to recent improvements in the pay and prospects of the West African Medical Staff in order that the efforts of the naval and military authorities to obtain an adequate supply of medical officers should not be hampered in any degree. This consideration no longer applies as it has been so widely recognised by all the younger members of the medical profession that the claims of the Navy and Army are paramount.

DENTAL SURGERY.

ANYONE who is on the Medical Register is entitled to practise as a dentist, although he cannot register as such without the special licence; but it is of eminent advantage to take the L.D.S., otherwise few dental appointments at general or special hospitals or dispensaries are available. The subjects beyond those included in the general qualification are—Dental Anatomy and Physiology (Human and Comparative), one course; a separate course of Dental Histology, including the preparation of microscopical sections; Dental Surgery, one course; a separate course of Practical Dental Surgery; a course of not less than five lectures on the Surgery of the Mouth; Dental Mechanics, one course; a course of Practical Dental Mechanics, including the manufacture and adjustment of six dentures and six crowns; Dental Metallurgy, one course; a course of Practical Dental Metallurgy; Practice of Dental Surgery at a recognised school, two years, and a certificate of having been engaged during a period of not less than two years in acquiring a knowledge of Dental Mechanics (this may be obtained by apprenticeship to a duly qualified dental practitioner or in the mechanical department of a recognised dental hospital). The Dental Schools in London are the Royal Dental Hospital of London, the National Dental Hospital, Guy's Hospital Dental School, and the London Hospital Dental School. Most of the large provincial towns, where there are medical schools, have now dental hospitals.

The Registration of Dental Students is carried on at the Medical Council Office in London in the same manner as the existing registration of medical students, and subject to the same regulations as regards Preliminary Examinations. Candidates for a diploma in Dental Surgery must produce certificates of having been engaged during four years in professional studies, including two years' instruction in mechanical dentistry. The two years of instruction in mechanical dentistry, or any part of them, may be taken by the dental student either before or after his registration as a student, but no portion of such mechanical instruction will be counted as one of the four years of professional study unless taken after registration. The recommendations as to the course of study and examinations adopted by the General Medical Council in November, 1909, are under revision by the Council, but consideration of them is postponed until the Departmental Committee on the Dentists Act has reported.

It is necessary for anyone practising Dental Surgery in this country to be on the Register, and no foreign qualifications are recognised, except the Dental Diploma granted in Belgium after examination by the Provincial Medical Commission, provided the holder has obtained the grade of "Candidate in Medicine" at one of the four Belgian Universities. Certain dental qualifications granted in Australia and New Zealand are also registrable. The Royal Colleges of the United Kingdom and ten of the Universities grant degrees or licences in Dental Surgery.

THE REGISTERING BODIES IN DENTISTRY.

The Royal College of Surgeons of England grants a diploma in Dental Surgery under the following regulations, which apply to all candidates who have registered as dental students after Jan. 1st, 1897. Candidates are required to pass three examinations: the Preliminary Science Examination, the First Professional Examination, and the Second Professional Examination. I. Preliminary Science Examination.—This is identical with Part I. of the First Examination of the Examining Board in England. Candidates who commenced professional study on or after Oct. 1st, 1913, must pass the Preliminary Science Examination before commencing the courses required for the Second Professional Examination. II. The First Professional Examination.—The candidate must produce evidence of instruction in Dental Metallurgy and Practical Dental Mechanics. The Examination consists of Part I. (Mechanical Dentistry) and Part II. (Dental Metallurgy), the examination in Dental Metallurgy being by written paper. The parts may be taken together or separately. III. The Second Professional Examination.—This is divided into two parts: (*a*) the General, (*b*) the Dental. The General part must be passed before the Dental portion. The instruction is obtained partly at a General Hospital and partly

at a Dental Hospital.—The Second Professional Examination consists of: Part I., General Anatomy and Physiology, General Surgery and Pathology; Part II., Dental Anatomy and Physiology, Dental Pathology and Surgery, and Practical Dental Surgery. There is a written and *vivâ voce* examination in each part and a practical examination as well in Part II. Exemption from the Preliminary Science Examination is granted to candidates who have passed an Examination in Chemistry and Physics for a degree in Medicine at a University in the United Kingdom, in India, or in a British colony. Exemption from Examination in Anatomy and Physiology is granted to candidates who have passed the Second Examination of the Examining Board in England or the corresponding Examination for any degree or qualification in Medicine or Surgery registrable under the Medical Act of 1886. Exemption from Examination in General Surgery and Pathology is granted to candidates who have passed the Examination in Surgery of the Examining Board in England or the corresponding Examinations of the Colleges and University above mentioned. The fee for the diploma is 20 guineas, and is payable as follows:—Preliminary Science Examination, 3 guineas; First Professional Examination, 7 guineas; Second Professional Examination, 10 guineas. Synopses of examinations and all further information can be obtained from the Secretary, Examination Hall, Queen-square, London, W.C. 1.

Royal College of Surgeons, Edinburgh.—Regulations giving a list of Preliminary Examinations recognised for obtaining the Licence in Dental Surgery, as well as of the subjects of the Professional Examinations, may be obtained from Mr. D. L. Eadie, Clerk to the Royal College of Surgeons, at 50, George-square, Edinburgh. Candidates must produce certificates of having, subsequently to the date of registration, been engaged for four years in professional studies and of three years' instruction in Mechanical Dentistry from a registered dental practitioner, except in the case of previously registered medical practitioners, when two years will be considered sufficient. Candidates must also have attended a course of instruction at a University or in an established school of medicine or in a provincial school specially recognised by the College as qualifying for the Diploma in Surgery. In addition they will be required to have attended in a recognised dental hospital, or with teachers recognised by the College, special courses of lectures and instruction in Anatomy and Physiology (Human and Comparative), Surgery, Pathology, Materia Medica, Dental Histology, and Practical Dental Mechanics and Metallurgy; two years' attendance at a dental hospital or the dental department of a general hospital recognised by the College. Practical instruction in Mechanical Dentistry from a registered Dentist, or in the Mechanical Department of a recognised Dental Hospital and School, for *three* years. Candidates who have passed the First and Second Examinations for the Triple Qualification will be exempt from the First Dental Examination, and will have the advantage of being admissible either to the Final Dental Examination or to the subsequent Examination for the Triple Qualification, or to both. But the First Dental Examination will not be held as equivalent to the First and Second Triple Examinations, and will admit to the Final Dental Examination only. Candidates who are Licentiates of this College or who may be registered medical practitioners will be required to produce certificates of attendance on the special subjects only and will be examined in these only for the dental diploma. First Professional Examination: The candidate must have attended the required courses. The examination embraces (1) Chemistry and Physics; and (2) Anatomy and Physiology. The fee is £5 5*s*. for the complete examination, and £3 3*s*. is payable for each division. In all cases of rejected candidates the fee for re-entry is £3 3*s*. Second Examination: The candidate must have attended the remaining courses of the curriculum, must produce certificates showing that he is 21 years of age, and must pay a fee of £10 10*s*., for re-entry £5 5*s*. The examination embraces (1) Surgery and Medicine; and (2) the special subjects of Dental Anatomy and Physiology, Dental Surgery and Pathology, Dental Materia Medica, Dental Mechanics and Dental Metallurgy, with a practical as well as the written and oral examinations in the subjects of Dental and Oral Surgery, Pathology, and Mechanics. The candidate will be tested in the Treatment of Dental Diseases, in Operative Dentistry, the Administration of Anæsthetics, Orthodontics, and in Prosthetic and Mechanical Dentistry. Candidates who claim exemption from the First Dental Examination on the ground of having passed the First and Second Triple Qualification Examinations or other recognised examinations will, before being admitted to the Second Dental Examination, be required to pay the total fee of £15 15*s*. payable for the dental diploma. Fees and schedules must be lodged with the Clerk not later than one week before the examination.

Royal Faculty of Physicians and Surgeons of Glasgow.—The regulations as to certificates, curriculum, number, and subjects of examinations, fees, &c., are in effect similar to those of the Royal College of Surgeons of Edinburgh, but embrace Dental Bacteriology. Candidates can enter for the First Examination in three divisions, the first embracing Physics and Chemistry, the second Dental Metallurgy and Dental Mechanics, and the third Anatomy and Physiology. The examination in Dental Mechanics is practical; and there is at the Final Examination an examination in Practical Dentistry conducted in a dental hospital. Copies of regulations, &c., to be obtained from Mr. Walter Hurst, Registrar, Faculty Hall, 242, St. Vincent-street, Glasgow.

Royal College of Surgeons in Ireland.—Candidates for the Licence in Dental Surgery are required to pass two professional examinations. Before the First Examination the candidate must produce evidence of having attended courses in Theoretical and Practical Chemistry, including Metallurgy and Physics, at a recognised institution; of having been registered as a medical or dental student by the General Medical Council; and of having attended courses of instruction in the following subjects at a recognised school of medicine: (*a*) Anatomy Lectures; (*b*) Dissections with Demonstrations; (*c*) Physiology, including Dental Physiology; (*d*) Practical Physiology and Histology, including Dental Physiology and Histology, Human and Comparative. Before the Final Dental Examination the candidate must have been engaged during a period of two years in acquiring a practical familiarity with the details of Mechanical Dentistry under the instruction of a registered dentist, or under the direction of the superintendent of the Mechanical Department of a recognised Dental Hospital, and have attended, at institutions recognised by the College for the purpose, the following courses of instruction: (*a*) Dental Surgery and Pathology, Orthodontia, and the Materia Medica and Therapeutics applicable to Dental Surgery. Lectures. Two courses. (*b*) Dental Mechanics. Lectures. Two courses. (*c*) Dental Anatomy. Lectures. One course. (*d*) The practice of a Dental Hospital, or of the Dental Department of a General Hospital. Two years. He must also have attended Clinical instructions at a recognised General Hospital during the ordinary teaching sessions (nine months), and have been engaged during four years in the acquirement of professional knowledge subsequently to the date of registration as a medical or dental student. One year's *bonâ-fide* apprenticeship with a registered dental practitioner, after being registered as a medical or dental student, may be counted as one of the four years of professional study. He must be 21 years of age.

In the First Dental Examination candidates will be examined in (A) Physics and Chemistry, including Practical Chemistry and Metallurgy. (B) Anatomy, Physiology, and Histology—General and Dental. All the subjects may be passed at the same time, or they may be passed in two groups, (A) and (B). The examination is partly written, partly *vivâ voce*, and partly practical.

In the Final Dental Examination candidates will be examined in General Pathology, Medicine, and Surgery; Dental Surgery, and Dental Pathology, with the Materia Medica and Therapeutics applicable to Dental Surgery; Dental Mechanics and Metallurgy; Orthodontia. Candidates must pass in all the subjects at one examination. The examination is partly written, partly *vivâ voce*, and partly practical, and includes the examination of patients and the performance of dental operations. Candidates are required to provide their own instruments and gold for filling. The First Dental Examination will commence on the first Mondays in the months of February, May, and November. The Final Dental Examination will commence on the second Mondays in the months of February, May, and November. The total fee for the Diploma in Dental Surgery

is 20 guineas. Candidates must pay the fees for examinations from which they are exempted, unless when such exemptions have been granted in virtue of examinations passed before the Conjoint Board in Ireland.

University of Birmingham.—The teaching of Dentistry is undertaken by the University acting in association with the Birmingham Dental Hospital and the Birmingham Clinical Board. The instruction at the Dental Hospital is carried out under the direction of the University Dental Clinical Board, so that students may fully qualify themselves for the Dental Diploma (L.D.S.) of this and other universities and licensing bodies. There is a special and well-equipped Dental Museum and Laboratory. An Entrance Exhibition, value £37 10*s.* is awarded annually at the commencement of the winter session. The following are the regulations for Degrees in Dentistry:—1. The degrees conferred by the University are those of Bachelor and Master of Dental Surgery (B.D.S. and M.D.S.). 2. All candidates for these degrees must pass the same Matriculation Examination as that required from candidates for Medical Degrees. 3. The degree of Bachelor of Dental Surgery is not conferred upon any candidate who has not obtained a Licence in Dental Surgery. The candidate is not eligible for the degree until a period of 12 months has elapsed from the passing of his examination for the Licence in Dental Surgery. Of this period at least six months must be spent in the dental department of a general hospital approved by the University. 4. *A.* In addition to the Licence in Dental Surgery the candidate must produce evidence that he has attended the courses required by medical students of the University in the following subjects and passed the Examinations held in the same for Medical and Surgical Degrees: (*a*) Chemistry and Practical Chemistry, (*b*) Physics and Practical Physics, (*c*) Elementary Biology, (*d*) Anatomy and Practical Anatomy, and (*e*) Physiology and Practical Physiology. *B.* That he has passed the class examinations in: (*f*) One Special Course of Lectures on Medicine, (*g*) One Special Course of Lectures on Surgery, and (*h*) Pathology and Bacteriology. *C.* That he has attended courses and passed the class examinations in: (*k*) Dental Histology and Patho-Histology, (*l*) Comparative Dental Anatomy, and (*m*) Dental Surgery and Prosthetic Dentistry. *D.* That he has received instruction in the Clinical Examination of living cases at the dental department of a general hospital for a period of not less than six months. 5. The Final Examination will deal with the subjects in Classes *C* and *D*. 6. On the expiration of 12 months from the date of passing the Examination for the Degree of Bachelor of Dental Surgery, the candidate will be eligible for that of Master of Dental Surgery. 7. For this degree candidates will be required to submit a thesis containing original work and investigations in some subject connected with Dentistry, which thesis shall be submitted to examiners to be nominated by the Dental Advisory Board.

University of Bristol.—Candidates for the degree of Bachelor of Dental Surgery must be not less than 21 years of age and shall have pursued the courses prescribed by University regulations during not less than five years, of which three shall have been passed in the University, and shall have been registered as dental students by the General Medical Council. All candidates for the degree of B.D.S. are required to satisfy the examiners in the several subjects of four examinations. The First Examination: The subjects are Chemistry, Physics, and Zoology, and the curriculum extends over one year.* The Second Examination: The subjects are Dental Mechanics, Dental Metallurgy, and Dental Materia Medica, and the candidate shall produce evidence of having served for two years an approved pupilage in Dental Mechanics. The Third Examination: The subjects are Anatomy, Physiology, and Histology, Dental Anatomy, and Dental Histology. The Final Examination: The subjects are Medicine and Surgery, Dental Surgery (including Prosthetics), Operative Dental Surgery, and Dental Bacteriology. Degree of Master of Dental Surgery: Candidates shall be Bachelors of the University, shall present a Dissertation on some subject of Dental Surgery to be approved by the Examiners, and pass an examination in Dental Surgery. Diploma in Dental Surgery: Candidates need not be undergraduates, but shall be registered dental students before being admitted to any professional examination; the curriculum extends over four years. A two years' pupilage in Mechanical Dentistry is required, and four examinations must be passed, the subjects of which differ only from those of the B.D.S. in that Zoology is not required for the First Examination, and Medicine is not required for the Final Examination. Candidates who are already registered medical practitioners shall be further exempted from study and examination in Physics and Chemistry, Anatomy, Physiology and Histology, Medicine, and General Surgery.

University of Durham.—Every candidate for the Licence in Dental Surgery must be registered as a dental student. There are four Examinations. The subjects are:—*First:* (*a*) Chemistry; and (*b*) Physics. *Second:* (*a*) Dental Mechanics, Theoretical and Practical; (*b*) Dental Metallurgy. *Third:* (*a*) Anatomy; (*b*) Physiology and Histology; (*c*) Dental Anatomy and Dental Histology; and (*d*) Dental Materia Medica. *Final:* (*a*) Surgery; (*b*) Dental Surgery, including Prosthetics and Orthodontia; (*c*) Operative Dental Surgery, Practical Examination; and (*d*) Dental Pathology and Bacteriology. A candidate before presenting himself for examination is required to furnish certificates of instruction in the following subjects, attended after registration as a dental student at recognised Colleges or Schools:—*First Examination:* Chemistry and Physics. *Second Examination:* Dental Mechanics and Dental Metallurgy. *Third Examination:* Anatomy, with Dissections; Physiology; Histology; Dental Anatomy and Physiology; Dental Histology; and Dental Materia Medica. *Final Examination:* Dental Hospital Practice (two years); General Hospital Practice (nine months); Medicine Lectures (two terms); Surgery Lectures (two terms); Dental Surgery and Pathology (a course of not less than 20 lectures); Dental Bacteriology (three terms); Operative Dental Surgery (not less than 12 lectures); and Anæsthetics (a course of not less than one month).

Before admission to the Final Examination each candidate must furnish evidence (1) of having attained the age of 21 years; (2) of having undergone a three years' pupilage in Mechanical Dentistry with a registered dentist; and (3) of having been engaged in professional study for at least four years subsequent to registration as a dental student. The examinations will be held concurrently with the medical examinations, and the fees payable by candidates are as follows: First Examination, £2 10*s.*; Second Examination, £2 10*s.*; Third Examination, £3 10*s.*; Final Examination, £3 10*s.*; fee for Licence, £3; total, £15. For re-examination: First Examination, £1 10*s.*; Second Examination, £2; Third Examination, £2 (in one part only, £1); Fourth Examination, £2. The practical examinations in dentistry will be conducted at the Newcastle Dental Hospital.

University of Leeds.—The degrees in Dental Surgery are Bachelor of Dental Surgery (B.Ch.D.) and Master of Dental Surgery (M.Ch.D.). All candidates for the degree of Bachelor of Dental Surgery shall be required to have passed the Matriculation Examination, to have pursued thereafter approved courses of study for not less than five academic years, two of such years at least having been passed in the University subsequently to the date of passing Parts I. and II. of the First Examination, and to have completed such period of pupilage or hospital attendance, or both, as may be prescribed by the regulations of the University. No candidate will be admitted to the degree who has not attained the age of 21 years on the day of graduation. The classes in the Department of Dentistry begin on Sept. 30th. The instruction in the Preliminary subjects of Chemistry, Physics, and Biology are given at the University in College-road. The classes in the other subjects and the systematic courses in Dental subjects are held in the School of Medicine of the University in Thoresby Place. The clinical instruction is given in the Dental Department of the Leeds Public Dispensary, which is affiliated with the University and recognised by the Royal College of Surgeons. Applications for the prospectus should be made to the Dean of the Faculty of Medicine.

University of Liverpool (*Liverpool Dental Hospital Clinical School and School of Dental Surgery*).—The University grants a Licence in Dental Surgery (L.D.S.) and degrees in Dental Surgery (B.D.S. and M.D.S.). The courses of systematic instruction are given in the University buildings, five minutes' walk from the Dental Hospital. The two institutions are now closely associated, and the manage-

* Candidates who have passed the Higher School Certificate approved by the Board of Education in these subjects will not be required to sit for the first examination for either the B.D.S. or the L.D.S., and will be regarded as having completed one year of study.

ment of the curriculum is in the hands of the Board of Dental Studies. The Dental Hospital, covering a site of 672 square yards, was opened in March, 1910, equipped in each department with every modern accessory and receives constant additions. The laboratory is in charge of a skilled dental mechanic under the supervision of the Director of Dental Education and Dental Staff, and students are able to undertake at the hospital the whole of their training in Mechanical Dentistry. The times of the lectures at the University are arranged to meet the convenience of students, thus allowing the maximum time for attendance upon Dental Hospital practice. The staff of the hospital includes 12 Dental Surgeons, three Demonstrators, six Anæsthetists, three House Surgeons, and a Curator. Fees: The composition fees are as follows: Licence course (L.D.S.): Composition fee £58 10*s*., for the course of other licensing bodies £61 10*s*., payable in two equal instalments, the first on entry, the second 12 months later. Two years' instruction in Mechanical Dentistry (pupilage) and two years' Dental Hospital Practice (combined), £100, or in two instalments of £52 10*s*. each. Degree course (B.D.S.): £67 10*s*. for all lectures (including Chemistry, Physics, and Zoology) in three instalments. Two years' dental hospital, £21; general hospital practice, £10 10*s*.; three years' mechanical instruction (pupilage), £105. Further information may be had from the Director of Dental Education, Mr. W. H. Gilmour.

University of Manchester.—In the University of Manchester the Dental Department forms an integral part of the Faculty of Medicine. This contains a series of laboratories, lecture rooms, and museums which will bear comparison with those of any other school in the kingdom, and the fullest opportunities for study are offered to students preparing for any of the professional examinations. Instruction adapted to the requirements of students preparing for the B.D.S. Degree and the Dental Diplomas of the University, the Royal College of Surgeons of England, and of other licensing bodies is given during the Winter and Summer Sessions both at the University and at the Dental Hospital of Manchester adjoining the University. The required general hospital practice is taken at the Manchester Royal Infirmary. Women students are admitted to the classes in the Dental Department, and for them common rooms are provided. The composition fee for candidates for the University degree of Bachelor of Dental Surgery is 60 guineas, payable in two equal instalments at the beginning of the first and third years of studentship. The composition fee for candidates for the University Diploma in Dentistry is 55 guineas, payable in two equal instalments at the beginning of the first and third years of studentship. The composition fee for candidates for the L.D.S. of England is 60 guineas, payable in two equal instalments at the beginning of the first and third years of studentship. Students who have already served their apprenticeship with a private practitioner, and who propose to complete the final portion of their attendance at the University and at an approved dental hospital, will be required to pay the composition fee in two equal instalments at the commencement of the first and second years of studentship. The composition fee does not include the hospital fees, the examination fees, the fee for the conferment of the degree or the diploma, the registration fee, nor the fees for chemicals and chemical apparatus.

National University of Ireland.—This University grants the degrees of Bachelor of Dental Surgery and a degree of Master of Dental Surgery. A student may not be admitted to the Degree of Bachelor of Dental Surgery unless a period of not less than four years shall have elapsed from the date of his matriculation, during which period he must have pursued an approved course of study of not less than nine terms. For the degree of Bachelor of Dental Surgery candidates must pass four examinations, the first two being the same as those for the first and second examination in Medicine. The subjects of the third examination are Dental and Practical Pathology, Dental Surgery and Dental Medicine, the subjects of the fourth being Dental Surgery and Pathology, Dental Mechanics, Operative Dentistry, Orthodontia, and Dental Materia Medica. A candidate for the degree of B.D.S. must produce evidence of having been engaged during a period of two years in acquiring a practical familiarity with the details of Mechanical Dentistry under the instruction of a registered dentist, or under professional direction in the mechanical department of a dental hospital approved by the University. A portion of or the entire period may be served before commencing study for the degree of B.D.S., but no portion so taken prior to commencement of study shall count as part of the four years of Dental Study. The degree of Master of Dental Surgery will not be granted until three years after the B.D.S. has been obtained.

TEACHING INSTITUTIONS IN DENTISTRY.

See also under Universities of Birmingham, Leeds, Liverpool, and Manchester above.

LONDON.

Royal Dental Hospital of London, School of Dental Surgery, Leicester-square.—A school of the University of London, and women are now admitted as students and are eligible for all hospital appointments and school prizes.—The school provides the special dental education required by the Royal College of Surgeons for the Licence in Dental Surgery. The general part of the curriculum may be taken at any general hospital. The hospital is open from 9 A.M. to 5 P.M., there being one staff for the morning and another for the afternoon of each day. Pupils are received for the training in dental mechanics recognised by the curriculum. The demonstrators at the commencement of each session give a course of lectures on Operative Dental Surgery. The six house surgeoncies are held for six months each and are open to all qualified students. The lecturers, in addition to their lectures, give special demonstrations on the Microscopy of Dental Anatomy and Dental Surgery. The lecturer on Dental Mechanics also gives practical demonstrations in the laboratory. There is an Entrance Scholarship in Chemistry and Physics of the value of £50. One Entrance Scholarship in Dental Mechanics and Metallurgy value £25, open to pupils of the Hospital only. One Entrance Scholarship of £25 in Dental Mechanics, open to pupils of private practitioners. The Saunders Scholarship of £20 awarded to second year students. The Storer Bennett Research Scholarship for Scientific Research in any branch of Dental Surgery, value £50, is awarded triennially. The Alfred Woodhouse Scholarship of £35 and the Robert Woodhouse Prize of £10 for Practical Dental Surgery. Prizes and certificates are awarded by the lecturers for the best examinations in the subjects of their respective courses, at the end of the summer and winter sessions. Fee for two years' hospital practice required by the curriculum, including lectures, £53 3*s*. in one payment, or £55 13*s*. in two yearly instalments. The curriculum requires two years to be passed at a General Hospital; the fee for this is about £60. Both hospitals can be attended simultaneously. For the lectures in Chemistry and Physics for the Preliminary Science Examination £10 10*s*. The fee for the instruction in Dental Mechanics and the two years' hospital practice required by the curriculum is £150 if paid in one instalment, or 150 guineas if paid in three equal instalments. The fee for tuition in Dental Mechanics is 50 guineas per annum; for one year's hospital practice £21. The Winter Session opens on Oct. 1st.

University College Hospital Dental School.—Corner of Great Portland and Devonshire-streets, W.—Students are entered as students of University College Hospital and, as such, attend the classes of Chemistry, Physics, Anatomy, and Physiology in University College, which is a few minutes' walk from the Dental Department in Great Portland-street, hitherto known as the National Dental Hospital. The First Dental School to admit Women Students. Practical courses to comply with the R.C.S. curriculum are held. Clinical Lectures and Demonstrations are given, and each student on entering passes through a preliminary course under a demonstrator. Two Entrance Exhibitions, of the value of £40 and £20, are open for competition. Prizes are open for competition at the end of each course of lectures. Fee for the full curriculum of four years, in all subjects required by the Royal College of Surgeons, 180 guineas, or in four instalments of 62, 41, 41, 41 guineas. A composition fee for medical men has been arranged covering the Two Years' Mechanical Work, Hospital Practice, and Lectures required by the curriculum of the Royal College of Surgeons amounting to 120 guineas. Hospital Practice to registered practitioners by special permission of Committee,

12 months, £15 15s. The Calendar, containing full information as to Lectures, Fees, Prizes, and Subjects for the Entrance Exhibitions may be had on application to the Dean, who attends the Hospital on Tuesday mornings at 10.30.

Guy's Hospital.—The work of the Dental Department begins daily at 9 A.M. both in the extraction rooms and in the conservation room. The Extraction Rooms: A new Dental Out-patient Department has been provided. There is ample accommodation for ordinary extractions and anæsthetic extractions, together with waiting- and retiring-rooms. Patients are admitted between 8.45 and 9.30 A.M., and are seen by the dental surgeon for the day, the dental house surgeon, the assistant dental house surgeon, and the dressers. The Conservation Room is open from 9 A.M. till 5 P.M. It has recently been entirely remodelled and greatly enlarged, giving a floor space of over 6000 square feet. It affords accommodation for about 100 dental chairs, with the necessary equipment of the most modern type, for the use of the Dressers, who, under the supervision of the Staff, perform the various operations of Dental Surgery. The members of the staff attend every morning and afternoon to give demonstrations and otherwise assist students in their work in the Conservation Room and Mechanical Laboratory. The Probationers' Laboratory is supervised by two of the staff demonstrators, and instruction is given in operative dentistry on a "mannikin" to students during their first three months of study. Pupils in Dental Mechanics are received, and a graded, systematic, and full course of instruction, extending over two years, is carried out. Dental students have the opportunity of attending at this hospital the whole course of instruction required by the examining board for the L.D.S. Eng.—viz., two years' pupilage in dental mechanics, the special lectures and practice of the Dental Department, and the general lectures and practice of the Medical School. The fees for these two courses may be paid separately or together, or they may be combined with the fees required to be paid for the course for a medical diploma. Students who enter for a medical as well as a dental diploma are allowed to pursue their study of Dentistry during any period of their medical course most convenient to themselves without further charge. Four Entrance Scholarships in Dental Mechanics of the value of £20 each are offered for competition annually, two in September and two in April, and prizes of the aggregate value of £47 are awarded for general proficiency and for skill in Practical Dentistry. A Dental Travelling Scholarship of the value of £100 is awarded every second year. Dental students are eligible for admission to the Residential College and enjoy the privileges of students in the Medical School. Application should be made to the Dean of the Medical School.

London Hospital.—This school is a part of the London Hospital and Medical College, and is fully equipped on the most modern lines and with the latest appliances. It provides a complete curriculum in all subjects for the L.D.S. Diploma, and is admirably adapted for the purpose of teaching. The Conservation Room is well lighted and ventilated and fitted with pump chairs of the latest pattern; the fountain spittoon at every chair has been specially designed and has attached to it a saliva ejector, hot and cold water, compressed air, gas and electric current, also a swing bracket to carry the students' cabinet. Electric sterilisers are supplied in each department and motor engines where required. The School possesses in addition to the Theatres, Laboratories and Museums in the College, a special Museum of Dental Anatomy and Surgery, Operative Dentistry, Prosthetic and Extraction Rooms, and Laboratories for Practical Dental Metallurgy and Dental Prosthesis. A systematic course of instruction in Dental Prosthesis is arranged for pupils. The up-to-date Laboratory contains every modern apparatus and is in charge of a skilled curator and his assistants. Connected with the Medical College and Dental School are a Library, Athenæum, Clubs' Union, Dining Hall with moderate tariff, Students' Hostel, and an Athletic Ground. For full particulars as to fees and course of study advised apply to the Dean, Professor William Wright, who will be glad to make arrangements for anyone wishing to see the Dental School and Medical College.

The above arrangements are subject to revision in consequence of circumstances arising out of the war.

London (Royal Free Hospital) School of Medicine for Women.—Full courses are arranged for women students for the study of dentistry, and in preparation for the Licence in Dental Surgery of the Royal College of Surgeons of England, at the London (Royal Free Hospital) School of Medicine for Women, in conjunction with the London Dental Hospital, Leicester-square, and the National Dental Hospital, Great Portland-street, W. The course is arranged as follows: First and second years: Chemistry, Physics, and Dental Mechanics. Third, fourth, and fifth years: Anatomy, Physiology, and Special Dental Courses, Courses in Medicine and Surgery, General Hospital Course, Dental Hospital Course. The combined fees at the London School of Medicine for Women and the National Dental Hospital are £180 if paid in one sum on beginning the course, or £191 if paid in three annual instalments. Bursary: The Council of the School will award annually (until further notice) an "Agnes Guthrie" Bursary of the value of £50 to a student fulfilling the required conditions, who enters for the full dental course. Candidates are required to send in applications on or before July 1st, to the Warden and Secretary, from whom a prospectus of the School and all particulars can be obtained.

PROVINCIAL.

Birmingham Dental Hospital.—The Dental Hospital was founded in 1858, and was recognised by the Royal College of Surgeons in 1880 for the teaching of Dental Students. Having an annual attendance of about 16,000 patients, it affords every advantage for students about to enter the profession to acquire a thorough practical knowledge, as required by the Medical Council. The present Hospital was opened on July 6th, 1905. It has accommodation for 50 students. The equipment is in accordance with the most modern requirements for the efficient teaching and practice of Dental Surgery. The operations performed annually average 35,000, including 5000 gold and other fillings, and many cases of crowns, bridges, porcelain inlays, and regulations. By arrangements with the Birmingham University and with the General and Queen's Hospitals the entire course of Lectures, Hospital Practice, &c., may be completed for an inclusive fee of £96 15s., or including Mechanical Pupilage, £186. The instruments and materials necessary for Hospital Practice cost about £28. The Composition Fee for the courses required for the L.D.S. of the University, or any of the Corporations alone, is £60, payable in two annual instalments at the commencement of the first and second years; that for the courses required for the L.D.S. and the Degree in Dentistry of the University is £75; that for the L.D.S. in combination with the M.R.C.S. and L.R.C.P. is £85; and that for the M.B., Ch.B., and B.D.S. is £95. All of these composition fees are payable in two annual instalments at the commencement of the first and second years. Each of these fees covers the cost of the courses given at the University for the qualifications indicated, but does not include fees for Hospital teaching. For two years' dental hospital practice the fee is 20 guineas, payable in two instalments of 10 guineas each at the commencement of the first and second (hospital) years respectively. For two years' mechanical pupilage, 85 guineas, which may be paid in two annual instalments of 50 and 35 guineas respectively; mechanical pupils may join for a probationary period of one month, fee 5 guineas, which is deducted upon payment of the full amount. For general surgical hospital practice, lectures, and demonstrations: Surgery, two winters, £10 10s. One Entrance Scholarship is offered annually of the value of £37 10s. It is awarded to the student who, entering for the Dental Degree of the University in October, or having entered not earlier than the previous April, shall pass the best examination in the subjects studied during his apprenticeship. Candidates must be under the age of 21 years. Application for admission, together with a certificate of birth, must be sent to the Dean of the Medical Faculty, Mr. W. Thompson Madin, on or before Oct. 15th.

Leeds Public Dispensary.—The Dental Department of the Leeds Public Dispensary is fully equipped to provide training for Dental Students, and affords every opportunity for the student to prepare for any of the Dental Degrees or Diplomas. The Demonstrator of Operative Dental Surgery instructs students during their probationary course. At the completion of this training students have patients allotted to them by the Demonstrator, and have

every opportunity of acquiring knowledge from the members of the Staff, two of whom are in attendance each day. The following prizes are awarded:—First year Students, value 2 guineas. Operative Dental Surgery Prize, value 5 guineas. Two prizes in Prosthetic Dentistry: (*a*) a prize, value 2 guineas, for first-year pupils; (*b*) a prize, value 5 guineas, open for competition to all Students. Extraction prize, value 2 guineas, open for competition to all Students. A prize in Orthodontics, value 5 guineas, is open to all students. Warden: Mr. Stephen D. Hey, to whom all communications should be addressed.

Dental Hospital of Manchester.—This Hospital is in association for teaching purposes with the University of Manchester and the Royal Infirmary, and is in the centre of a very large population. Courses of study are provided to meet the requirements of the various examining bodies, including those of the University of Manchester for the qualifications L.D.S. and B.D.S., and the L.D.S. of the Royal College of Surgeons of England. Clinical instruction is given by the members of the staff and by the house surgeons and demonstrators, and also by the honorary anæsthetists in the administration of nitrous oxide gas; a special class in anæsthetics is conducted by the clinical tutor in that subject.

A Travelling Scholarship, value £100, will be awarded from time to time. Ten prizes, varying in value from £2 to £8, are awarded annually.

For the whole course of hospital instruction for the L.D.S. (including two years' mechanical training) the fee is £100, or if paid in instalments £105. For the two years' Operative Course only, £21, or if paid in two instalments 21 guineas. For the whole course of hospital instruction for the B.D.S. degree (including mechanical training), £130, or if paid in instalments 130 guineas. Additional practice in Dental Mechanics may be taken by pupils who have already received their mechanical training elsewhere, at a fee of £20 for six months.

All the courses of instruction are open to women students.

Copies of the Prospectus will be forwarded on application to Mr. J. Hilditch Mathews, Dean.

Newcastle-upon-Tyne Dental Hospital and School.—This Hospital is centrally situated (within five minutes of the various colleges, infirmary, and railway station); the rooms are well lighted and thoroughly equipped for carrying on the work. Dental surgeons and an anæsthetist attend each morning. A tutorial dental surgeon is also in attendance. The Composition Fee for the special Dental Lectures and Dental Hospital Practice is £45 3*s.* if paid in one sum, or £46 4*s.* if paid in two instalments of £23 2*s.* The Composition Fee for the Lectures at the Colleges of Medicine and Science is 40 guineas; in addition to this there is a library and an athletic fee. Particulars of the fee for General Hospital Practice may be obtained from the Senior House Physician, Royal Victoria Infirmary, Newcastle-upon-Tyne. Medals and Certificates of Merit are granted to students showing certain standards of proficiency in the various classes at the Dental School. The prospectus of the Dental Hospital and School, containing full information, may be obtained from either Mr. J. T. Jameson, 12, Windsor-crescent, Newcastle-upon-Tyne, Dean, or Mr. James Coltman, 13, Ellison-place, Newcastle-upon-Tyne, Vice-Dean.

Devon and Exeter Dental Hospital, 24, Southernhay, West, Exeter.—Established 1880.—The hospital is open on Tuesdays, Wednesdays, and Thursdays, and patients are admitted between the hours of 9 and 11 A.M. Students attend the practice of the hospital under the control of the medical officers. Honorary treasurer, Mr. J. M. Ackland; secretary, Mr. Albert G. Littlejohn.

SCOTLAND.

The Incorporated Edinburgh Dental Hospital and School.—The Edinburgh Dental Hospital and School is located in a spacious and well-equipped building at 31, Chambers-street and offers special advantages to dental students. The General Courses required for the Dental Diploma may be taken in the Medical School of the Royal Colleges of Physicians and Surgeons or in the University schools. The hospital attendance and clinical instruction are taken at the Royal Infirmary. The University, Medical Schools, and Royal Infirmary are within three minutes' walk of the Dental Hospital. The special courses are taken in the hospital. The Dental Hospital practice, extending over two years, affords a student ample opportunity for a full acquaintance with every branch of dentistry. The hospital admits a limited number of indentured pupils. They receive their instruction in Mechanical Dentistry concurrently with the general and special courses. A premium of 60 guineas is payable with each such pupil. The practice and lectures of the hospital are recognised by, and qualify for, all the Licensing Boards. The cost of the hospital outfit of instruments is included in the Dental Hospital fee of £31 10*s.* The minimum cost of classes and Diploma for the whole course of dental instruction amounts to £93 12*s.* Those students who desire to take a Medical and Surgical Diploma in addition to the L.D.S. have in this school admirable facilities for so doing. The triple qualification of the Royal College of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow is recommended. The minimum cost of Professional Education, the Triple Qualification, and the Licence in Dental Surgery amounts to £167 14*s.* Further particulars can be obtained from the Dean, Mr. W. Guy.

Incorporated Glasgow Dental Hospital and School, 158, Renfrew-street, and 15, Dalhousie-street, Garnethill, Glasgow.—Lectures will be delivered on the following subjects: Dental Mechanics, Dental Metallurgy, Dental Anatomy and Physiology, Dental Surgery and Pathology, Anæsthetics, Operative Technique, Dental Bacteriology, Operative Dental Surgery, Dental Histology, Orthodontia, and Crown and Bridge Work. Fees for two years' hospital practice £18 18*s.* Composite fee for Lectures and Hospital Practice £40. The hospital is opened daily from 5 to 7 P.M. (Saturdays excepted). Students may only enrol during the months of April or October. Prospectus may be had from the Secretary, D. M. Alexander, 186, St. Vincent-street, Glasgow.

Glasgow Royal Infirmary (Dental Department).—Mr. W. Taylor attends at the Royal Infirmary at 9 A.M. on Wednesdays and other days as arranged, and gives a course of instruction in Dental Surgery. The following course in the curriculum can be taken at St. Mungo's College: Anatomy, six months; Practical Anatomy, nine months; Physiology, six months; Chemistry, six months; Practical Chemistry with Metallurgy, three months; Surgery, six months; Medicine, six months; Materia Medica, three months; Clinical Surgery, six months; Dental Surgery, six months, and attendance for two years on the dental department of the hospital. The attendance on the Dental Clinic is free to students of the hospital.

IRELAND.

Incorporated Dental Hospital of Ireland, Lincoln-place, Dublin.—All Dental Students who have passed their First Dental Examination in the Royal College of Surgeons in Ireland (or an equivalent examination or examinations) are admissible to the Clinical Instruction of the Hospital. In addition to Clinical Instruction and Special Demonstrations, courses of lectures are given at the hospital on Dental Surgery and Pathology, Mechanical Dentistry, the Administration of Anæsthetics, Orthodontia, Dental Anatomy, and Dental Materia Medica. Practical instruction is also given in Anæsthetics. In addition to the longer courses of hospital attendance, courses of three months' duration will be given to surgeons intending to practise in the Colonies or remote country districts, or in the Army and Navy.

Fees.—Dental Hospital Practice (each year), £12 12*s.*; Lectures, £6 6*s.*; Composition Fee, £15 15*s.* per annum. In addition to the above courses registered dentists who are members of the British Dental Association will usually be permitted to take out a three months' course for a fee of 6 guineas. The course in practical Dental Mechanics can be taken in the Hospital Laboratory. Further particulars can be obtained from the Dean.

UNIVERSITY OF BRUSSELS.—This University grants its M.D. degree to such foreign candidates as are already duly qualified in medicine and surgery in their own countries, provided they pass the three examinations imposed. For the present, owing to the war, examinations at the University are for internal students only.

DIPLOMAS IN STATE AND TROPICAL MEDICINE.

As usual we include in the Students' Number of THE LANCET an epitome of the instruction given at various universities and centres of medical education to medical men desiring to obtain diplomas in sanitary science, public health, State medicine, and tropical medicine. During the war some of this work has been suspended, for both teachers and taught being already registered medical men have been required in other spheres. But the public health of the country and of our colonial dependencies must be maintained, for this is one of our greatest guarantees of ultimate success in the struggle of endurance; and the machinery for the special education of public medical servants exists, as appears from what follows, and is ready to resume full activity at the earliest opportunity.

Resolutions, designed with a view of ensuring "the possession of a distinctively high proficiency, scientific and practical, in all the branches of study which concern the public health," have been adopted at various times by the General Medical Council from 1902 to 1911. Certain universities and corporations grant qualifications in Tropical Medicine which have not as yet been made registrable by statute.

University of Oxford.—An examination, conducted partly in writing, partly *vivâ voce*, and in each subject partly practical, is held in (Michaelmas[1] and) Trinity Term in the following subjects:—General Hygiene, General Pathology (with special relation to Infectious Diseases), the Laws relating to Public Health, Sanitary Engineering, Vital Statistics. The examination is in two parts, which may be taken together or separately; but Part I. must be passed either before or at the same examination as Part II. The fee for admission to the examination is £5 for each part. Successful candidates are entitled to receive the Diploma in Public Health.

The First Part of the examination will comprise (*a*) a written paper of three hours in Chemistry and Physics; (*b*) a three hours' practical and *vivâ voce* examination in Chemistry and Physics.

The Second Part of the examination will consist of the following parts:—(*a*) Two written papers, each of three hours, dealing with General Hygiene (including Sanitary Engineering, Vital Statistics, and the Laws relating to Public Health); (*b*) a practical and *vivâ voce* examination in General Hygiene; (*c*) a written paper of three hours in Pathology and Bacteriology; and (*d*) a three hours' practical and *vivâ voce* examination in Pathology and Bacteriology.

Candidates in Part I. of the examination will be required to produce a certificate (1) of Laboratory Work in Chemistry as applied to Hygiene.

Candidates in Part II. will produce the following further certificates: (2) of a Practical Knowledge of the Duties, Routine and Special, of Public Health Administration; (3) of having had Practical Instruction in Bacteriology, and the Pathology of the Diseases of Animals transmissible to Man; and (4) of having attended the practice of a Hospital for Infectious Diseases at which opportunities are afforded for the study of the Methods of Administration. The names of candidates must be sent to the Assistant Registrar of the University, Clarendon Building, Oxford, to whom applications for any further information should be addressed.

University of Cambridge.—Two examinations in so much of State medicine as comprised in the functions of medical officers of health are held during the year. The examination is divided into two parts and demands proficiency in all the branches of study which bear upon the duties of medical officers of health. The examinations in both parts will be oral and practical, as well as in writing. Candidates may present themselves for either part separately or for both together at their option; but the result of the examination in the case of any candidate will not be published until he has satisfied the examiners in both parts. Marks of distinction will be placed against the names of candidates who have specially distinguished themselves in either (1) general principles of hygiene; (2) bacteriology; (3) chemistry in Part I. of the examination; or (4) the second part of the examination, which has reference to State Medicine and to the applications of Pathology and Sanitary Science. Every candidate will be required to pay a fee of £6 6*s*. before admission or readmission to *either part* of the examination, but candidates who have presented themselves before the year 1896 will be readmitted to either part on payment of a fee of £5 5*s*. Candidates must before admission to either part of the examination produce evidence of having satisfied provisions (1), (2), and (3), and before admission to Part II. having satisfied provision (4), above mentioned.

All applications for further information respecting examinations and the courses of study should be addressed to Mr. J. E. Purvis, the Chemical Laboratory, Pembroke-street, Cambridge.

Two Examinations in Tropical Medicine and Hygiene are conducted yearly by the State Medicine Syndicate of the University of Cambridge. The examinations are held in Cambridge early in January and in the middle of August. Each examination will extend over four days.

Any person whose name is on the Medical Register is admissible as a candidate to the examination provided (I.) that a period of not less than 12 months have elapsed between his attainment of a registrable qualification and his admission to the examination; (II.) that he produce evidence, satisfactory to the Syndicate, that he has diligently studied Pathology (including parasitology and bacteriology) in relation to Tropical Diseases, Clinical Medicine, and Surgery at a Hospital for Tropical Diseases, and Hygiene and Methods of Sanitation applicable to Tropical Climates. As evidence of study and attainments a candidate may present to the Syndicate (1) any dissertation, memoir, or other record of work carried out by himself on a subject connected with Tropical Medicine or Hygiene; (2) any Certificate or Diploma in Public Health or Sanitary Science he may have obtained from a recognised Examining Body. Such evidence will be considered by the Syndicate in determining whether he is qualified for admission to the examination and by the examiners in determining whether, if admitted, he shall be included in the list of successful candidates.

The examination will be partly in writing, partly oral, and partly practical and clinical (the clinical part will be conducted at a hospital for tropical diseases, at which cases will be submitted for diagnosis and comment), and will have reference to the nature, incidence, prevention, and treatment of the epidemic and other diseases prevalent in tropical countries. Every candidate who passes the examination to the satisfaction of the examiners will receive from the University a diploma testifying to his knowledge and skill in tropical medicine and hygiene. The fee for the examination is £9 9*s*., and applications should be addressed to Dr. Graham-Smith, Medical Schools, Cambridge. The examination for the Diploma in Tropical Medicine and Hygiene will be discontinued after 1918 till the end of the war.

University of London.—Candidates for the M.D. degree may offer State medicine as a subject in which to graduate. Certificates must be produced showing that a course of practical instruction has been attended for the prescribed period, and that the course has included such chemical, microscopical, and meteorological work and exercises as more especially relate to sanitation. The attendance includes six months' practical instruction in a laboratory and six months' instruction in public health administration under the supervision of a medical officer of health, and three months' attendance on the practice of a hospital for infectious diseases. The examination consists of papers in State medicine, including hygiene, school hygiene, and forensic medicine; a paper in medicine; an essay; and a two days' practical examination. Candidates must satisfy the examiners both in the papers and in the practical tests. A *vivâ voce* examination may be held at the discretion of the examiners. In connexion with this degree the various metropolitan medical schools hold regular classes under teachers of Public Health and Sanitary Science, such instruction being also used to obtain the various diplomas of other Universities and of those Royal Corporations which grant them.

University of Durham.—Candidates for the degree of Bachelor of Hygiene (B.Hy.) must be at least 22 years of age, registered, and a graduate in Medicine of a recognised university. They must spend six months at Newcastle-upon-Tyne studying Comparative Pathology, Practical Bacteriology, Sanitary Chemistry, and Physics, and have to pass an

[1] The examination in Michaelmas Term is suspended during the war.

examination in Sanitary Chemistry, Physics, Comparative Pathology, Sanitary Legislation, Vital Statistics, Nosology, Climatology, Meteorology, Distribution of Health and Disease, Sanitary Medicine and Practical Hygiene. The fee for the examination for the degree of B.Hy. is £10 10*s.* and for the degree £6 6*s.* Candidates for the degree of Doctor of Hygiene (D.Hy.) must have acquired the degree of Bachelor of Hygiene, must for two years subsequently have been engaged in Public Health administration, or in research work relating to Public Health. The fee for the examination for the degree of D.Hy. is £5 and for the degree £6 6*s.* The regulations for examination for the Diploma in Public Health (D.P.H.) are the same as those for the degree of Bachelor of Hygiene, except that the candidate is not required to be a graduate in Medicine of a recognised University and the course of study need not be passed at Newcastle-upon-Tyne. The fee for the examination is £10 10*s.* and for the diploma £3.

Victoria University of Manchester.—An examination in Public Health is held twice yearly. The examination is in two parts and is written, oral, and practical. Candidates may present themselves for Parts I. and II. separately or at the same time provided that no candidate be admitted to Part II. unless he has already passed in Part I. No candidate's name will be published until he has satisfied the examiners in both parts of the examination. The fee for each part is £5 5*s.*, and must be paid on or before July 1st in each year. For any subsequent examination in the same part the fee will be £3 3*s.* Every candidate who has passed both parts of the examination to the satisfaction of the examiners, and who is legally registered, will receive a Diploma in Public Health. The examinations will begin about the end of March and the middle of July in each year. Holders of the Diploma in Public Health are eligible for examination for the Certificates in School Hygiene and Factory Hygiene after attending the prescribed periods of study and hospital practice.

University of Birmingham.—The University grants a degree of B.Sc. in Public Health and also a Diploma in the same subject on the following conditions: Graduates in Medicine of this University may become candidates for the degree of Bachelor of Science in Public Health by conforming to all the requirements laid down for candidates for the Diploma in Public Health, except that after graduating in Medicine all courses of study must be taken out in the University, and they must, in addition, have attended a three months' course of Geology in the University. The examinations will be held in the months of March and June and will consist of two parts, each part being written, oral, and practical. No candidate will be allowed to pass Part II. until he has passed Part I. Candidates may enter for Parts I. and II. separately or at the same time. The fee for each part of the examination is £5. Medical Officers of the Royal Navy who have attended courses in Hygienic Chemistry, Bacteriology, and Public Health at the Naval Medical School, Greenwich, will be admitted to the examinations for the Diploma in Public Health, whether they have previously been students at the Birmingham School or not; and the same applies to officers of the Royal Army Medical Corps who have studied Chemistry and Bacteriology at the Staff College and pursued the further course of study approved by the General Medical Council.

University of Liverpool.—The University grants a Degree in Hygiene (M.H.) and a Diploma (D.P.H.), and every facility is afforded for training in Sanitary Science and State Medicine. The curriculum for the Degree extends over a period of two years, the first of which is devoted to laboratory instruction and practical classes (including those for the Diploma); the second being devoted to advanced study and research. The D.P.H. curriculum fees are: Chemistry, £5 5*s.*; Bacteriology, £5 5*s.*; Practical Sanitation, £15; Infectious Diseases, £3 3*s.* The courses may be taken out at any time, and students are allowed to work daily in the laboratories.

The University grants a Diploma in Tropical Medicine. Three courses of instruction are given every year. Two of these last for three full months—the Lent Course from Jan. 6th to April 5th and the Autumn Course from Sept. 15th to Dec. 13th. The Third Course, an Advanced Course, lasts one month, from June 1st to the 30th. At the end of each full course an examination is held by the University for its Diploma of Tropical Medicine (D.T.M.), which is open only to those who have been through the course of instruction of the school. The examination lasts three days and consists (1) of papers on Tropical Medicine, Tropical Pathology, and Tropical Sanitation and Entomology respectively; (2) of a clinical examination; and (3) of an oral examination. The advanced course consists entirely of Practical and Clinical Laboratory Work, given at the laboratory at the University. The fee for the full course of instruction is 13 guineas, with an extra charge of 10*s.* 6*d.* for the use of a microscope if required. The fee for the examination is 5 guineas. Applications should be made to the Dean of the Medical Faculty, University of Liverpool. Two University Fellowships of £100 a year each are open to students of the school, amongst others. Accommodation for research work is to be had at the University Laboratory. The Mary Kingsley Medal is awarded by the school for distinguished work in connexion with Tropical Medicine. The new laboratories are completed and ready for occupation on the termination of the war.

University of Leeds.—The University grants a Diploma in Public Health, and every facility is afforded for training in Sanitary Science and State Medicine. The examination, which is held twice in each year—namely, in June and December—is in two parts, and is written, oral, and practical. Candidates may present themselves for Parts I. and II. separately or at the same time, provided that no candidate be allowed to pass in Part II. unless he has already passed in Part I. Fees—The fee for each part is £5 5*s.*, and for any subsequent examination in the same part £3 3*s.* Instruction in Sanitary Chemistry is given in the second and third terms and in Bacteriology during the first and second terms. Practical work under arrangement with the Leeds City Council. Prospectus can be obtained from the Dean of the Medical School.

University of Bristol.—Diploma in Public Health. Candidates must be at least 23 years of age, shall be fully registered medical practitioners of not less than 12 months' standing as such, and shall have passed the examination prescribed by regulation. The examination is divided into two parts. The subjects of the First Part are Chemistry as applied to Public Health and Pathology and Bacteriology. Candidates for the First Part shall, during six months after having obtained a registrable qualification, have received practical laboratory instruction in Hygienic Chemistry, in Bacteriology, and in the Pathology of the Diseases of Animals Transmissible to Man. The subjects of the Second Part are: Public Health and Epidemiology, Sanitary Law, Vital Statistics, and Sanitary Reporting.

University of Edinburgh.—Two degrees in Science in the Department of Public Health are conferred by the University of Edinburgh—viz., Bachelor of Science in Public Health and Doctor of Science in Public Health. A Diploma in Tropical Medicine and Hygiene is also granted. Candidates for the degree of B.Sc. in Public Health must be graduates in Medicine of a recognised University, and must pass two examinations, for the first of which they must, after graduation in Medicine, have worked for at least 20 hours per week during a period of not less than eight months, of which at least five consecutive months must be in the Public Health Laboratory of the University of Edinburgh and the remainder either there or in a laboratory recognised by that University; they must also have attended courses of instruction in Physics and Geology in some Scottish University. Candidates are not admitted to the Second Examination sooner than six months after having passed the First Examination, nor sooner than 18 months after having taken their degree in Medicine, and they must have attended two separate courses in Public Health in some University of the United Kingdom or in such medical school or Indian, Colonial, or Foreign University as may be approved for the purpose by Edinburgh University, each course consisting of 40 lectures at least; one of which courses shall deal with medicine and the other with engineering, each in its relation to public health. The subjects of examination include Laboratory work, Physics, Geology, Medicine in its application to Public Health, Sanitation, Sanitary Law, and Vital Statistics. Graduates who have held the degree of B.Sc. in Public Health from the University of Edinburgh for a term of

five years may offer themselves for the degree of D.Sc. in Public Health in that University. They must then present a Thesis and pass an examination in Public Health. The fees are £3 3*s*. for the First and £3 3*s*. for the Second B.Sc. Examinations, and £10 10*s*. for the degree of D.Sc.

University of Aberdeen.—The Diploma in Public Health (D.P.H.) is conferred only on graduates in Medicine of a University in the United Kingdom not less than 12 months after medical graduation. Every candidate must produce evidence of having attended, after graduation in Medicine, during a period of six months, practical instruction in Hygiene and Bacteriology in laboratories approved of by the University, together with having during six months (whereof three months must be distinct from the period of laboratory instruction) been diligently engaged in acquiring a practical knowledge of the duties, routine and special, of Public Heath administration under the medical officer of health of a county or large urban district. He must have regularly attended for three months the practice of a hospital for infectious diseases at which opportunities are afforded for the study of methods of administration. He must also have obtained practical instruction in the drawing and interpretation of plans. The diploma is conferred after an examination in Public Health held in March and July of each year. The fee is £5 5*s*.

University of Dublin (*Trinity College*).—The Diploma in Public Health is conferred, after examination, on the following conditions. The candidate must be a registered medical practitioner and have obtained a registrable qualification at least nine months before the examination. The candidate must have completed, subsequently to obtaining a registrable qualification, four months' practical instruction in a chemical and bacteriological laboratory or laboratories approved by the University, must have studied practically outdoor sanitary work for six months under an approved officer of health, and must have spent three months' attendance at a fever hospital where opportunities are afforded for the study of methods of administration. A special prospectus and a list of recognised laboratories may be obtained by application to the Registrar of the School of Physic, Trinity College, Dublin.

National University of Ireland.—At this University there is a Diploma in Public Health and a B.Sc. in Public Health. The Diploma may be granted to matriculated or non-matriculated students of the University who shall have completed approved courses of study and shall have passed the prescribed examinations, provided that it shall not be granted except to a registered medical practitioner. Candidates may present themselves for the examination after an interval of not less than 12 months from the time of obtaining a registrable qualification. The curriculum extends over a period of not less than nine calendar months. Every candidate must produce a certificate that he has attended practical instruction in a laboratory, approved by the University, in Chemistry, Bacteriology, and the Pathology of the diseases of animals transmissible to man. The examination consists of two parts, which may be passed separately or together. Part I. comprises the following subjects: Chemistry, Meteorology and Climatology, and Sanitary Engineering and Architecture. Part II. comprises the following subjects: Bacteriology, Hygiene, Sanitary Law, and Vital Statistics. The examination in each part will be oral and practical as well as written.

For the B.Sc. in Public Health a candidate shall not be admitted unless he (*a*) shall have received the degrees of M.B., B.Ch., and B.A.O. at least one year previously; (*b*) shall have pursued an approved course of study in the Faculty of Medicine; and (*c*) shall have passed the prescribed examination. In addition to D.P.H. course the candidate will be required to take up (1) a Special Course of Pathology; (2) Bacteriology; and (3) Advanced Course in Hygiene. Each of these courses lasts three months.

University of Belfast.—A Diploma in Public Health is given by examination. Every candidate must produce evidence that, after obtaining a registrable qualification, he has during six months received practical instruction in an approved laboratory in which Chemistry, Bacteriology, and the Pathology of the diseases of animals transmissible to man are taught. After obtaining a registrable qualification every candidate must produce evidence that he has attended during three months the practice of a hospital for infectious diseases at which opportunities are afforded for the study of methods of administration. The examination must have extended over not less than four days, one of which shall have been devoted to practical work in a laboratory, and one to practical examination in, and reporting on, subjects which fall within the special outdoor duties of a medical officer of health. The examination will be held once yearly, Part I. in March and Part II. in June. The first part of the examination will have reference to the general principles of sanitary science, and the second part to State Medicine and to the applications of Pathology and Sanitary Science. The fee for each part is 1 guinea.

Royal College of Physicians of London and the Royal College of Surgeons of England.—The following are the regulations for obtaining the Diploma in Public Health: The examination consists of two parts. The first part of the examination takes place in January and July, and the second part in January and July. The fee for each part is £10 10*s*., except for those who are diplomates of the Royal Colleges, who pay £6 6*s*. for each part. A candidate intending to present himself must give 14 days' written notice to the Secretary, at the Examination Hall, Queen-square, London, W.C. 1. He will be admissible to examination in Part I. on producing evidence (1) of having been in possession of a registrable qualification for at least 12 months; (2) of having attended thereafter practical instruction in a laboratory recognised by the Examining Board in England for at least 240 hours during a period of six months; and (3) of being at least 23 years of age. A candidate will be admitted to Part II. of the examination on producing evidence (1) of having been diligently engaged in acquiring a practical knowledge of Public Health administration during six months under certain specified conditions; (2) of having attended during three months the clinical practice of a hospital for infectious diseases; and (3) of being at least 24 years of age.

The examination for the Diploma in the Diseases and Hygiene of the Tropics has been discontinued during the war.

The Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, the Royal Faculty of Physicians and Surgeons of Glasgow.—All candidates for the Diploma in Public Health must have a qualification which has been registered under the Medical Acts. Candidates must have attended not less than four calendar months' practical instruction in Chemistry and Bacteriology in a recognised laboratory or laboratories, must have studied outdoor sanitary work for six months under a medical officer of health or other sanitary officer; and must give evidence of attendance for three months at the practice of a Hospital for Infectious Diseases, at which he has received instruction in the methods of administration. The examination consists of two parts, and candidates may enter for both at one period or for either separately. The First Part includes (*a*) Laboratory Work (Chemistry and Bacteriology), (*b*) Physics and Meteorology; and the Second Examination embraces (*a*) Report on Premises visited, (*b*) Examination at Fever Hospital, (*c*) Examination at Public Abattoir, (*d*) Written and Oral Examinations on Epidemiology and Endemiology, (*e*) Vital Statistics and Sanitary Law, and (*f*) Practical Sanitation. The fee is 12 guineas for both examinations, or 6 guineas for either of them. A fee of 3 guineas is payable by rejected candidates for either examination. The examination is held twice yearly, in May and October. The published regulations provide detailed synopses of the subjects of examination. The Registrar for Edinburgh is Mr. D. L. Eadie, 50, George-square, and for Glasgow Mr. Walter Hurst, 242, St. Vincent-street.

Royal College of Physicians of Ireland and Royal College of Surgeons in Ireland.—Every candidate for the Diploma in Public Health must be a registered medical practitioner. He must subsequently to qualification (1) receive six months' laboratory instruction in Chemistry, Bacteriology, and the Diseases of Animals transmissible to man; and (2) during six months practically study outdoor sanitary work under a medical officer of health, and shall as an additional requirement attend a hospital for infectious diseases. Candidates are examined on four days, commencing on the first Monday of February, May, and November. The examination comprises the following subjects:—Hygiene, Chemistry, Meteorology and Climatology, Engineering, Vital Statistics, Sanitary Law, and Bacteriology. The fee for the examination is £10 10*s*. For further particulars apply to Alfred Miller, Secretary, Committee of Management; Office, Royal College of Surgeons, Dublin.

The Numerical Position of the Medical and Dental Professions.

THE NUMBER OF MEDICAL STUDENTS.

THE number of students in actual attendance on courses of instruction in preparation for medical degrees or diplomas in the medical schools of the United Kingdom is now accurately known from the returns submitted by the General Medical Council to the Ministry of National Service. These show that although the total number of fourth- and fifth-year students at the present time is still perilously low—in the case of the former a bare three-quarters of the minimum yearly entry into the profession considered desirable by the Director-General of National Service to make up for the wastage—yet this is more than compensated by the increased numbers of students in the early years, and the total number has, in fact, steadily increased during the last two years, as the following schedule shows:—

Total Medical Students in Attendance at the Medical Schools of the United Kingdom.

May, 1916	6103	October, 1917	7048
January, 1917	6682	May, 1918	7630

An analysis of these 7630 students into groups according to sex, attainment of military age, place of study, and seniority is given in a table submitted by the President of the General Medical Council on June 28th last, which we now reproduce in full, having printed a shortened form of it in THE LANCET of July 27th. The numerical proportion of men and women students can be seen from the table, and may be stated in percentages as follows:—

Percentage of Men and Women Students.

	Men.	Women.		Men.	Women.
First year	68	32	Fourth year	73	27
Second ,,	67	33	Fifth ,,	82	18
Third ,,	68	32	All years	71	29

from which it may be noted that the proportion of men and women entering on their medical study has remained practically constant during the last three years, although differing in the various regions of study. Among the students of all years in London 33 per cent. are women, in England and Wales (including London) 31 per cent., in Scotland 36 per cent., and in Ireland 18 per cent.

THE NUMBER OF REGISTERED MEDICAL PRACTITIONERS.

The total number of names on the Medical Register at the beginning of the present year was 43,819, distributed as follows between the various local registers:—

England ... 23,715, being 54 per cent. of the whole number.
Scotland ... 13,918 ,, 32 ,, ,,
Ireland ... 6,176 ,, 14 ,, ,,

The numbers added by registration, removed on evidence of death, and the totals remaining on the Register on the last day of each of the last five years are shown in the following table:—

Year.	Number added by registration.	Number removed on evidence of death.	Number of names on the Register on Dec. 31st.	Increase on the previous year.
1913	1168	746	41,940	501
1914	1433	1068	42,378	438
1915	1526	800	43,225	847
1916	1202	1005	43,481	256
1917	1134	831	43,819	338

The yearly additions in the last column do not agree precisely with the differences between the preceding columns, inasmuch as a certain number of names are removed from or replaced on the Register each year on formal grounds. It is noteworthy that during the last three years no name has been removed from the Register on account of its bearer ceasing to practise. So far the number of names on the Register has increased from year to year, but it is quite evident on referring to the numbers of medical students due to qualify in the years 1919–21 that this increase will not be kept up in those years unless, on the one hand, death is less active, or, on the other, there is a greater supply from medical schools outside the United Kingdom. A list is given later of the degrees granted in British possessions and in foreign countries, which are registrable in the colonial and foreign lists respectively of the Medical Register.

—	First year. Due to qualify in 1923.					Second year. Due to qualify in 1922.					Third year. Due to qualify in 1921.					Fourth year. Due to qualify in 1920.					Fifth year. Due to qualify in 1919.					Totals for all years.		
	Men.	Women.	Total.	Men under 18.	Men from places outside the U.K.	Men.	Women.	Total.	Men under 18.	Men from places outside the U.K.	Men.	Women.	Total.	Men under 18.	Men from places outside the U.K.	Men.	Women.	Total.	Men under 18.	Men from places outside the U.K.	Men.	Women.	Total.	Men under 18.	Men from places outside the U.K.	Men.	Women.	Total.
London District ...	285	202	487	118	41	211	137	348	15	28	167	150	317	—	27	195	66	261	—	29	389	53	442	—	93	1247	608	1855
England and Wales (including London)	592	329	921	273	50	472	256	728	44	40	362	226	588	3	44	300	116	416	—	42	514	92	606	—	105	2240	1019	3259
Scotland	393	222	615	214	37	329	259	588	76	23	319	185	504	—	52	231	129	360	—	49	315	103	418	—	71	1587	898	2485
Ireland	393	114	507	56	2	448	104	552	5	12	369	73	442	—	13	228	30	258	—	8	115	12	127	—	5	1553	333	1886
Total	1378	665	2043	543	89	1249	619	1868	125	75	1050	484	1534	3	109	759	275	1034	—	99	944	207	1151	—	181	5380	2250	7630

THE NUMBER OF REGISTERED DENTISTS.

The total number of dentists appearing upon the Dentists' Register for 1918 was 5524, the comparative figures for the last five years being—

Year.	Number added by registration.	Number removed on evidence of death.	Number of names on the Register on Dec. 31st.	Increase on the previous year.
1913	195	66	5276	135
1914	273	93	5426	151
1915	241	109	5453	27
1916	195	120	5512	59
1917	130	105	5524	12

As in the case of the Medical Register, certain removals and replacements of names are made on formal grounds, so that the third column cannot be accurately deduced from the two preceding.

Of the total 5524, 5495 are described in the Register as United Kingdom dentists, 11 as Colonial dentists, and 18 as Foreign dentists.

REGISTRABLE COLONIAL AND FOREIGN MEDICAL DEGREES.

UNDER the Medical Act, 1886, a number of medical diplomas granted in British Possessions entitle their possessor to be registered without further examination in the colonial list of the Medical Register. The conditions attached to such registration is that the holder of the colonial diploma obtained it when he was not domiciled in the United Kingdom or in the course of a period of not less than five years during the whole of which he resided out of the United Kingdom. These diplomas are as follow:—

BRITISH NORTH AMERICA.

Manitoba: College of Physicians and Surgeons, Member; University of Manitoba, M.D.
New Brunswick: Provincial Council of Physicians and Surgeons, L.M.S.
Newfoundland: Medical Board, L.M.S.
Nova Scotia: Provincial Medical Board, L.M.S.; Dalhousie University, M.D., C.M. (Halifax Medical College, M.D., C.M., if obtained prior to August 31st, 1911.)
Ontario: College of Physicians and Surgeons, Member. (To this can be added as additional qualifications the degrees in medicine of the Queen's University, Kingston; the Western University, London; and the University of Toronto.)
Prince Edward Island: Medical Council, L.M.S.
Quebec: McGill University, M.D., C.M.; Laval University, M.D.
Saskatchewan: College of Physicians and Surgeons, Member.

ASIA.

Ceylon: Medical College, L.M.S.
Hong Kong: University of Hong Kong, M.B., B.S.
India: University of Allahabad, M.B., B.S.; University of Bombay,[1] (1) L.M.S., (2) M.B., B.S., (3) M.D., (4) M.S.; University of Calcutta, (1) L.M.S., (2) M.B., (3) M.D., (4) M.S., (5) M.O.; University of Madras,[2] (1) M.B., M.S., (2) M.B., B.S., (3) M.D.; Punjab University, (1) L.M.S., (2) M.B., (3) M.D., (4) M.S.
Straits Settlements: King Edward VII. Medical School, Singapore, L.M.S.

AUSTRALASIA.

New South Wales: University of Sydney, (1) M.B., (2) M.D., (3) Ch.M.
New Zealand: University of New Zealand, (1) M.B., Ch.B., (2) M.D.
South Australia: University of Adelaide, (1) M.B., B.S., (2) M.D., (3) M.S.
Victoria: University of Melbourne, (1) M.B., (2) M.D., B.S.

EUROPE.

Malta: University of Malta, M.D.

Certain medical diplomas granted in foreign countries also entitle to registration in the foreign list of the Medical Register provided that the holder is not a British subject, or that, being a British subject, the diploma was obtained under domiciliary conditions similar to those attached to colonial diplomas. These diplomas are as follows, the date in parentheses being the year in which Part II. of the Medical Act, 1886, was applied to the country in question:—

Italy: Degrees of Doctor of Medicine and Surgery of all the Royal Italian Universities (1901).
Japan: Degrees of Bachelor of Medicine (Igakushi) and Doctor of Medicine (Igaku Hakushi) of the Imperial Universities of Japan; and the Degree of Bachelor of Medicine (Igakushi) of any Government or Prefectural special Medical College, or of a private special Medical College designated by a Minister of Education of the Empire of Japan (1905).
Belgium: Degrees of Doctor of Medicine of the Belgian Universities of Brussels, Ghent, Liége, and Louvain, which give legal authority to practise medicine, surgery, and midwifery in Belgium (1915).

The colonial list of the Medical Register at present contains some 900 names, the foreign list less than 150 names, of which the large majority are Belgian. We hope to publish later some account of these degrees and diplomas which, when registered, entitle the possessor to practise medicine within the borders of the United Kingdom.

[1] If obtained after June 25th, 1912, the degree must have been registered in the Presidency.
[2] If obtained after June 1st, 1916, the degree must have been registered in the Presidency.

OUR CURRENT NUMBER

Being almost exclusively devoted to information especially interesting to Students, we are necessarily compelled to defer the publication of communications on other important subjects.

We tender our best thanks to those gentlemen who have at considerable personal trouble kindly supplied us with the returns and prospectuses upon which the information given in this Students' Number of THE LANCET *relative to the various medical examining bodies, hospitals, and medical schools of the United Kingdom is based. We regret that in some cases, however, owing to proofs having been either not returned at all or too late, certain inaccuracies may be found.*

EDITORIAL NOTICES.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

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Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—J. Behesnilian (Sect. II.), Charing Cross Hosp.; J. Gorsky (Sects. I. and II.), Westminster Hosp.; W. H. Haupt (Sect. I.), George Washington Univ.; B. A. M. Henderson (Sect. II.), Manchester and Charing Cross Hosp.; F. Lyth and H. Lyth (Sects. I. and II.), Manchester; H. E. Reburn (Sect. I.), King's College Hosp.; G. P. N. Richardson (Sects. I. and II.), Cambridge and St. Mary's Hosp.; W. H. Steavenson (Sects. I. and II.), Guy's Hosp.; and J. Stephen (Sects. I. and II.), Manchester.

Medicine.—H. Carter (Sects. I. and II.), London Hosp.; W. H. Haupt (Sects. I. and II.), George Washington Univ.; W. D. Macrae (Sects. I. and II.), London Hosp.; G. P. N. Richardson (Sects. I. and II.), Cambridge and St. Mary's Hosp.

Forensic Medicine.—J. F. E. Burns, Bristol; F. I. G. Edwards, Royal Free Hosp. and Liverpool; W. H. Haupt, George Washington Univ.; W. H. Steavensor, Guy's Hosp.

Midwifery.—F. I. G. Edwards, Royal Free Hosp. and Liverpool; I. R. Florence, Guy's Hosp.; W. H. Haupt, George Washington Univ.; J. H. Marriott, Manchester.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: J. Behesnilian, J. Gorsky, F. Lyth, H. Lyth, G. P. N. Richardson, W. H. Steavenson, and J. Stephen.

THE BELL FUND.—Dr. S. A. K. Wilson, 14, Harley-street, London, W.1, acknowledges a donation of £2 2*s.* to this Fund from Dr. Frank C. Shrubsall.

RESULT OF THE ENTRANCE SCHOLARSHIP EXAMINATIONS AT ST. THOMAS'S HOSPITAL.—Entrance Science Scholarships:—1st, £150, no award; 2nd, £60, M. C. Sivakara; honourable mention, N. G. Harris, Emrys Williams.

INSTRUCTION IN HOSPITAL ADMINISTRATION FOR THE DIPLOMA IN PUBLIC HEALTH.—A course of lectures and demonstrations in hospital administration, lasting three months, will be given at the Western Hospital of the Metropolitan Asylums Board, Seagrave-road, Fulham, London, S.W. 6, by Dr. R. M. Bruce, medical superintendent, on Tuesdays and Fridays, at 5 P.M., beginning Oct. 8th. The fee for the course is £3 3*s.*, payable to the clerk to the Metropolitan Asylums Board, Embankment, London, E.C. 4.

THE CODEX ADDENDUM, 1918.—The current issue of the *Pharmaceutical Journal* contains a list of alternative formulæ for the preparations temporarily withdrawn from the British Pharmacopœia on account of containing lard or vegetable oils. The Addendum has been prepared by the Codex Subcommittee of the Pharmaceutical Society, and is now published with its authority.

THE University of London Press announces the addition of four volumes to the series of Military Medical Manuals—viz.: "Disabilities of the Locomotor Apparatus, the Result of War Wounds," by Professor Aug. Broca, edited by Sir Robert Jones. "Electro-Diagnosis of War," by Professor A. Zimmern and P. Perol, edited by Dr. E. P. Cumberbatch. "Wounds of the Pleura and Lungs," by Professor R. Grégoire and Dr. Courcoux, edited by Lieutenant-Colonel C. H. Fagge, M.S. "Mental Disorders of War," by Professor Jean Lepine, edited by Dr. Charles Mercier.

MAUDSLEY NEUROLOGICAL CLEARING HOSPITAL.—The course of instruction in shell shock and war neuroses will be resumed on Sept. 20th at 3 P.M. No fees will be charged. Application should be made to Lieutenant-Colonel F. W. Mott, at the hospital, Denmark Hill, London, S.E.5.

POST-GRADUATE COLLEGE, WEST LONDON HOSPITAL.—During next week clinics will be held each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held on Tuesday, August 13th, 24 cases were considered and £212 6*s.* 8*d.* voted to 22 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 51, of M.B. Glasg. who practised at Sheffield and died in April of this year. Applicant was left entirely without means and her health is bad, suffering from chronic rheumatism. Daughter, aged 25, at home; son, 22, Second Lieutenant, prisoner of war; son, 19, in the Army, and allows his mother 3*s.* 6*d.* per week. Rent and rates, £30. Daughter has to remain at home to look after mother. Voted £4, with leave to apply again in October.—Daughter, aged 60, of M.R.C.S. Eng. who practised at Halesworth and died in 1904. Applicant's only income £30 from investments. In the winter suffers severely from bronchitis, so only able to earn a little in the summer. Pays £10 a year rent. Voted £12 in 12 instalments.—Widow, aged 39, of L.R.C.P. Edin. who practised at Alfreton, Derbyshire, and died in March, 1917. Applicant was left with two children, now aged 5½ and 3½ years. She earns £115 in a temporary post, and her father, who lives with her, pays the rent of the house. Asks for help towards education of children. The Guild will help if the Fund will give a small qualifying grant. Voted £4.

Subscriptions may be sent to the acting honorary treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W.1.

Notes, Short Comments, and Answers to Correspondents.

THE NEW INDIAN QUALIFICATIONS.

IN THE LANCET of Feb. 13th (p. 321) we stated the attitude of the General Medical Council towards the licences in medicine and surgery granted by certain Provincial medical faculties in India. At that time no general conclusion had been reached in regard to the admission by home licensing bodies to their own examinations of holders of the new Indian qualifications. We are now authorised to state in regard to the Conjoint Examining Board of the Royal College of Physicians of London and the Royal College of Surgeons of England, that—

1. A candidate who has passed the final examination for Membership of the State Faculty of Bengal is *not* allowed to sit for the final examination of the Conjoint Board without passing the second examination in anatomy and physiology.
2. A candidate who has passed one or more examinations of the Bengal Faculty, but has not obtained his diploma, is not exempted from any examination of the Conjoint Board.
3. A candidate who has obtained the Membership of the Bengal Faculty can enter for the second examination of the Conjoint Board on producing evidence of having completed the curriculum and obtained his diploma; and when he has passed the second examination of the Conjoint Board, he can proceed to the final examination if he completes two years of additional study at a recognised medical school and hospital in this country.
4. In every case the candidate must have passed a preliminary examination in general education, which fulfils the requirements of the Conjoint Board or of the General Medical Council.

The list is given on p. 309 of diplomas of Indian Universities which entitle their holders without further formality to registration in the United Kingdom.

HOW TO BECOME A WOMAN DOCTOR.

IN a little book of 130 pages, published by Messrs. Chas. Griffin and Co. at 3*s.*, Miss Emily L. B. Foster has put together some useful information for the woman who desires to be a doctor, as she has already done for the woman dispenser. Dr. W. J. Fenton, who as dean of the Charing Cross Hospital Medical School now has some practical knowledge of the working of a scheme of placing men and women students on an equality throughout their whole course, contributes a preface, in which he says:—

"The students work together on perfectly friendly terms, and there is every reason to believe that the experience will be to their mutual advantage: the result being medical practitioners soundly educated, with broad-minded and sympathetic views, both towards the public, which they will have to serve, and the profession, of which they will form a part."

Miss Foster herself contributes brief paragraphs on the History and Prospects of the Woman Doctor and on Co-education, and sketches a day in the life of a woman house physician. Otherwise the book contains nothing but a welcome statement of the facilities now open to women, along with extracts from the regulations of various diploma-granting bodies.

THE POSITION OF REGISTERED DENTISTS.

WE have given elsewhere the number of names at present on the Dentists Register as 5524. Of the 5495 United Kingdom dentists, 1281 are registered on their own declaration as being in *bona fide* practice of dentistry, 7 of them possessing additional medical and surgical qualifications. Of the remaining 4214, 2446 are licentiates in dental surgery of the Royal College of Surgeons of England, 177 of English Universities, and 1128 possess Scottish and 463 Irish diplomas. 467 of the 4214, or 11 per cent., possess also surgical or medical qualifications. The special position of registered dentists in relation to the Military Service Acts has now been fully recognised by the Ministry of National Service in the appointment of a Special Dental Tribunal to deal with all applications for exemption by registered dentists. The membership of this Tribunal was given in THE LANCET of June 20th (p. 926), and its address is 19, Hanover-square, London, W.1.

VETERINARY SURGEONS AND NATIONAL SERVICE.

IN a circular (R. 225) issued to tribunals the Secretary of the Local Government Board states that, having regard to present military and civilian requirements, it has been decided to take no registered veterinary surgeon for military service except as a commissioned officer for employment in his professional capacity. The decision, as in the case of registered medical men and registered dentists, is subject to the condition that, if left in civilian employment, he is engaged on such veterinary work as is deemed to be of most value to the nation. A special tribunal, known as the Veterinary Tribunal, has been appointed for dealing with the cases of veterinary surgeons, to which any application for the grant, renewal, or review of exemption is now to be made. The address is 10, Red Lion-square, London, W.C. 1.

Thoughts ON THE EMPLOYMENT OF PREGNANT WOMEN IN MUNITION FACTORIES.[1]

BY MARY A. S. DEACON, M.B., B.S. LOND.,
MEDICAL OFFICER TO A NATIONAL FILLING FACTORY.

THE factory from which the following report was compiled is built on the site of a farm in flat, open and well-drained fields; there is an abundance of fresh air and sunshine. All the buildings are very well ventilated with cross and end-to-end through draughts, and the sanitary and bath accommodation is in excess of the Home Office requirements. The factory is particularly well managed; the canteen is good; the factory clothes are most suitable and made so as entirely to cover all the worker's private clothes.

The factory is situated a mile from the station and tram terminus, and all workers have of necessity to walk this mile as there is no other way of reaching their work. The exercise is most salutary for them, and it is surprising to see the difference in their general appearance noticeable after about six weeks' work with us.

A covered way is provided alongside the roadway for protection in rough weather, and this pathway has been well rolled so that it is always firm and dry.

Our workers are of the usual city type—undersized, badly developed, with very bad teeth and often anæmic. About 50 per cent. are married, and often these have their household duties to attend to after they get home at night. In spite of these drawbacks, after about six weeks' work, and hard work too, if they have the grit to stick it, they become more robust, less anæmic and much more healthy-looking in every way. I consider that this improvement is due to healthy exercise, well disciplined work, the good and abundant food supplied in the canteen at moderate price, and above all to the abundance of fresh air which they are obliged to get when working in this factory. The fresh air and hard work make them hungry, and getting good money they can well afford to obtain sufficient food. During their meal hour they have amusement, some days they dance and on others concerts are arranged. All workers are medically examined before being engaged, and if found suitable but with bad teeth these are extracted by the factory dentist before work is actually started.

During the nine months, June 1st, 1917, to Feb. 28th, 1918, I have kept records with a view to finding out the effect of the work on any woman who may become pregnant. Of the total number of women workers engaged in that period (1197) 575 were married and 622 single. The married women have been brought into the labour market for various reasons. Munitions factories have given them their opportunity, and factory managers have no alternative but to engage them.

THE NATURE OF THE PROBLEM.

The question is one which may be looked at from two standpoints: (*a*) under the enforced conditions due to the war; (*b*) post-war conditions.

As regards (*a*), seeing that it is essential for a certain percentage of married women to take up some form of work outside the home, it is equally essential for their medical welfare to be carefully studied, with a view to bringing about a set of conditions which will make it possible for them to carry on their work to the satisfaction of their employers, and without fear of injury to themselves or the future race. In so doing it should be possible to find by experience whether similar conditions could be applied in post-war days if the necessity for married women to work then should still exist.

In a factory such as ours the work is mostly arduous and heavy, but the factory management have had all operations classified into heavy, medium, and light operation, and they are also willing, if they have the vacancies, to put workers who are not fit for the heavier operation into the less arduous classes, so that I have been enabled in many cases (by this coöperation on the part of the factory management) to transfer pregnant workers from the heavy work to the lighter operation and so gather materials for this report.

The nature of the work also necessitates extreme cleanliness, and in this factory such cleanliness is enforced with the utmost rigour.

The question then arises in a factory of this kind, where so many married women are employed, whether when they may become pregnant it is better to dismiss them at once or to keep them at work until within a few weeks of their confinement. Up to the present I have not taken on new workers if they are pregnant, as I do not consider that they would become proficient before they had to leave, and this would be hardly fair to the factory.

THE QUESTION OF EFFICIENCY.

We will first study the question solely from the factory's point of view—"efficiency." The authorities of the factory might put forward the arguments—

(*a*) That the women were no longer capable of heavy work.
(*b*) That not being in good state of health their time-keeping and work record would be bad.
(*c*) That miscarriages might occur, which would disorganise the work at the time, and which also might lead to compensation claims.
(*d*) That in the event of there not being any suitable light work at which to employ them the women would not be worth their pay.

A natural prejudice would also be felt against seeing women about in such a condition, but this hardly amounts to a reason, and in a factory where about 90 per cent. of the workers are women should not even be a prejudice.

The answers to these arguments are:—

(*a*) The women need not be capable of very heavy work, as in most factories there are many lighter duties to which pregnant women could be put, and in which no strain is put upon the abdominal muscles, while they do not in fact necessitate as much energy as is required in household duties.

(*b*) The fear that the woman's time and work records would be bad at such times is one that in some cases, of course, may be justified, but if the upset is such as really to incapacitate her and to cause her to neglect her work, then there is nothing to compel her to stay if she wishes to leave, and nothing to prevent the factory dismissing her if really a negligent worker. On the other hand, some women feel better when in such a condition, and in all cases their health must be the better for regular and sufficient exercise, good food, and healthy occupation for their minds and bodies.

The time when the pregnancy is most likely to upset the health is during the first four months, when the condition cannot be diagnosed unless the worker comes to the factory doctor complaining of symptoms pointing to such a condition, and this she is not likely to do if she fears dismissal, so that bad time-keeping and slack work due to such causes cannot be eliminated, even in factories where dismissal is the rule.

A woman who is anxious to retain her work will do her best to attend regularly and to give as much satisfaction as possible in all her duties, and the mere fact that she is regular in her habits will probably keep her in better health, and so increase her capacity for work.

(*c*) Miscarriages are very unlikely to occur if the woman is encouraged to make her condition known to the factory doctor at as early date as possible, with a view to being transferred to, or retained in, work suitable to her condition, and if she is not in fear of dismissal she will be much more likely to report early. No factory could possibly obtain information as to the condition of its workers during the first three months of pregnancy excepting by the voluntary information of the workers themselves, and yet this is the period during which nearly all miscarriages occur, and is the most critical time during the whole period of pregnancy. No claim for compensation could possibly stand if it were shown that the factory authorities required the women to notify their condition to them as early as possible with a view to suitable work being found, and it would then be a woman's own fault if she continued her own heavy work against the known wishes of the management.

In our factory we have notices put in the changing houses and in the ambulance-rooms asking the women to notify the doctor as early as possible if they are pregnant, so that they may be placed on work which will avoid any risk of personal injury.

(*d*) The argument that the woman by doing other than her usual work is not worth her pay is answered by the statement that the disciplined and trained worker is more worth her pay even with a slight physical disability than the undisciplined and untrained worker who may take her place.

[1] Being part of a paper read at the Oxford Welfare Conference, August 6th–10th, 1918.

The factory arguments in favour of keeping on such women are:—

(*a*) That good feeling will be promoted if the workers know that the management have their actual welfare at heart, and are not penalising them for natural physical disabilities.

(*b*) That this mutual good feeling will produce better workers.

(*c*) That miscarriages will be actually fewer in a factory where the conditions are known at an early date, as such accidents are thereby prevented, along with their subsequent disorganisation of the factory work.

THE WORKERS' POINT OF VIEW.

From the workers' point of view it seems to me that most arguments must be entirely in favour of being kept on. The most cogent reasons are:—

(*a*) The worker should not be turned away from work that she is quite able and competent to do because of her condition, excepting in cases where the work is very heavy, but as in our factory (and also, I should think, in most other factories) there is alternation of work, and as the same woman may do various kinds of work, some suitable employment can usually be found for her.

(*b*) The worker will not be tempted to take drugs or to use other means to provoke miscarriage if she is free from the fear of losing work where she can earn a good wage, and being obliged either to drop out of the labour market altogether or to take on duller and less highly paid work because she cannot do without the money. I have heard of cases in which the worker when dismissed from a factory because of her condition has, in order to obtain bare necessities, gone rag-picking on some refuse heap and got into such a bad condition that both she and the child have been in great danger at the time of the actual confinement.

(*c*) If the worker continues at her more highly paid work she can afford to save money for the time during which she will be laid by, and can also probably then afford to take a longer interval after the confinement, when the rest is all-important both to herself and the child.

(*d*) During the pre-confinement period, if she earns good money, she can enjoy the better food which is so necessary to her condition. She shares the company and fellowship of her companions, so necessary to keep her cheerful, and by walking a mile to work obtains plenty of exercise and fresh air. The maintenance of the mother in a fit state of health and spirits is all-important to the health of the child to which she is to give birth. Several of the workers are reported as never having felt so well during former pregnancies or having had such good confinements or such healthy babies. In no case has the actual nature of their employment had the slightest detrimental effect.

The woman's arguments against staying on might be:—

(*a*) In some cases she might not feel well enough to turn out to work and to travel to and fro, but if she does not really feel well enough to do so, she is practically free to leave.

(*b*) The fear that she might miscarry. This fear will very probably be dispelled if the worker notifies her condition. As a matter of fact, the tables which I have prepared and give here in summary show that of the very few cases of miscarriage that we have had—only 15, including 2 premature births, during the whole of the nine months—13 were at very early dates before the factory authorities could have taken any steps toward a dismissal, as they could not possibly have known of the condition except by the voluntary information of the worker herself. Only two occurred while actually at work. I believe that some factories have had a lot of trouble in this way, but we have never had any real trouble of that kind; one baby was actually born in the ambulance-room, as the woman had miscalculated, but as the ambulance-room was equal to the occasion this did not matter. Another threatened miscarriage was arrested by suitable treatment, and the pregnancy continued until full term.

(*c*) A reluctance to staying among her fellow-workers.

THE QUESTION OF MATERNAL WELFARE.

From the State point of view the greatest question of the present day is the increase of the human race and infant welfare. And any measures are to be encouraged which tend to promote the greater well-being of the mother before and at the time of confinement, and the health of the coming generation. If the woman can keep in a more healthy condition, be better fed and happier in cheerful surroundings, this is all for the good of the State and is likely to raise the birth-rate. I contend that a woman who is struggling for an existence and is debarred from earning a good wage simply through her condition is being discouraged instead of helped at a time when she deserves all possible aid. She is thereby thrown into a condition of anxiety at a time when worry is a detriment and she is prevented from saving for a period of stress. In consequence the child suffers before and after birth.

Every working mother should be encouraged, if possible, to abstain from work for at least three months after confinement, so as to recover completely her normal state of health, and to nurse the baby during this time; but in practice this is very difficult, as the woman is often short of money and implores to be taken back. If the State can promote a scheme to keep the mother entirely in the home, so that she can feed and look after her children, so much to the good; but while she depends upon her individual exertion, no woman should be debarred from doing the best for herself and for unborn children. From a medical point of view reasonable work combined with exercise and good food are the proper preparation for childbirth.

I wish particularly to emphasise the fact that from a medical point of view no certain diagnosis of the woman's condition can be made during the first three months, unless she will tell you her own suspicions; and yet this is the period during which most risk is run and during which most miscarriages occur. Also this is the period in which measures are taken with a view to provoking miscarriage, if loss of work is feared, so that no factory can be free from such danger even if it dismisses all known cases of pregnancy, while the State will certainly be the loser of some of the coming generation.

SUMMARY OF RECORDS.

In the report that I have drawn up I have had 101 cases of women who became pregnant during the nine months of which I have kept records.

Of these 46 cases terminated successfully with 47 children before the end of February, 1918, when the report was made up. One woman had twins; 7 cases could not be traced but were all right when last heard of.

Thirty-four cases had not come off at the end of February, but of these 19 have terminated successfully since.

There were 2 premature births and 13 early abortions—that is, before the third month of pregnancy. Of the 2 premature cases one had operation for advanced carcinoma of cervix at 5 months and the other contracted syphilis at 6 months, the baby being born dead at 8 months.

The 13 miscarriages were all very early, from five to ten weeks. Of these, one patient fell out of bed while dreaming and miscarried three days later, another took "female pills" and fell downstairs, a third had had tuberculous trouble, and a fourth previous miscarriages.

It is very possible that other babies have been born who do not appear in my report, as other women may have had confinements without reporting their condition. It is, however, unlikely that there have been more miscarriages than I have recorded, as all workers who are absent for three days consecutively are visited at their homes and inquiries are made into the reason for such absence, so that miscarriages could hardly escape notice by reason of this factory regulation.

I am still keeping records of all such cases, and now that the workers do not fear dismissal and know that an interest is taken they willingly notify their condition. Thus they are kept under observation even after they leave, with the result that my next year's records will be more complete than those for the nine months to February, 1918. All the women whom I have seen since confinement report that they have had easy labours, healthy children, and that they never felt better while carrying.

One woman who worked until ten days before her confinement had the first healthy baby that she had ever had out of eight. Another had had 12 pregnancies, but only one other living child before this one. A third told me she had seven other children and that this was the healthiest one. All the women told me that they found the walk to work beneficial, and said that they had never felt so well before.

ARTS AND HANDICRAFTS EXHIBITION. — The exhibition which is organised annually by the *Englishwoman* will this year be held at the Central Hall, Westminster, from Nov. 13th to 23rd. The exhibition is designed to encourage home handicrafts, and has a distinct bearing on the employment of disabled soldiers. A number of social organisations, including the Church Army and the Y.M.C.A., use the exhibition for the sale of their hand-made productions.

THE LATE DR. J. S. COOPER.—The death occurred on August 15th, at his residence in Culter, of James Snowie Cooper, M.D. Aberd. After graduating at Aberdeen University in 1891 he practised for a time in Lancashire, and was then physician for three years at the Sanatorium, Banchory. Lately his health had precluded his practising his profession. He is survived by a widow, daughter of the late W. R. Bruce, D.D., minister of Newmachar, and one daughter.

METHODS OF CONTROL OF FRAGMENTS IN GUNSHOT WOUNDS OF THE JAWS.

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IN considering the methods at our disposal for the control of the various fragments in gunshot wounds of the jaws, it is necessary first of all to review the forces producing the displacements which require subsequent reduction and control.

There are four factors concerned: (1) direction of missile; (2) size of missile; (3) muscular contraction; (4) fibro-cicatricial contraction (in later stages of untreated cases). The direction of the missile and the size of the missile are rather intimately connected; other things being equal, the larger the missile the more will be the gross displacement produced, and this in the direction of the missile; the fragments tend to be of large size, the number of them being, I think, strictly proportionate to the velocity of the missile. When, however, the wound is produced by a rifle bullet, we roughly get three effects: (1) the high-velocity bullet striking the bone at right angles to its surface will frequently drill it and produce radiating fractures with little or no displacement, and none in the direction of the missile; (2) the high-velocity bullet striking the bone at a tangent produces extreme comminution, and constitutes one of the most difficult forms of fracture we have to treat; (3) the low-velocity bullet which produces a local shattering with some displacement in the direction of the missile.

Muscular Action.

The various muscles which may exert a displacing force on the various fragments are, of course, well recognised, but many of the so-called depressors and elevators of the jaw exert important stresses in other directions, which become exaggerated when the continuity of the mandible is broken. A few years ago when I realised this double action of nearly all jaw muscles I calculated the direction of their forces after a large number of measurements by plotting the average measurements on a graph. (These plotted charts have unfortunately to be omitted for want of space.) The following illustrations demonstrate this.

The *temporal* muscle, which, of course, has an upward and backward pull, also exerts an outward pull of 2 cm. on each side.

The *masseter* likewise is not only an elevator of the mandible, but will pull a posterior fragment very much forwards and also considerably outwards, the latter stress being over 1·5 cm. on each side.

The *internal pterygoid* muscle is an elevator of the posterior fragment, but if unopposed would tend to pull it 4 cm. inwards on each side. This action, of course, is normally more than counteracted by the masseter and temporal actions, but occasionally owing to hyper-development of the internal pterygoid a state of equilibrium may be obtained, or even with the aid of other muscles the fragment may be tilted inwards.

The *external pterygoid* normally draws the condyle and interarticular fibro-cartilage forwards, but what is not usually recognised is that it has almost as much inward pull as it has forward—i.e., as 3 : $3\frac{1}{2}$. The direction is also always slightly upwards.

The *superior constrictor of the pharynx* has also a direct inward pull upon a posterior fragment, and if a patient is constantly using this muscle in swallowing for some days, it may be, after being wounded, it may produce a marked inward displacement of the ascending ramus. But, on the other hand, I have seen cases in which the displacement was said to be due to this muscle when it was clearly due to cicatricial contraction between the mandible and the tongue.

The *digastric* and *geniohyoid* muscles are normally depressors of the mandible, but when continuity is severed, especially in bilateral fractures in the anterior region, they tend to draw the fragments more backwards than downwards, and also by reason of their attachments to the hyoid being more widely apart than their insertion into the mandible, a symphysis fracture tends to be kept open at its lower end.

The *mylohyoid* muscles being attached in a fan-shaped manner to the inner surface of the mandible, tend to draw anterior fragments towards the middle line and to invert them, and since the mylohyoid muscle is a swallowing muscle, it is one which is frequently in action before immobilisation is usually brought about.

The muscles of *facial expression* (as distinct from the masticatory muscles) all have an inward moulding effect upon fragments of both jaws, and tend by their use to narrow and compress the dental arches in a backward direction. Many of these muscles, but especially the buccinators, are attached either directly or indirectly to both maxilla and mandible. The effect of these muscles is most seen in fractures of the upper jaw, the fragments of which on account of it are always drawn downwards and backwards. (This is frequently thought to be due to the effect of gravity alone, but the extreme difficulty of controlling the fragments unless the facial muscles are prevented from contracting shows that this is not so.)

But while these are the directions in which forces are normally exerted by the individual muscles, there are two important variations which tend to produce unexpected effects.

(*a*) Abnormally developed muscles, or muscles used exclusively after the wound, produce a variation of displacement from that expected. For instance, abnormally developed internal and external pterygoids may overcome the action of the masseter and temporal muscles, or if the fracture is just anterior to the attachment of the superior constrictor of the pharynx and the patient is continually swallowing small boluses before the fragments are fixed, the posterior fragment may be tilted inwards.

(*b*) The condition of the various groups of muscles at the moment of impact does, I think, have considerable effect upon the amount and direction of displacement. The condition being whether they are strongly contracted or flaccid at the time. For instance, if a man is "setting his teeth hard," doing some desperate deed when he is struck in the posterior third of the mandible, the posterior fragments will at once be strongly drawn upwards and outwards, and there will not be marked depression of the anterior portion. Whilst if the man is charging with his mouth open, shouting and excited, and is struck in the same place, the anterior fragment will tend to be strongly depressed, but the posterior will not be correspondingly elevated.

Control of Fragments.

As a general principle the fragments should be reduced to a normal position and a splint applied which will maintain them in that position. This is frequently possible in jaw fractures, but it is also frequently impossible; for instance, in fractures of the upper part of the ascending ramus, the condyle, and coronoid no form of splint will control the upper fragment, and it then becomes necessary to align the anterior fragment with the displaced posterior one. Also in severe comminutions it is impossible immediately to reduce all the fragments, since these are displaced in different directions by different muscles—reduction and control must proceed synchronously in these cases. Speaking generally, in order to effect control some appliance or surgical means should be adopted which will act in a contrary direction to the displacing forces. In this paper it is not proposed to discuss the simpler forms of fracture nor to enumerate the well-known types of splint. When teeth are present in both or all the fragments, control becomes a comparatively simple matter, but the classes of cases in which control becomes more difficult are: (*a*) those in which teeth are absent from one or both fragments; (*b*) severe comminutions, with involvement of the teeth.

But before passing to consider these conditions I should like to offer a criticism of two methods of temporary control at present being used. 1. The four-tail bandage as usually applied, with a pull almost directly backwards, only serves to exaggerate displacements already present. Fig. 1 shows how a four-tail may be used without doing much harm. 2. The Hammond splint fails to control upward and downward displacement of fragments, tends to increase the looseness of any already loose teeth, does not prevent the lateral tilting and swinging of fragments, and, moreover, requires as long a time and as much skill to apply as a more efficient splint.

The control of the posterior fragment, either when the fracture is posterior to the last molar or when the posterior fragment is edentulous, is always a matter requiring special treatment. When the posterior fragment is edentulous some form of saddle can usually be fitted to a metal cap splint.

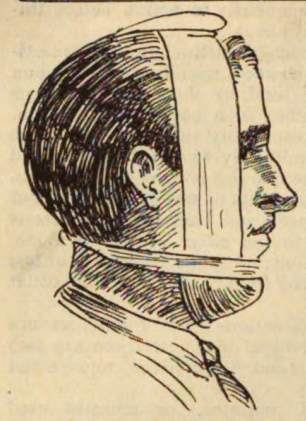

FIG. 1.—An improved method of applying the "four-tail." The vertical portion is broad and very tight, the horizontal being narrow and comparatively slack.

The saddle portion can either be rigid and reduction accomplished forcibly under an anæsthetic, or it may be attached by screws which will permit of a gradual reduction. When the fragment is just anterior to the masseter muscle and posterior to the last molar the control of the posterior fragment becomes somewhat difficult, since there is not sufficient horizontal ramus available to which a saddle can be attached. To overcome the difficulty I have devised two simple methods.

(*a*) When a suitable upper molar is available an *angle band* is fitted carrying an extension posteriorly which presses on the anterior border of the ascending ramus, and so prevents it being drawn forwards and upwards. (Fig. 2.)

(*b*) *The Zygomatic Screw.*—This is the most certain method of controlling any badly displaced posterior fragment. The posterior fragment is pulled down into position forcibly, preferably by forceps introduced through the wound, and is held in position by an assistant. An incision is made over

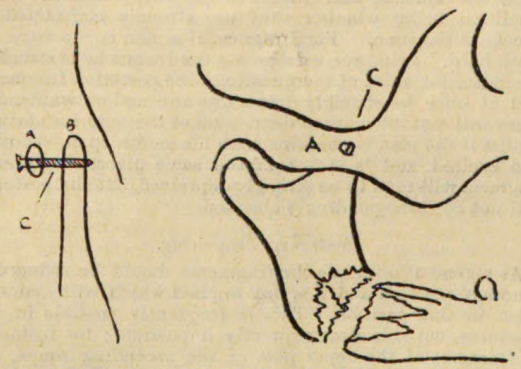

FIG. 3.—Left: Antero-posterior view (in section). Right: Lateral view. A, zygomatic arch. B, coronoid process of mandible. C, screw.

the zygoma, a hole is drilled through the latter and the coronoid process, and a long thin screw (¾ in.) is passed through both; if the other end impinges on the skull so much the better. No movement of the upper fragment is possible. In some individuals the coronoid process does not reach up under the zygoma; this does not very much matter, since then the screw is passed through the dense temporal fascia and muscle and effectually prevents movement. This method is very suitable for immobilising the posterior

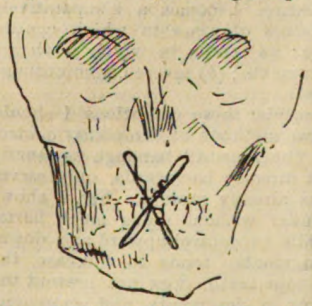

FIG. 5.—Intermaxillary wiring for fractures of the ascending ramus, condyle, or coronoid process. (Tracing from skiagram; upper jaw edentulous.)

fragments in bone grafts at the angle of the mandible. (Fig. 3.)

The Gutter-splint.—This is a modification of the Kingsley splint which I have used for some years chiefly as a temporary splint, but occasionally as a permanent one. It consists of a gutter shaped o the dental arch, capable of fitting over all the teeth if present, and filled with modelling composition.

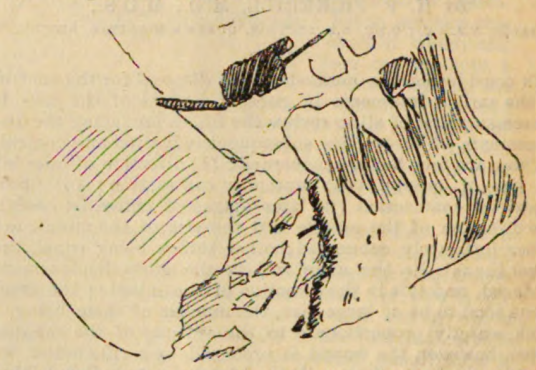

FIG. 2.—Extension from an "angle-band" posteriorly to control and prevent the upward displacement of a posterior fragment. (Tracing from skiagram.)

Attached to the metal gutter are two arms which project out of the mouth, and lie along the cheeks. The splints are made in three sizes and one is selected which approximately fits the case. (Fig. 4.) The displacement of the upper or lower jaw fragments are temporarily reduced by digital pressure, the composition warmed and the splint pressed into place, the arms being held in place by a bandage passing either above the head or below the

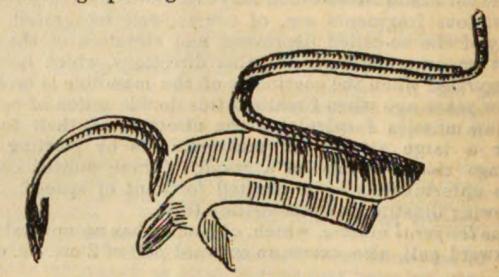

FIG. 4.—The gutter-splint. The groove or gutter is filled with dental modelling composition.

chin. A number of these were sent out with the New Zealand Expeditionary Force for use in the field, and if such temporary splints were more frequently used we should not get the exaggerated displacements and deformities which we sometimes see, and a considerable amount of pain would be saved to the patient and many secondary hæmorrhages avoided. I believe this is the most comfortable form of splint to use in the control of downward displacement of upper jaw fragments. Metal bands round the head are extremely uncomfortable and painful, and are, moreover, much more difficult to immobilise.

FIG. 6.—Bolt of stout wire passed through lower border of mandible to control symphysis fractures. The apparatus seen above is part of an external nasal splint. (Tracing from skiagram.)

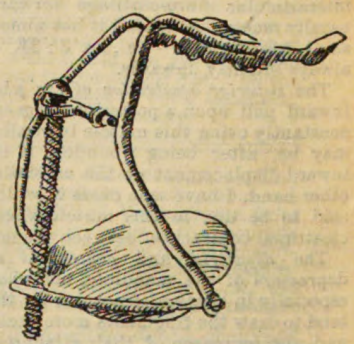

FIG. 7.—"Screw-lever" splint for controlling comminuted fractures in the anterior region.

Fractures of the neck of the condyle and *coronoid process* require special consideration. In these cases, since it is impossible to control the posterior or upper fragment, the

lower or anterior fragment must be placed in such a position as to secure good alignment and apposition. If displacement is due entirely to muscular force the coronoid will always be drawn upwards and outwards and the condyle upwards, forwards, and inwards (by the external pterygoid muscle). This must be determined, however, by skiagrams, since in aeroplane crashes, for instance, the displacing force of the crash may be much greater than the pull of the external pterygoid or the latter muscle may be avulsed.

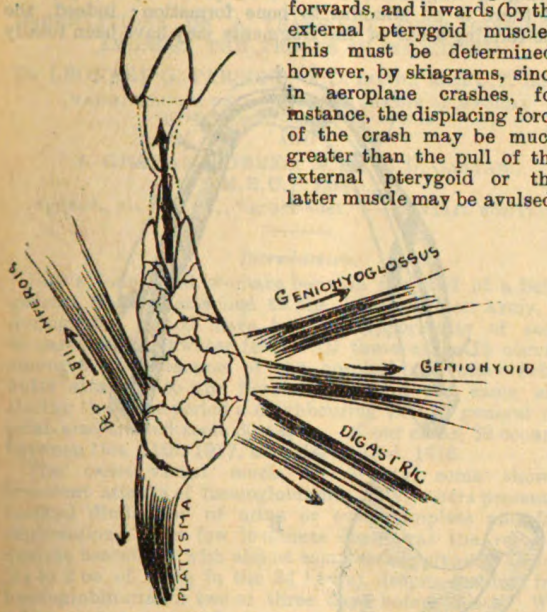

FIG. 8.—Diagrammatic view of action of muscles for comminuted fractures when the lower teeth are simply suspended to teeth in the upper jaw.

If the condyle is in the usual position the anterior part of the mandible should be brought into and secured in as high and forward a position as possible, at the same time bringing the chin a little towards the injured side. This is desirable because the upper fragment is displaced inwards by the external pterygoid muscle, and by rotating the chin slightly towards the injured side the fractured neck is made to move inwards. This may best be done, I think, by intermaxillary wiring, either by silver wires around the teeth, or if, as frequently happens, the upper jaw is edentulous, four holes are drilled, two in the upper and two in the lower jaw, at about the level of the roots of the incisor teeth, crossed silver wires are passed through, and the mandible thus laced up firmly to the maxilla in the desired position. The same method of control applies to fractured coronoid. (See Fig. 5.)

Fractures at the symphysis are sometimes liable to non-union. This is due to separation of the lower borders of the fragments owing to the outward pull of the elevator and depressor muscles, chiefly the digastrics. A dental metal-cap splint may be put on and the teeth brought together, but it is not observed whether the lower borders are at the same time approximated—rather do they naturally tend to be separated by the approximation of the teeth, and if, unfortunately, the teeth in the immediate fracture area are also extracted this approximation of the upper border and separation of the lower border tends all the more to occur.

I have endeavoured to eliminate this source of error by avoiding dental splints in this kind of deformity and using either intermaxillary wiring or by bolting the fragments together with a metal bolt passed through the lower border of the mandible posterior to the symphysis. (See Fig. 6.) This appeals to me as a rational method since it acts in a direction exactly opposite to the displacing forces, and moreover the teeth can be retained in situ, antiseptic treatment satisfactorily carried out, the jaw as a whole remaining functional.

The Control of Comminuted Fragments.

Before the war I believed, as the result of experience, that it was necessary to remove all small commiputed fragments and teeth in the vicinity of the fracture. In the great majority of gunshot wounds we are seeing to-day this is not necessary. The reason for the difference being, I think, that in civil practice fractured jaws frequently occur in unhealthy, cantankerous, and alcoholic individuals, whose resistance and reparative powers are not very high. The majority of our present patients are, however, extremely "fit," respond wonderfully to treatment, and one can retain fragments and adopt a much more conservative line of treatment than one could for civilians.

In comminuted fractures, however, there is frequently much displacement of small fragments owing chiefly to the unbalanced action of attached muscles. Especially is this so in the anterior region of the mandible. The teeth are much loosened and there are brought into existence numerous "dead spaces" around the fragments.

Upon the recognition of the necessity for the elimination of these "dead spaces" depends the successful conservative treatment of such cases. There is no reason why small fragments of bone or a tooth should not survive partial detachment and a certain amount of infection, provided they are relatively immobilised within reasonable time and not allowed to be more or less permanently bathed in pus.

If a simple dental splint is put on, the teeth are immobilised and not the fragments, with the result that the fragments are like floating islands in a sea of pus.

Believing this to be so, I some time ago devised a splint (Fig. 7) (which for want of a better name I call the "screw-lever" splint) and which I believe controls both teeth and fragments in comminuted fractures. It consists of a cap fitting over the retained teeth with arms passing out of the mouth and under the mandible; to the ends of these arms is hinged a padded lever which, by being depressed by a screw anteriorly, is raised in an upward and forward direction posteriorly.

In use the teeth are pressed downwards into their sockets, the fragments are pressed upwards, and are clamped between the cap and the pad with an increasing pressure; the teeth and fragments are both controlled and dead spaces eliminated.

A modification of this splint may be used for controlling depressed fragments at any point along the lower border of

FIG. 9.—Comminuted fracture. Lateral and anterior aspect of mandible. Treated by "screw-lever" method. (Tracing from a positive skiagram.)

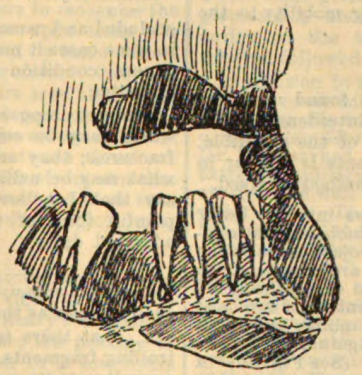

FIG. 10.—The same after use of screw-lever splint. Fragments reduced. Some rarefaction in central area. (Tracing from a negative skiagram.)

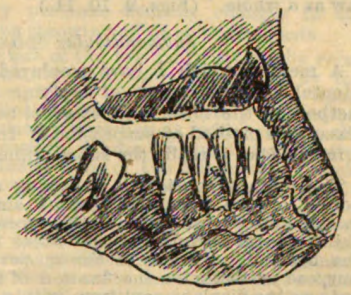

FIG. 11.—The same after removal of splints and normal use of jaw for a month. Consolidation is obviously taking place, and the teeth are in situ. (Tracing from a negative skiagram.)

the mandible. Care must always be taken, however, that the composition pads do not interfere with free drainage and irrigation.

An important asset which this means of control possesses is that the mandible remains functional and is not immobilised as a whole. Function is the best stimulus to bone production which we possess, and one which we might utilise much more fully. Also, I think we would do well to adopt Lucas-Championnière's teaching with regard to fractures—a principle which, so far as I am aware, has not yet been purposely applied to jaw fractures. I have two cases at the present time which illustrate this point in a remarkable manner.

The first is a patient who was awaiting bonegraft with a definite loss at the left angle, and had a double Gunning splint on for some months; something more than a month ago the site of loss was curetted, the screws taken out of the splint, and movement allowed. He is now getting a bridge of osseous tissue thrown out across the gap, and the patient himself says the jaw is as firm as ever it was, and that he can eat anything; the radiographic report is that union has taken place.

The second case is one admitted during the rush in the early part of April, with fracture in the right pre-molar region. Angle bands and expansion arch were put on as a temporary splint, and he was sent out to an auxiliary hospital. For some reason I did not see him for a fortnight, when it was found that the ligature wires to the arch had slipped, the posterior fragments was displaced outwards slightly, but that firm union was taking place. In less than a month firm osseous union was complete, despite the teeth in the fracture line on each side being retained.

Many teeth and fragments are sacrificed in the treatment of jaw injuries which might well be saved for the patient and obviate the subsequent supply and use of artificial dentures. The reason being, I think, that almost entirely "interdental" or suspensory types of splints are used. The lower jaw is simply suspended by means of its teeth to teeth in the upper jaw. The depressor muscles are being constantly used, in fact, they are the only ones used, the elevator muscles being thrown out of action by the splint, and consequently the jaw fragments are pulled downwards and backwards away from the suspended teeth with the frequent result of non-union, and the presence of the teeth is blamed for the result. (Fig. 8.) The extraction of the teeth frequently gives beneficial results by providing drainage, but I suggest that a more surgical procedure is to provide submental drainage and a form of splint which will clamp the upper and lower borders of the mandible, thus relatively immobilising the fragments whilst allowing mobility to the saw as a whole. (Figs. 9, 10, 11.)

Submandibular Splinting.

A method which I have employed and found useful in edentulous cases is that of applying the interdental splint method to the lower and external border of the mandible. Kasanjin's method of suspension of fragments is similar in principle, but is really the submandibular method reversed.

The method consists in inserting screws into the lower border of the mandible through small incisions in non-infected areas; the heads of the screws project through the skin an equal distance to that which they are screwed into the bone. The heads of the screws then serve the same purpose as teeth for the fixation of a splint. An assistant reduces the displacement from within the mouth and stout nickel-silver wires are bent round to fit against the screws and laced into position with ligature wire. (See Fig. 12.) A double vulcanite Gunning splint may be used as an additional support, but I do not regard it as satisfactory by itself in such cases, since it depends for its efficiency entirely on the tightness of a four-tailed bandage and does not therefore relatively immobilise the fragments; but it does effectively prevent function, whereas the submandibular screw method allows of normal function of the jaw as a whole.

In later stages when fractures have been neglected for some unavoidable reason, another factor, that of *fibro-cicatricial contraction* along the track of the original wound, tends to either produce fresh displacements or to exaggerate old ones.

There are two methods of dealing with this condition: (1) the immediate and surgical; (2) the gradual and mechanical. Of the two I think the first is always best when practicable. Time is saved by opening up the fracture-lines, removing the forming cicatrix, and freshening the bone-ends and wiring, or the immediate application of splints to a pre-determined position may be used. Fresh bone formation is thus stimulated. A similar result may be obtained by bending or stretching the cicatricial tissue connecting the fragments, but it is a comparatively slow process, and there is no stimulus to bone formation; indeed, the bone-forming areas of the fragments may have been totally occluded and osseous union may never occur. Nevertheless, in some cases it may be the wisest course when the patient's general condition and resistance does not warrant a severe operation.

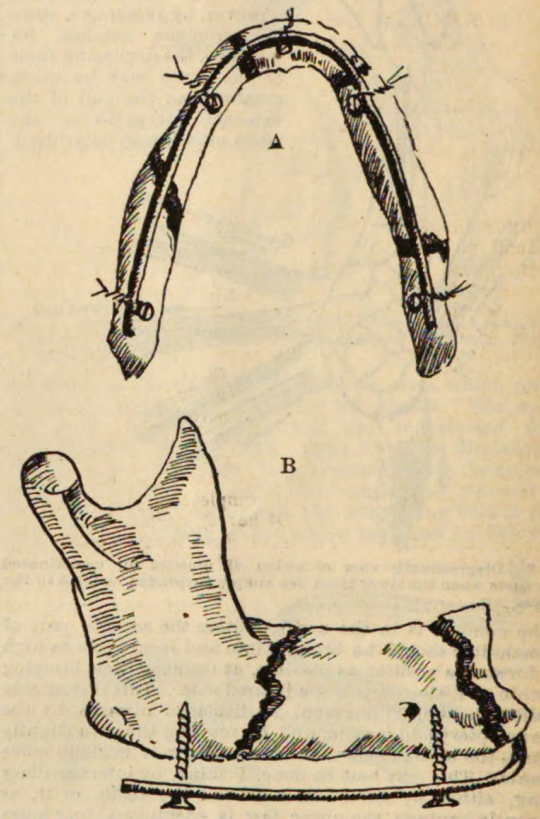

FIG. 12.—Method of submandibular splinting for small fragments in edentulous jaws. A, viewed from below. B, viewed from the side.

I do not propose to describe in detail any of the methods which may be employed for the gradual reduction of old fractures; they are sufficiently well known and are all of what may be called an "orthodontic" type. I would only say that I believe the most useful, powerful, and least painful form of traction is given by the use of screws adjusted daily.

Conclusions.

General principles.—If one may draw conclusions from such a paper as this, I would say:—

1. That there is, or should be, no best method of controlling fragments. Each case should be treated individually, according to its requirements.

2. Control and not absolute immobilisation of the fragments should be the aim of any method of treatment.

3. The utilisation of function and perhaps slight mobility of the fragments from as early a time as possible is the best stimulus to union.

4. A conservative line of control should be adopted whenever possible—i.e., loose teeth and small fragments should be retained and controlled with function rather than be sacrificed to obtain possibly a quick but inferior result. This is in accord, I think, with the trend of orthopædic surgery at the present time.

I have to thank Colonel W. H. Parkes, D.M.S., N.Z.E.F., for permission to publish this paper. Most of the methods described were evolved when I was in charge of the Jaw Department at No. 2 N.Z. General Hospital, Walton-on-Thames.

HÆMOGLOBINURIA (BLACKWATER FEVER).

OBSERVATIONS ON A TRANSIENT FORM OCCURRING AMONGST THE TROOPS IN MACEDONIA.

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Introduction.

SINCE June, 1916, we have been on the staff of a British general hospital attached to the Royal Serbian Army, and during that period have had the opportunity of seeing 46 cases of blackwater fever. Of these cases 13 occurred amongst the personnel of the hospital and other British units attached to the Serbian Army in the same area. During the same period a neighbouring British general hospital also treated some 30 cases. Of our cases, 38 occurred between Oct. 11th, 1917, and March 23rd, 1918.

The cases varied much in severity, some showing transient attacks of hæmoglobinuria only, others presenting marked diminution of urine or even complete and fatal suppression. In a few instances death was the result of uræmia associated with almost complete suppression of urine (1½ to 2 oz. of urine in the 24 hours), despite freedom from hæmoglobinuria for two or three days before death. With reference to amount of urine two clearly differentiated types of case were observed: 1. Those associated with polyuria which invariably recovered. 2. Those associated with diminution or suppression of the urine, some proving fatal.

The object of this paper is to draw particular attention to the cases showing a transient hæmoglobinuria. We regard the recognition of the danger of these cases as of prime importance for two reasons. 1. When hæmoglobinuria has once occurred a recurrence is very probable, and a transient case may subsequently develop a severe or even fatal attack. 2. Experience leads us to believe that all forms of blackwater fever will be more prevalent in the winter of 1918–19 than they were in the two preceding winters.

We have not been able to make any detailed study of the literature of the subject. Manson[1] appears to recognise the transient cases but does not lay stress upon them. A malarial hæmoglobinuria has been described by some writers and regarded as distinct from blackwater fever. Our view is that the transient cases we have seen are true blackwater fever in a mild form, and that, except in degree of severity, there is no difference between them and the severe and fatal forms of blackwater fever. All grades between these two extremes have been met with. We are also of opinion that the disease is not directly due to quinine, and we have seen no cases which could be regarded as quinine hæmoglobinuria.

Symptoms.

In these mild cases the symptoms observed are: nausea or vomiting, shivering, or even a definite rigor, followed by sweating; sometimes pain or a dragging, heavy sensation in the loins; usually some degree of jaundice; the passage of port wine or porter coloured urine, which in a few hours becomes normal in appearance.

These symptoms may be slight in degree or moderately severe, but are never as severe as in a sustained case of blackwater fever. They may be no more grave than those accompanying a mild malarial paroxysm, and but for the colour of the urine advice would very likely not be sought in many instances. Indeed, it is quite possible that the condition may be overlooked altogether. For instance, one patient (No. 0/553), convalescent from malaria, complained that he had passed black water during the night—a true statement—and also said that he had not had a rigor or feeling of cold, or even headache, backache, or sickness. His temperature had been 99·2°, and the night nurse reported that he had shivered and afterwards perspired freely. Such an example shows that the general symptoms may be trivial in nature or even absent.

Actual vomiting, also pain in the back and loins, are not common. The jaundice is variable in degree, but never severe, and is of the hæmolytic type. None of these cases have shown more than a moderate grade of fever; the highest temperature recorded was 103·2°; as a rule when the urine cleared the temperature became afebrile and remained so unless malarial recurrences occurred during convalescence.

The urine at the onset of an attack varies in colour from a reddish madeira to a deep port-wine shade which, in reflected light, appears almost black.

After being allowed to stand for a short time a light brown sediment is deposited, leaving the supernatant urine clear. The amount of deposit is usually considerably less than in the severer forms of blackwater fever. This appearance rapidly passes off, and after two or three specimens showing hæmoglobin colouration the succeeding urine looks normal to the naked eye.

Thus case No. 16,186 passed dark "port wine" urine for the first time in the afternoon; the next specimen, obtained during the night, although lighter in colour, still contained hæmoglobin; but the third specimen at 9 A.M. on the following morning was free from hæmoglobin.

The patient already mentioned (No. 0/553) passed three specimens of madeira-coloured urine between 1 A.M. and 8 A.M.; no more urine was passed until 4 P.M. the same day, and this contained no hæmoglobin.

In our series of cases there has never been any marked diminution in urine passed. In some cases a transient polyuria has been present; thus in the case just quoted 53 oz. were passed between 4 P.M. (the first normal specimen) and 8 A.M. the next morning.

Chemical and microscopical examination of the urine showed a remarkable sequence of changes.

The hæmoglobin, at first giving a very marked reaction, rapidly disappears. The amount of albumin, considerable in the first specimen, rapidly disappears in succeeding ones, but rather less rapidly than the hæmoglobin. Microscopically, the first specimen usually shows numerous casts—granular, hyaline, and epithelial—also many epithelial cells, in addition to a varying amount of granular amorphous debris, and occasionally a few red blood cells. These casts and epithelial cells rapidly disappear from the urine in succeeding specimens, as will be seen by a reference to the details of urinary findings. This sequence is so striking a feature of the transient form that, in a case admitted to hospital with a history of having passed black water, the rapid disappearance of casts and albumin from the urine may be taken as confirmatory evidence of recent hæmoglobinuria. Indeed, we are inclined to go further and say that, in this country, this sequence is sufficient to diagnose the occurrence of hæmoglobinuria even in the absence of any history of that symptom.

To explain this series of changes it would seem that the "toxin" of blackwater fever, (1) by its action on the red blood cells gives rise to hæmolysis with resulting hæmoglobinæmia and hæmoglobinuria, and (2) by its direct action on the kidney produces necrotic changes in the tubules, followed by the throwing off of epithelial casts.

In addition to the action of the toxin directly on the renal tissues, renal functions are profoundly influenced by the damaging effect of the passage of hæmoglobin and waste corpuscular debris. Both factors are probably responsible for the marked circulatory obstruction evidenced by the extreme capillary congestion. These tubular and congestive changes are well marked in some of the fatal cases of blackwater fever. The throwing off of the cast is the first step in the process of the repair of the kidney lesion.

In the transient cases we are describing, the "dose" of the toxin is a small one; repair begins at once, for casts are very obvious in the first specimen of black water passed. In the severer cases which recover casts are at first seldom seen or are seen only in small numbers; later they increase in number until they reach a maximum, when they may be present in enormous numbers, and then gradually diminish as the case improves, finally disappearing altogether. It is rare to find casts in cases which pass small amounts of urine and eventually prove fatal. The presence of large numbers of casts is therefore of much importance in prognosis.

Details of the urinary changes in three cases of transient hæmoglobinuria are given. Cases No. 16,186 and No. 0/553 have been referred to above. Case No. 0/551, a Greek doctor, was sent in by a French medical officer as a case of blackwater fever. He had passed black water from noon on the previous day until 10 A.M. on the day of admission. No hæmoglobinuria occurred afterwards but the urinary changes provided confirmatory evidence of his history.

Urinary Findings in Cases of Transient Hæmoglobinuria.

CASE NO. 16,186.—4/2/18, 3.30 P.M. Urine almost black, sp. gr. 1023, acid; albumin, +++; guaiac test, +++. Deposit: Casts, *many* granular and a few granular epithelial; cells, epithelium; R.B.C., none.

4-5/2/18, night. Urine red brown, sp. gr. 1020, acid; albumin, +++; guaiac test, +; casts *fewer* in number, same varieties; R.B.C., none.

5/2/18, 9 A.M. Urine, no naked-eye Hb, sp. gr. 1015, acid; albumin, +; guaiac test, 0; *no casts*; some pus cells: R.B.C., few.

[1] Manson: Tropical Diseases (sixth edition), p. 286.

CASE No. 0/553.—8/3/18, 1 to 5 A.M. Urine (clear) madeira, sp. gr. 1030, acid; albumin, +++; guaiac test, +++; bile pigment, 0. Deposit: Few granular and fine hyaline casts; some renal epithelial cells and leucocytes; R.B.C., none.
8/3/18, 4 P.M. Urine, no naked-eye Hb, sp. gr. 1010, acid; albumin, slight cloud; guaiac test, 0; casts, none; few renal epithelial cells and leucocytes; R.B.C., none.
4 P.M. to 8 A.M., 8/3/18–9/3/18. Urine normal, sp. gr. 1018, acid; albumin, slight cloud; guaiac test, 0; some granular casts; renal epithelial cells.
14/3/18. Urine normal, sp. gr. 1030, acid; albumin, 0; guaiac test, 0; no casts; no cells; no R.B.C.; amorphous urates.

CASE No. 0/551.—23/2/18 (on admission). Urine yellow orange, sp. gr. 1020, acid; albumin, ++; guaiac test, 0; bile pigment, 0. Deposit: Casts *abundant*, granular, hyaline, epithelial; *many* renal epithelial cells and leucocytes; R.B.C., very few; mucus.
25/2/18. Urine normal, sp. gr. 1012, acid; albumin, +; guaiac test, 0; casts, *some* granular and hyaline, *few* degenerated epithelial; *scanty* leucocytes and renal epithelial cells.
28/2/18. Urine normal, sp. gr. 1010, acid; albumin, very faint haze; guaiac test, 0; casts, *few* hyaline and finely granular; cluster or two of leucocytes; R.B.C., none; cell debris.

Albumin. +++, heavy deposit. ++, dense cloud. +, definite cloud.
Guaiac test. +++, very marked reaction. ++, marked reaction. +, definite reaction.

Associated with hæmoglobinuria and the symptoms already mentioned, the spleen is found to enlarge and not infrequently become tender. In some cases the liver also enlarges, and there may be tenderness over the gall-bladder region. All these signs disappear shortly after the hæmoglobinuria stops.

Convalescence, if not complicated by malarial relapses, is, as a rule, rapid and not much more prolonged than after an attack of malaria. A certain degree of anæmia occurs, but it is not marked. In most of the cases, however, convalescence was retarded by malarial relapses, but without further hæmoglobinuria.

Etiology.

In the present paper we shall only deal with certain points in connexion with this series of cases, but the remarks apply also to blackwater fever in general.

(*a*) *Associated with other diseases.*—Every case gave a history of repeated attacks of malaria, and many suffered from malarial relapses whilst in hospital.

Some were under treatment for, or convalescent from, malaria at time of onset of hæmoglobinuria. No case of blackwater fever has been seen in association with any other disease, with two possible exceptions, which were at the time under treatment for dysentery and malaria. (One of these occurred in the present series—viz., Case No. 16,816.) Examination of the blood for malarial parasites was usually negative. Of the 9 cases of this variety of blackwater subtertian parasites were present in one case only; another case showed scanty parasites of uncertain type, probably benign tertian. In the remainder no parasites could be found. One of the negative cases, however, showed hæmozoin pigment in the leucocytes, and benign tertian parasites were found in the blood in a malarial relapse (February, 1918) during convalescence.

(*b*) *Length of time exposed to malarial infection before hæmoglobinuria occurred.*—We are informed that malaria is not a common disease in Serbia, and that it is of a mild type.

A large proportion of malarial patients admitted to the hospitals attached to the Royal Serbian Army contracted the disease in the summer of 1916, when the re-equipped Serbian Army, recently landed from Corfu, was encamped in the neighbourhood of Salonika. The army took its place in the line early in August, 1916, and at that time there were many cases of malaria. All the transient cases and all except 8 of the more severe forms of hæmoglobinuria occurred in the winter of 1917–18, and it may therefore be assumed with a considerable degree of certainty that the Serbian cases had not passed through more than two severe malarial seasons. One of the transient cases occurred amongst the British troops attached to the Serbian Army, and he came out to Macedonia in June, 1917, and was therefore exposed to one malarial season only.

These two facts—namely, that all except 8 out of the 46 cases of blackwater fever occurred during the 1917–18 winter and that no transient cases occurred before this winter—we consider, justify our opinion (1) that an increase in blackwater fever amongst the troops in Macedonia may be expected in the 1918–19 winter; and (2) that a definite number of cases of transient hæmoglobinuria, precursors of the more severe attacks, have already very probably escaped, and may in the future escape observation. The increase of liability to blackwater fever associated with and, in all probability, favoured by continuous periods of residence in a malarious and blackwater fever country has been frequently noticed, and is now well recognised.

(*c*) *Topography, weather, &c.*—The cases were derived from one sector of the Serbian front, which occupies a position in a wide valley leading from the plain up to the mountains where the trenches were situated.

In both plain and valley malaria of a severe type is very rife. The incidence of the disease reaches its maximum during the five or six weeks between the middle of September and the end of October. The incidence curve of blackwater fever, on the other hand, did not begin to rise until October, reached its maximum in February, then fell quickly, and after April and throughout the summer kept very low. Most of the cases occurred during the colder part of the year, and there is no doubt that the condition, as in malaria, may be precipitated and aggravated by exposure to cold and fatigue. The influence of these factors is supported by the well-known effect of cold in producing an attack of hæmoglobinuria in cases of paroxysmal hæmoglobinuria. In many instances cold could certainly not be excluded, because falls of snow and hard frosts were frequent in the trenches during these months. In more than one case, however, this factor could apparently be discounted because the attack occurred in quite warm weather, such as was experienced at times during the winter months of 1917–18, and amongst individuals living in the plain and not in the mountains.

(*d*) *Presence of a specific hæmolysin, &c.*—A certain number of experiments have been carried out by one of us (L. G. P.) to determine, if possible, the presence of a specific hæmolysin.

The difficulties in demonstrating a specific lysin are great; it is highly probable that by the time the hæmoglobin appears in the urine the lysin has done its work and disappeared from the blood. This would seem to be so particularly in the transient forms of hæmoglobinuria, and even in those cases which show a naked-eye hæmoglobinæmia at the time of the experiment the same may be true. Hæmolysis is, of course, taking place coincidently with the rigor, vomiting, and raised temperature; and if the serum were taken at this early period better results might be obtained; these symptoms, however, frequently occur before the patient comes into hospital or are thought to be the onset of an ordinary malarial attack. Up to the present we have not been successful in obtaining blood serum in the initial stage of an attack, and we have not obtained any evidence of a specific lysin.

The sera have been tested against the washed red blood cells of individuals in hospital for other conditions than blackwater fever, and control experiments have also been done by putting sera of normal individuals up against the washed red blood cells from cases of blackwater fever.

As a rule a 10 per cent. dilution of sera and 10 per cent. dilution of red cells were used, but in a few cases undiluted sera were also tried against a 10 per cent. dilution of red cells. The hæmolytic tubes containing sera and cells were put into the incubator at 37° C. for one hour, being shaken about every 10 minutes; afterwards they stood outside the incubator for 12 hours. As we had no ice-chest this was timed so that the tubes were outside the incubator all night, for the nights were frosty. The sera of blackwater fever patients were also tested against the citrated blood of these normal individuals in order to see if agglutination of the red cells took place. Sufficient serum and cells for these tests can be obtained from 1 c.cm. of blood; this amount of blood can be easily removed from the patient's vein with a hypodermic syringe and needle without doing the least harm to the worst case of blackwater fever.

The sera of five of the transient cases were tested in this manner.

In two cases only was there even the slightest degree of hæmolysis and in each of these the tinge of hæmolysis occurred with one group of normal cells only. It is perhaps noteworthy that these two blackwater sera showed marked agglutination of the red cells when tested against the citrated blood from which this group of cells was obtained.

Marked agglutination occurred in some of the other experiments, but no hæmolysis.

A rather interesting result was obtained in another case. The point has probably been already observed, but it throws a little light on the changes occurring in blackwater fever. The specimen of urine passed by the patient (No. 0/553 before the blood was taken contained hæmoglobin; the next specimen passed some hours later was free from hæmoglobin, but the blood serum showed most definite tinting with hæmoglobin (hæmoglobinæmia). The hæmoglobin free in the blood-stream had probably been dealt with by the liver and it was noted subsequently that the stools apparently contained an excess of bile pigment.

The fragility of the red cells in some of these cases was tested against varying percentages of saline and found to be normal. It is universally agreed, we believe, that the "fault" in blackwater fever does not lie with the red cells.

(*e*) *Relation between quinine and hæmoglobinuria.*—We have formed the opinion that quinine is not *the* cause of hæmoglobinuria.

We have seen cases where quinine had not been taken for weeks previous to the appearance of blackwater fever. Patients have been given quinine during the attack and no untoward results have occurred; moreover, several of the cases have shown typical malarial attacks during convalescence and have been treated with quinine in doses up to 70 gr. per diem without a return of blackwater. Outside our own experience, however, there would appear to be some evidence that quinine may in very rare instances act as the determining agent in precipitating an attack of blackwater fever comparable, as already suggested, to the effect of exposure to cold, over-exertion, and fatigue. We are of opinion, however, that the possible existence of such cases should not influence treatment, for, even if they do exist, they are extremely rare.

We tried the effect of adding red blood cells from cases of blackwater fever to solutions of common salt in strengths of 0·05 to 0·9 per cent., in each of which was dissolved quinine bihydrochloride in strengths which we estimated would represent the concentration of quinine in the blood when administered by the intravenous method in doses of 10 to 15 gr. It was found that in some cases hæmolysis did not occur with strengths above 0·3 per cent.—i.e., the normal limit, but in other cases hæmolysis occurred with all strengths up to 0·9 per cent. It was therefore thought possible to separate out two classes of blackwater fever—namely, those in which quinine could be given, and those in which its action would be harmful, and that in this way the test would prove an important guide to treatment. Later, however, we obtained similar results in patients not suffering from blackwater and actually taking quinine at the time. It was also found that in cases of hæmoglobinuria whose red cells showed hæmolysis in all strengths of the solution, the quinine given caused no increase in the amount of hæmoglobinuria, and that after an attack had passed off subsequent administration of the drug did not produce a recurrence.

In concluding our observations on etiology, we would add our belief that blackwater fever is due to malaria, although not necessarily associated, at the time of its occurrence, with a malarial paroxysm, and that the true causal factor of the blackwater fever attack must be looked for in connexion with the toxins of the malarial parasite.

Certain work has been done on the malarial toxins, but there still remains a considerable field for research into their nature. The suggestion that the hæmolysis is due to supersensitisation of the red blood cells does not, in our opinion, give a satisfactory explanation of the fatty degeneration of the myocardium and the necrotic changes found in the liver and spleen in fatal cases. Nor does this theory explain the very marked degenerative and tubal changes or the extreme congestive disturbances which occur in the kidney in such cases. We consider the uræmia and anuria are due to these renal changes rather than, as is usually held, to the mechanical effect of the blocking of the tubules with hæmoglobin.

Further, these changes much resemble those found in other severe toxic conditions—e.g., eclampsia—and afford strong presumptive evidence of the presence of a toxin in the blood. This toxin apparently differs from the ordinary malarial toxin, since in deaths from malaria the spleen, liver, and particularly the kidneys, do not show the striking changes seen in blackwater fever. Certain facts appear to point to this special toxin being elaborated in the intervals between malarial attacks, for hæmoglobinuria frequently occurs unaccompanied by any actual malarial paroxysm.

Treatment.

All our patients were treated at the commencement of their illness as if suffering from severe blackwater fever, but when it was seen that the case was a transient one treatment was modified accordingly.

Warmth, absolute rest in bed, administration of a saline aperient, and copious drinks of lemon water, barley-water, soda-water, &c., were ordered. The only food allowed was milk, and patients were encouraged to take at least 5 pints of fluid in the 20 hours; some, indeed, drank as much as 8 pints in that period. Some of the cases received rectal salines, 5 oz. of normal saline being given every two hours, or 10 oz. every four hours. These were, however, stopped in the course of a few hours when it became obvious that the case was a transient one.

At the end of 48 hours the strict milk dietary was relaxed, and milk pudding, bread-and-milk, jelly, &c., were allowed. The diet was further increased *pari passu* with the improvement in the urinary symptoms, which usually cleared up so rapidly that the patient soon reached a full diet.

Quinine was given, not as a routine measure, but only if evidence of active malarial infection was shown, either by finding parasites in the blood or by the development of malarial symptoms following on, or in addition to, the hæmoglobinuria.

When quinine is necessary it is, perhaps, best administered intramuscularly, but it has also been given by the mouth or, occasionally, by the rectum, 5 gr. being added to each rectal saline. Quinine sulphate has been given by the mouth and the bihydrochloride by the two other methods.

Quinine amblyopia is stated to be more common in blackwater fever than in malaria, and therefore it has been recommended that great care be taken in determining the dosage of quinine in this disease; whilst not disputing this point, we think that some of the visual symptoms may have been due to retinal hæmorrhages, such as have been observed in certain of our cases by our colleague, Captain W. Niccol, R.A.M.C., ophthalmic specialist to the hospital. During the hæmoglobinuria we have not given more than 45 gr. in the 24 hours, but in the relapses of convalescence we have given 60 gr. daily, and in one case of a severe relapse 70 gr. a day were given on two successive days.

During convalescence a generous diet was ordered and iron and arsenic given.

Convalescent treatment was continued for a longer period than for an ordinary malarial attack. The period of absolute rest in bed should be about ten days; some of our cases, however, were up before that length of time had expired, because it is almost impossible to keep a Serb patient in bed when he is feeling anything approaching well.

As previously stated, malarial relapses occurred during convalescence in nearly all the cases and were treated as ordinary malarial attacks.

A careful watch should be kept on the urine during these relapses on account of the possible recurrence of hæmoglobinuria. All cases after recovery from an attack should be removed from a blackwater fever area, and, if possible, evacuated from Macedonia owing to the risk of recurring and more severe attacks of blackwater fever.

Prognosis.

The prognosis of the actual attack of transient hæmoglobinuria is invariably good; indeed, as stated above, the symptoms may be quite trivial, and most cases would recover even if no treatment were received. The outlook, however, may be grave in a patient already seriously debilitated by previous malaria or dysentery. In the only case in our series which gave us any anxiety there was marked debility from recent malaria and dysentery at the time the hæmoglobinuria occurred; after three days, however, the patient made a rapid improvement and was soon out of danger.

As for their future prognosis, we believe that these cases are liable to recurrences of hæmoglobinuria, especially if they remain exposed to malarial infection. Moreover, in all probability these recurrences will prove more severe than the original attack. Judging from the cases we have seen, no permanent damage is done to the kidneys by these transient attacks.

Conclusions.

This paper has been written to draw particular attention to these cases of transient hæmoglobinuria for the following reasons:—

1. The condition is frequently a slight one and may escape notice unless looked for; but apart from its mild character it is in all respects the same disease as blackwater fever and should so be regarded. All varieties, including intermediate cases between the transient and the severe and fatal forms of blackwater fever, have been seen.

2. Transient hæmoglobinuria is very likely to be the precursor of more severe recurrences.

3. It is highly probable that the transient cases and all other forms of blackwater fever will be more common among the troops in Macedonia during the winter months of 1918–19 than in previous winters.

Finally, our thanks are due to Colonel S. F. Clark, A.M.S., the officer commanding the hospital, for allowing us to make use of these cases; also to our colleagues, Captains H. C. Nickson and C. G. Teall in particular, for their help in the diagnosis and treatment.

Macedonia, May, 1918.

OUTBREAK OF TYPHOID FEVER IN TORRY, ABERDEEN.—For the last three weeks the notifications of typhoid fever from Torry, Aberdeen, have been 15, 28, and 12. Dr. Matthew Hay, medical officer of health for Aberdeen, states in last week's report that it is now practically certain that many of the cases are traceable to an infected milk-supply.

A NOTE ON

THE SUSCEPTIBILITY OF THE ANTI-SCORBUTIC PRINCIPLE TO ALKALINITY.

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AND
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THE main sources for the supply of our antiscorbutic requirements are certain vegetables and fruits, most of which are cooked before they are eaten, although a certain proportion is consumed raw, especially in the summer. In the winter very little, if any, fresh uncooked vegetable is eaten in this country, but unpreserved raw fruit is usually within the reach of most. During the forthcoming winter, however, owing to the unsatisfactory fruit crops, it may be anticipated that the main source of antiscorbutics in our diet will be found in cooked vegetables, thus leaving us dependent on a rather less profuse supply of this dietary essential than is customary in normal times. Without anticipating any alarming consequences, it will nevertheless be advisable to bear this point in mind.

The object of this note is to describe a few experiments that form a part of an inquiry in which we are now engaged, which reveals a fact, in our opinion, of practical as well as of theoretical significance. The observation in question discloses the extreme susceptibility of the antiscorbutic factor to alkalies.

The most convenient way of testing the antiscorbutic potency of a substance is on guinea-pigs. These animals, as is well known, if kept on a diet of oats, bran, and autoclaved milk, succumb to scurvy within a period of 3–4 weeks. Any antiscorbutically active substance given in addition to this scorbutic diet will either delay or prevent the onset of scurvy, according to the potency of the dose. It is found that a daily addendum of 3–5 c.cm. of freshly expressed orange juice keeps a guinea-pig in good condition.

In our first experiment we administered daily doses of 3, 5, and 7 c.cm. of orange juice made neutral to phenolphthalein respectively to three guinea-pigs, which were kept on a scorbutic diet. All these animals throve well for 78 days, gaining in weight. At the end of that period they were chloroformed, and at the post-mortem examination no scurvy was observed. When, however, the orange juice was made N/20 alkaline with NaOH and stored for 24 hours in the cold room before administration daily doses of 3, 5, and 7 c.cm. did not prevent or delay the onset of scurvy. This result is not due to the effect of the alkali on the animals, for when the N/20 alkaline orange juice, after having been stored for 24 hours, was made N/20 acid with HCl before being given to the animals the effect still persisted. In this instance, as in the previous experiment, daily doses of 3, 5, and 7 c.cm. did not prevent or delay the onset of scurvy.

A much less drastic treatment was also found to be fatal to the antiscorbutic factor. Another set of three pigs received daily 3, 5, and 7 c.cm. of orange juice made only N/50 alkaline with NaOH on the day of feeding. All the animals died of scurvy after a slightly prolonged period, thus showing that the juice, after being made alkaline, retained only a trace of its antiscorbutic activity.

These experiments show definitely that alkalinity has a very deleterious effect on the antiscorbutic potency of orange juice. Theoretically this observation invites further investigations; but, as we have already pointed out, in view of the present food position it is of some practical importance. Most antiscorbutic vegetables are either neutral or very slightly acid, and any culinary manipulation which entails alkaline treatment, even to a slight degree, will be instrumental in the destruction, if not of the entire, at least of a significant part of the antiscorbutic potency of such vegetables. At a time when our need for antiscorbutics will have to be satisfied only by the consumption of cooked vegetables this becomes a problem of importance, and an immediate elucidation of the matter to the lay public becomes very desirable. At any rate, the point merits the attention of those interested in dietetics.

THE PROGNOSIS IN "TRENCH" NEPHRITIS.

BY S. C. DYKE, M.B., B.CH. OXON.,
CAPTAIN, R.A.M.C.

ALTHOUGH a number of reports have been published upon the clinical course of that particular form of renal disorder so rife among the British Armies in France and usually known as "trench" nephritis, there are up to the present comparatively few observations upon the later progress of these cases. With a view to throwing some light upon the prognosis in this condition an attempt is made below to analyse the after-history of 50 of these patients up to periods of within 12 months from the onset of acute symptoms. The 50 cases form part of a series of 100 upon which clinical observations were made at a base hospital in France in the early months of 1917. It has been made possible to follow their course through the home hospitals and disposition by means of the scheme devised by the National Research Committee. At a later date it is hoped that a fuller report, showing the final condition of all the 100 cases, may be made possible through the same means.

Analysis of After-histories.

Mortality.—One death only is reported in this series of 50. The cause of death in this case was scarlet fever, which developed two weeks after admission to a home hospital and a month from onset of nephritis. Fatal on 25th day from appearance of rash. This case was one of the mildest in the series. Œdema had disappeared by end of first week, and albumin from urine by eleventh day. At time of appearance of scarlet fever patient was convalescent. No P.M.; no record of condition of kidneys at death. No statement as to actual cause of death, whether from renal complications or otherwise, accompanied schedule of case.

The nephritis here, although it may have rendered the patient more than usually susceptible to the action of the scarlet fever toxins, cannot be regarded as the actual cause of death.

The prognosis with regard to life is very good.

Degree of recovery.—The schedules of the remaining 49 patients show their histories up to periods from the middle of the second to the end of the ninth month from the onset of the nephritic symptoms. They were universally filled in by the medical officers of the home hospitals, either on the actual settlement of the disposition of the patient or at a period in the history of the case when, although not actually made, it was evident what it would be.

Of the 49 cases, 23 are reported as having been discharged to the Command Depôt as fit for service. Six more are stated to have been transferred to homes or minor hospitals for the completion of convalescence, with every prospect that they also would become fit for the Command Depôt. In all these cases the recovery may be regarded as having been complete, and they will hereafter be referred to as "fit." That is to say, 29 out of 49, or approximately 60 per cent., of the patients made a return to complete health.

The prognosis as to perfect restoration to health is fair.

Of the remaining 20 cases, 11 were invalided from the Army, 4 were still undergoing treatment in hospital with no prospect of their ever regaining perfect health, and 5 had been classed C III. and sent to "employments." These will hereafter be all classed together and referred to as "unfit." In 40 per cent. of the series, then, the re-establishment of function was incomplete, and although not entirely destroyed the health of the patients was permanently damaged.

Influence of age on prognosis.—

In the clinical report on the original 100 cases[1] it was pointed out that the incidence in regard to age is spread with a rather striking evenness over the five-yearly periods between 20 and 40. The vast majority of the British soldiers in France fall between these ages, and it is not surprising that only one case occurred below 20, the age of this patient being 19. Considering, however, how comparatively few men of 41 or over were in 1916 on active service in France, it is rather suggestive that 8 per cent. of the cases fall into this category. The ages of incidence for the remaining 91 cases were as follows:—

Age 20 to 25	23 cases.	Age 31 to 35	23 cases.
,, 26 to 30	21 ,,	,, 36 to 40	24 ,,

[1] Clinical Observations on 100 Cases of "Trench" Nephritis, Captain S. C. Dyke, R.A.M.C., Journal of the Royal Army Medical Corps, February, 1918.

There are probably considerably more men in the British Expeditionary Force in France between the ages of 20 and 30 than between 31 and 40, and it is certainly worthy of note that the number of cases in the former group was only 44, as compared with 47 between the latter ages. There are, moreover, certainly fewer men in the field between 36 and 40 than between 20 and 25, and the fact that the figures for these two series are almost identical—24 as compared with 23—points to the same conclusion—namely, that the liability to the malady increases with age.

A further examination of the after-histories indicates that age is also an important factor in the prognosis. A consideration of the accompanying table will make this evident:—

		Age over 35.	Age under 35.
Becoming fit	29	4	25
Not becoming fit	20	11 (73%)	9 (27%)

In the fit class only 2 patients occur of the age of 40 or over, and only 4 of 35 or over, and this despite that in it are contained 60 per cent. of the whole series. Of those patients who failed to become entirely fit 6 were over 40 and 11, or over 50 per cent., were over 35 years of age. Of 15 patients over 35 years of age 11, or 73 per cent., failed to become fit; of 34 patients under that age only 9, or about 27 per cent., failed to regain complete health.

The rough conclusion may be drawn that, whereas in persons under the age of 35 suffering from this condition the probabilities are strongly in favour of complete restoration to health, in those of over 35 the likelihood is that permanent damage will remain.

The prognosis becomes worse with increase in age.

Resulting disabilities.—Of the 20 cases returned as unfit or likely to become so the reasons for the decision as given by the medical officers filling in the schedules were as follows:—

Albuminuria persisting from second to sixth month in 8 cases.

Chronic nephritis, further specified as interstitial in 2 cases and as parenchymatous in 1 case. In all 7 cases.

Arterio-sclerosis, 2 cases.

Anæmia, once accompanied by "backache" and once by œdema in 2 cases.

One patient was transferred to class C 3 on account of his age, 42. This man gave a history of an attack one year previously.

Arterio-Sclerosis.—

Although arterio-sclerosis was given as the reason of unfitness in only 2 cases its presence was observed in the peripheral circulatory system of 8 out of the 20 patients failing to make a complete recovery: in one other signs of this condition were noted in the retinal vessels only, making a total of 9 in which the arteries were obviously affected. In one further case a systolic bruit is recorded as the only abnormal feature in the cardio-vascular system. In 6 arterial changes are definitely stated as not to have been found, while in 4 no observations were recorded on this point. Thus of the patients who failed to do well 9 showed definite signs of arterial degeneration, in 7 such signs were absent, in 4 they were not looked for.

Arterio-sclerosis is present in about 50 per cent. of patients not entirely restored to health.

Of the 29 patients returned as fit for service observations were made as to the state of the cardio-vascular system in all except one, and in only one is any morbid change recorded. This consisted in a slightly accentuated second sound and some thickening of the radial artery. It occurred in a patient in whom a cloud of albumin was still present in the ninth month. The schedule was not very definite as to the patient's disposition, and it is possible that he was actually returned as unfit after it had been completed and had left the medical officer's hands. In 80 per cent. of the cases, then, there was no appearance of signs of arterial degeneration during convalescence.

Arterio-sclerosis is not a common immediate result of the condition.

The arterial changes referred to are reported as appearing from the third to the ninth month from onset.

Eye changes.—Examination was made for eye changes by the medical officers having charge of the cases in the home hospitals in about half of the series.

In only 6 were definite changes recorded, and these all belong to the unfit category. Of the changes, tortuosity of the retinal vessels with high reflex from the arteries and other signs of arterio-sclerosis were recorded four times, choroidal hæmorrhages twice, pallor of the disc twice, hyperæmia of the disc twice, "Tay's choroiditis" once. In no case was there any marked departure from normal vision.

Other factors in prognosis.—Search through the past histories of the patients who failed to make a good recovery revealed the fact that 3 of them had had definite attacks of renal trouble in the past. As these were the only patients in the series of 50 giving such a history it is striking to find them all in the minority of cases which failed to do well.

Of the 9 patients under the age of 35 who failed to make a complete recovery, and whose failure so to do cannot therefore be attributed to changes in the kidney associated with age, 2 gave a past history of acute rheumatism and 3 of acute pulmonary conditions in the past. One gave a history of "backache," which might or might not have been a renal symptom. Two of the remainder were clinically very severe cases from the onset. The remaining one was clinically a mild case at the onset, and it was with surprise that it was found on receiving his after-history sheet that he had been invalided from the Army in the ninth month, albumin being still present in the urine, as suffering from "chronic nephritis." Unfortunately, syphilis was not excluded in any of these cases.

Œdema and prognosis.—The œdema had disappeared in the majority of cases before the patients were sent to England, but in a few it was still persisting at the time of transfer to the home hospitals. By means of the after-history schedules it has been possible to form some idea of the relationship between the persistence of the œdema and the prognosis.

In every case except 1 the œdema disappeared before the albuminuria. The periods of its disappearance were as follows:—

Before end of first week	23 cases.	From second week to end of first month ...	10 cases.
During second week ...	6 ,,	During second month	7 ,,

It was still present after the end of the second month in 4 cases.

Of the 39 cases in which it disappeared before the end of the first month 28 became fit; of those in whom it persisted after the first month only 1 became fit. In this case the œdema disappeared finally on the forty-fifth day, and this was the only case in which it is reported as persisting after the albuminuria.

From the above it is concluded that:—

1. The œdema usually disappears during the first week. Its persistence during the second week is common; its persistence after the second week renders the prognosis increasingly unfavourable.

2. The presence of œdema after the end of the first month indicates that restoration to health will be incomplete.

Albuminuria and prognosis.—Practically all the patients were sent to England still showing albumin in varying quantities in their urine. Its disappearance was recorded on the schedules in 32 out of the 50 cases. From the time of onset the dates of its disappearance were as follows:—

Before end of first week	0 cases.	During second month ...	12 cases.
During second week ...	2 ,,	During third month ...	5 ,,
From second week to end of first month	7 ,,	During fourth month ...	2 ,,

Total before end of fourth month, 28 cases.

Of the above 28 cases, only 2 fall into the unfit class. Of the remaining 22 cases, it disappeared during the fifth and sixth month in 4 cases, but of these 2 were reported as permanently unfit. It was still present at the time of making the report in 18 cases, of whom 16 had been invalided out of the Army or classed C 3.

The above figures seem to show that—

1. The albuminuria usually ceases towards the end of the first or during the second month.

2. It may persist during the third month and the case still end favourably.

3. Its continuance after the end of the third month from onset renders the prognosis as regards restoration to complete health unfavourable.

Note on Etiology.

Although in collecting the facts for the original clinical report it had been hoped that some light might be thrown on the etiology, this hope has hardly been justified. Only two positive deductions bearing on the question could be made.

1. That the condition is proportionately commoner among troops the greater the exposure their work entails.

2. That the liability to the condition increases with age.

Among suggestions as to the causation of this condition made in the past have been (1) the presence of chloride of lime in the drinking water; (2) the absence of vitamines from the rations; (3) poisoning by heavy metals ingested in

solution in the juice of tinned fruits; (4) the action of poisonous gases; (5) that it is due to an infection.

In regard to suggestions 1 and 4 it is sufficient to point out that this condition was common in the Federal Army during the American Civil War, when in the Wilderness that Army was fighting under conditions of exposure and hardship similar to those now imposed upon the men on the Western front. But the Federal troops were strangers to both chloride of lime in their drinking water and poisonous gases in their trenches. Moreover, if poisoning by gas plays any part in this condition, the great increase in the use of gas shells, dating from the end of 1916, should have been followed by a corresponding rise in incidence, and this has not been the case.

As to the absence of vitamines, it is sufficient to point out that at the period under consideration preserved food formed only a small part of the rations, and there was no reason to suspect any shortage of these bodies.

If the consumption of tinned fruit has anything to do with causing the condition it ought to be proportionately more common among the officers than among the men, for much more tinned fruit is eaten in officers' messes than among the men. The fact is that the reverse is the case.

In pursuance of the view that the condition is of infective origin, various organisms have been isolated from the urines or nephritic cases, and in some instances vaccines prepared from them have been used in treatment. Recovery followed, but this is only surprising to those who disbelieve in vaccine therapy. Tytler and Ryle[2] recovered a streptococcus forming greenish colonies on blood agar from nephritic urine; they recovered similar organisms from controls, but in a smaller proportion of cases. They do not appear to attach much importance to this organism as an etiological possibility. Davies and Weldon[3] state that they have known instances of transmission of the disease to attendants, but the details given are so scanty that they can hardly be intended to serve as evidence.

There is one factor or group of factors common to all cases occurring in the B.E.F. in France and to the outbreak during the American Civil War, and that common factor is excessive and prolonged fatigue in combination with exposure.

It has long been recognised that albumin, often in large amounts, and casts are almost constantly present in the urine of healthy adults after such exertion as is entailed by ordinary athletics. This albuminuria is stated always to clear up and to leave no ill-results or predisposition to renal trouble. Such is undoubtedly the case in athletes, who after the game is over can take as much rest as they please. Among soldiers under modern war conditions, however, the case is very different. The battle does not stop like a game; it continues for days, weeks, or months, and the soldier must participate until his unit is relieved. When not actually attacking or repulsing attacks, the soldier is engaged in digging, ration-carrying, wiring, or some other arduous work. His intervals for sleep are inadequate and short, and his rest is uncomfortable and broken. Under such circumstances it is conceivable that what in the athlete may be a passing symptom, may in the soldier become a morbid process.

Martin Fischer maintains that acute nephritis is due to a toxic acidosis. He regards the albuminuria of athletes as due to a physiological acidosis. The difference he looks upon as one of degree, not of kind. Osler remarks that "common febrile albuminuria ..... represents the first link in the chain leading to acute Bright's disease." May not the same remark apply to the albuminuria of exertion?

All things considered, it seems possible that the most fruitful line of research as to the causation of this condition would be on the alterations of metabolism produced by fatigue, meaning by fatigue the bodily state produced by exertion, lack of sleep, and exposure.

Such an investigation might well also throw light on the etiology of that large class of cases occurring in civilian life and usually described as nephritis *a frigore*, for clinically the difference between these and the "trench" nephritis cases does not seem to be great. The prognosis in "trench" nephritis seems to be slightly better than in the civilian disease, but this may be accounted for by the fact that the former condition occurs among more or less picked men. Various writers have called attention to the great frequency of pulmonary complications, particularly bronchitis, in the military cases. The obvious explanation of this would be the infection of an œdematous lung from a pre-existing mild bronchitis, such as is common enough among the men in the colder months. Tytler and Ryle, in the article above quoted, draw attention to a deposition of fibrin in the walls of the lung alveoli of some of their cases which came to post-mortem. This condition, they state, is not found in ordinary nephritis, and they regard it as pointing to the action of a local irritant. They also call attention to hæmorrhages into the spleen. It will be interesting to learn whether these changes can really be regarded as differentiating "trench" from civilian nephritis. The changes found by these investigators in the kidneys were apparently such as might well occur in a case of nephritis *a frigore*.

It would appear that the principal, if not the only, way in which "trench" nephritis differs from nephritis as seen in civil practice is in the greater frequency of its incidence. Acute nephritis is not a very common disease among civilians; the condition described above is decidedly common in the B.E.F., though exact figures as to its incidence per 1000 are not now obtainable. What is the factor common to both soldiers and civilians, but more potently effective among the former than the latter? Such a common factor is excessive and prolonged fatigue, combined with exposure to cold and wet.

In conclusion it may be stated that such evidence as is provided by the consideration of the above series seems to indicate that the condition known as "trench" nephritis differs little from nephritis as met with in civilian practice except in the greater frequency of its occurrence, and that it is either a primary acute nephritis or an exacerbation of pre-existing disease, induced by fatigue and exposure.

My thanks are due to Colonel T. R. Elliott, A.M.S., consultant physician to the Boulogne Base, through whose courtesy the organisation of the National Research Committee for following the after-histories of patients was placed at my disposal; to the medical officers of the home hospitals who filled in and returned the schedules, thus making possible the section on prognosis; and to the nursing staff of the wards at the base hospital in France, whose unflagging zeal made possible the collection of the clinical material.

[2] Clinical and Pathological Notes on Trench Nephritis, W. H. Tytler and J. A. Ryle, Quarterly Journal of Medicine, January, 1918.

[3] A Contribution to the Study of War Nephritis, F. C. Davies and R. P. Weldon, THE LANCET, July 28th, 1917.

"OBSCURE EPIDEMIC ENCEPHALITIS."

SOME OBSERVATIONS ON BLOOD COUNTS AND CEREBRO-SPINAL FLUID.

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WITH the object of ascertaining the condition of spinal fluid and blood in this disease I have examined a number of cases of "obscure encephalitis" under observation at the London Hospital.

Findings in Epidemic Poliomyelitis.

I consider it material to refer briefly to the findings summarised in the Rockefeller Institute Monograph No. 4 (1912) and Dr. G. Draper's book on acute poliomyelitis (1917).

In the literature on poliomyelitis there are conflicting statements about leucocyte counts. L. E. La Fetra, in New York, reported six cases with a leucocytosis running from 13,000 to 20,000, while E. Müller, in Germany, reported 15 cases with a leukopenia of from 3000 to 5000. Though Gay and Lucas found leukopenia with lymphocytosis in monkeys, their leucocyte counts in human cases were 7800, 12,200, 11,600, 17,400, 12,000, and 13,400. Dr. F. W. Peabody and his co-workers' results can be summed up as under.

"We have found in the blood of patients with poliomyelitis a constant and marked leucocytosis. If taken in connexion with other available evidence a leucocytosis of from 15,000 to 30,000 is distinctly suggestive of the disease in question, especially if the polymorphonuclear cells are increased at the expense of the lymphocytes."

They find that this leucocytosis lasts for as many as seven weeks and is highest in the youngest children.

With regard to the spinal fluid "previous investigations have not been extensive nor have the examinations been careful." Gay and Lucas have recorded 75 to 100 per cent.

of mononuclear cells. Dr. Peabody and his colleagues examined 233 fluids from 69 cases, and they found that almost all were clear, colourless, and watery. Only a few showed the slightest opalescence. The type of cell present in the fluid was almost always the mononuclear. Though Flexner and Lewis and Lucas all record polymorphonuclear cells in the spinal fluid of their experimental monkeys up to 72 hours from the time of inoculations, Lucas in his 11 pre-paralytic human cases found only mononuclear cells. It must be stated that 2 out of 6 prodromal stage cases of the Rockefeller Institute showed polymorphonuclear cells. However, Dr. Draper describes many abortive and pre-paralytic cases in his book on acute poliomyelitis (1917), and he describes a "fluid whose clearness may or may not be impaired. It is rarely opalescent or turbid. Here at once is a gross point of difference from the fluid of cerebro-spinal meningitis." He also describes *polynuclear cells which are not polymorphonuclear cells* in the very early stages, but which are replaced by the end of 24 to 36 hours by small lymphocytes which represent 90 per cent. of the total number.

As regards protein, all the investigators have recorded a more or less definite excess.

In effect, according to the American investigators, a *leucocytosis* of from 15,000 to 30,000, combined with an excess of protein and a well-marked excess of mononuclear cells (small lymphocytes) in the spinal fluid is always present in cases of poliomyelitis. In a small percentage of cases polynuclear cells are said to occur in the spinal fluid in the prodromal stage.

Investigation of Cases of Epidemic Encephalitis.

My own results are as follows:—

Results of Examination of Blood and Cerebro-spinal Fluid.

No.	Sex	Age.	Cerebro-spinal fluid.		White cells of blood.						Max. temp.
						Differential counts.					
			Prot.	Cells.	Total.	P.	L.	H.	E.	O.C.	
1	M	58	+	SL	7,400	52	41	7	—	—	100°
				+	10,200	60	35	4	1	—	—
2	M	50	±	SL	6,400	74	20	3	2	1	99°
				±	6,000	67	24	4	4	1	—
3	M	48	±	SL ±	12,800	91·5	6	2	—	·5	104°
4	M	41	+	SL+	9,200	69	25	5	—	1	104°
5	M	40	±	No SL	7,200	57	37	2	4	—	99°
					5,800	48	35	4	12	1	—
					5,000	54	39	4	2	1	—
6	M	34	±	SL nil	9,000	59	33	7	1	—	99°
					6,400	73	23	3	1	—	100°
					5,480	78	16	6	—	—	—
					8,600	65	30	5	—	—	—
7	M	33	+	SL +	7,000	52	41	6	1	—	103°
8	F	23	+	SL	9,000	86·5	8·5	4	1	—	100·5°
			±	+	6,800	72	22	6	—	—	—
9	M	9	*	*	4,000	35	58	6	—	1	101°
10	M	7	?±	SL ±	21,200	88	10	2	—	—	104°
11	M	4	Nil	SL nil	14,000	75	19·5	3·5	2	—	101°
					7,840	63	32	5	—	—	—
12	F	2½	±	SL nil	3,600	19·5	73·5	2	5	—	102°
			±	±	—	—	—	—	—	—	—
13	F	1½	+++	+++T.B. found.†	11,680	64	31	4	1	—	103°
14	M	48			7,040	71	26	3	—	—	102°
15	M	47			8,800	63	32	3	2	—	99°
16	M	6			7,400	72	21	5	1	1	103°
17	F	6			11,600	85	13	2	—	—	105°
18	M	5			10,000	55	42	1	2	—	104°
19	M	5/12			10,000	18	75	4	2	1	101°
20	M	4			12,400	38	57	2	3	—	—

Prot., protein. P., polynuclears. L., lymphocytes, large and small. H., hyalines. E., eosinophils. O.C., other cells. SL., small lymphocytes. Max. temp., Maximum temperature recorded during attack.

* ½ c.cm. only, not sufficient to examine. † Cerebro-spinal fluid, Prot. +++ fine cobweb; Cells—SL, 60 per cent.; P, 40 per cent.

± = Very slight excess of protein or of cells up to 10 per c.mm.

+ = Slight excess of protein or of cells up to 20 per c.mm.

+++ = Marked excess of protein or of cells up to 100 and over per c.mm.

Remarks.—Case 1. Drowsy; ptosis; delirious. *Case 2.* Drowsy; ptosis. *Case 3. Died.* Anaerobic blood culture negative. Ptosis; rash; drowsy. *Case 4. Died.* Landry's type. *Case 5.* Ptosis; later facial paralysis. *Case 6.* Drowsy; ptosis. Unfortunately spinal fluid was not examined a second time. Anaerobic blood culture negative. *Case 7.* Dazed. *Case 8.* Catatonia; unconscious. *Case 9.* Ptosis; drowsy; chorea; ? T.B. *Case 10.* Drowsy; lobar pneumonia. *Case 11.* Delirious; irritable. *Case 12.* This blood count was done 9 weeks after admission; ? ptosis. *Case 13. Died.* Drowsy; proved on P.M., T.B. *Case 14. Died;* delirious; drowsy. *Case 15.* Ptosis; mental and speech slurring. *Case 16.* Drowsy. *Case 17.* Vomiting and abdominal pain. *Case 18.* Irritability. *Case 19.* Drowsy. *Case 20.* Ptosis; convalescent.

Twenty cases were examined, all of which were considered to be examples of epidemic encephalitis. In all cases the blood was examined and in 12 cases the spinal fluid also. (See Table.)

In 2 cases the diagnosis was proved to be erroneous. Case 10, with a high leucocyte count and a practically normal spinal fluid, developed a typical attack of pneumonia. Case 13 had tubercle bacilli in spinal fluid and this result was confirmed post mortem. In the remaining 18 cases, with the possible exception of one or two doubtful ones, there was every reason to suppose that the diagnosis was correct.

Leucocyte counts.—With the exception of Case 10, which turned out to be pneumonia, in no case has the leucocyte count been as high as even 15,000 per c.mm.

In 18 counts done on 10 adults the average number of leucocytes was roughly 7600 per c.mm., while the average of 13 counts on 5 typical cases (Nos. 1, 2, 5, 6, and 8) was 7000 per c.mm. The average of 9 counts in children was about 9000 cells per c.mm. The normal number of white cells was found to be between 5000 and 6000 per c.mm. in adults and about 8000 per c.mm. in children. Thus it will appear that there is a *small leucocytosis* in cases of epidemic encephalitis both in adults and children.

Of the 4 fatal cases (Nos 3, 4, 13, 14) No. 13, with a count of 11,680, turned out to be tuberculous, while No. 3, with a count of 12,800, had a generalised hæmorrhagic rash and also a bedsore, which account for the inflammatory condition of his blood. The remaining two had counts of 9200 and 7040.

The counts in children in general were found to be higher. In view of the high count of one fatal case with tuberculous meningitis (No. 13) it is a pity that the spinal fluid was not available for examination in these cases.

As regards the question of leucopenia, it can be stated that *no leucopenia* was found in these cases. Cases 9 and 12, with counts of 4000 and 3600, were both doubtful cases.

The average number of polymorphonuclear leucocytes was found to be 66 per cent. in adults and 45 per cent. in children. As the average number of these white cells in normal counts is about 60 per cent. in adults and 40 per cent. in children, it would appear from the averages that there was only a slight tendency to polymorphonuclear increase. However, there were a few counts in which the relative proportion of polymorphonuclear leucocytes had decidedly increased.

Cerebro-spinal fluid.—The spinal fluids examined either showed nothing abnormal or only a small excess of protein and a small excess of cells which were found to be small lymphocytes. The fluids were in all cases practically clear and in no case was opalescence noticed. Case 13, which had a cobweb and a very large excess of protein and cells was proved to be tuberculous.

Conclusions.

1. The very small amount of leucocytosis—viz., 8000 to 9000 per c.mm.—in cases of epidemic encephalitis falls far short of the pronounced leucocytosis—viz., 15,000 to 30,000—recorded at the Rockefeller Institute in cases of poliomyelitis.

2. The cerebro-spinal fluid is not as grossly affected as in poliomyelitis in which often cell counts running into several hundreds and sometimes exceeding 1000 per c.mm. have been recorded. As a matter of fact, the deviation from the normal is very small.

3. In view of the very small deviation from the normal both of the blood and the spinal fluid in cases of epidemic encephalitis, and especially in the absence of successful experimental communication of the disease to monkeys with the production of paralysis, in my opinion we are not justified in asserting that the virus of epidemic encephalitis is the same as in poliomyelitis.

4. Although the results of the examinations of the blood and the spinal fluid afford no positive proof in support of a diagnosis of epidemic encephalitis, such negative results will materially help in ruling out a number of other obscure cerebral conditions, as was found to be the case in those due to pneumonia and tuberculous meningitis recorded above. It is therefore considered advisable to have recourse to such examinations in all cases likely to be classed as those of epidemic encephalitis on clinical grounds.

I am very much indebted to my chief, Dr. P. N. Panton, for his very valuable advice and guidance. I am also much obliged to my colleague, Dr. Harold E. Bates, for his helpful criticisms and suggestions.

INFLUENZA AND PURULENT BRONCHITIS.

BY A. MAUDE, M.R.C.S., L.R.C.P. LOND.,

CAPTAIN, R.A.M.C.; MEDICAL OFFICER IN CHARGE OF MEDICAL CASES, MILITARY HOSPITAL, THETFORD.

HAVING had the questionable advantage of seeing every epidemic of influenza in England since 1889 my impression of the peculiarities of this outbreak in June, 1918, may be of value. The uncomplicated cases have been characterised by very short incubation (when the facts could be ascertained) and sudden onset. Most of the men complained of initial giddiness, even prior to the usual headache and generalised pain. Conjunctivitis was present in a large number, infection of the throat and tonsils was comparatively rare, and gastric cases were conspicuous by their absence, only occurring in the subjects of previous gastric affection.

Onset.—The young soldiers of graduated training battalions showed a tendency to profound stupor and drowsiness, lasting for several days, a condition probably due to the constant elimination of fatigue products, to which the influenza toxin had been superadded. In nearly all cases the tongue had been extremely coated, tending to early drying of epithelium. There were 2067 men sick with influenza reported in two commands of a combined strength of 10,000 men between June 18th and July 18th, of whom 248 were admitted to hospital. A high proportion of these developed the complex lung condition, described by Lieutenant J. A. B. Hammond, R.A.M.C., as purulent bronchitis,[1] and it may be of advantage to contrast our cases with those recorded in the Aldershot report. In the Thetford outbreak a large number showed a frank lobar pneumonia, usually of the lower lobes only, but in three instances the consolidation was apical. The apical cases were, as usual, severe and accompanied by acute, brief delirium.

Physical Signs.—In the early stages it is remarkable how slow the auscultatory signs are in developing; several days of high temperature may elapse without crepitation or bronchial breathing being audible. There is little relation between the extent of physical signs and the temperature, either at the beginning or during the stage of resolution. The commonest type was a pneumonia of limited extent, accompanied, and often preceded, by coarse bronchial signs indicating a bronchitis of the larger tubes. The pneumonic patches were often bilateral and showed a marked tendency to spread, combine, and wander. The combination of coarse bronchitis and lobar pneumonia produced grave dyspnœa and profound effects on the heart, especially on its right side. The physical signs of bronchitis were frequently present, combined with patchy signs of consolidation. In a large proportion the signs of bronchitis supervened upon those of localised pneumonia. In many instances the bronchitis was one-sided, showing its infective quality. Small patches of collapsed lung were a frequent sequel of this bronchitis; the collapse was in all cases of short duration and completely cleared up.

Sputum.—The sputum in hardly any instance showed the "prune-juice" staining of ordinary pneumonia, though in some cases it was tinged with bright blood in streaks or tiny bright clots (bronchial); in one youthful patient occurred several hæmoptyses of large dark clots, perhaps issuing from an acute bronchiectasis. The usual colour in the pneumonic cases was a faint crushed strawberry, the expectoration became eventually peculiarly tenacious, yellow, consisting of almost pure pus, and frequently in tough curdled casts, evidently brought from middle-sized bronchi. In no case was any offensive odour of sputum present. No systematic bacteriological examination was undertaken, but the researches of Dr. J. W. H. Eyre[2] and Captain W. Rolland,[3] R.A.M.C., have established the question of double successive infection by the influenza bacillus and the pneumococcus.

Pleurisy.—A large number of cases showed pleuritic patches, in most instances at the right base, and a large pleural effusion was formed in one boy of 18, and smaller effusions in others. In a considerable proportion a pleurisy was the herald of the lung attack.

Complexion.—The "heliotrope" complexion, noted in the Aldershot report, was present in many of the worst cases, but these were not so uniformly fatal as that report suggests; there were many recoveries of men in whom this aspect was quite marked.

Temperature.—Hardly any of the cases of defined lobar pneumonia terminated by crisis, and in a high percentage the lysis was very irregular, manifesting a high evening rise for many days, with a definite fall to normal, or near normal. The pyrexia in the pneumonic cases was high, reaching sometimes 105° or 106°, but in only one instance was there a chart of typically pneumonic character. A fall in temperature, whether sudden or gradual, was frequently delusive, being followed by renewed pyrexia. And when purulent expectoration was well established a swinging type with a range of several degrees, as noted by Lieutenant Hammond, was observed.

Prognosis.—The severer cases were characterised by very rapid emaciation, out of all proportion to the duration or severity of the pyrexia. Out of the 250 men admitted to hospital only three died, all from extensive double pneumonia, two being young subjects, and the third a middle-aged subject of chronic bronchitis. Had the epidemic occurred at a less favourable time of year the mortality must have been heavier. Several of the most seriously affected were the subjects of previous acute or chronic bronchitis.

Treatment.—We found that the most useful routine line of treatment was by expectorants, combined with free alcoholic stimulation and heart tonics. The worst cases were kept in the open air in an enclosed corridor, and cold and tepid sponging was resorted to freely in cases of high temperature. Pulmonary antiseptics and inhalations proved useless, and oxygen did not appear to be of value, while atropine seemed to interfere with pulmonary secretion and do more harm than good.

I am indebted to Lieutenant-Colonel H. W. Laing, R.A.M.C., and Major Kennedy Taylor, R.A.M.C., for valuable statistical information.

References.—1. Purulent Bronchitis, by J. A. B. Hammond, Lieutenant, R.A.M.C., and others, THE LANCET, July 14th, 1917. 2. Purulent Bronchitis: Its Influenzal and Pneumococcal Bacteriology, by Adolphe Abrahams, Captain, R.A.M.C., and others, THE LANCET, Sept. 8th, 1917.

AN "INFLUENZA" OUTBREAK.

BY C. W. WIRGMAN, M.D. LOND, F.R.C.S. ENG.,

CAPTAIN, R.A.M.C. (T.F.)

THE recent epidemic has been such a rush for most of those who have to deal with the victims that any detailed account of a number of cases is likely to be left till the pressure is over, and so notes of the earlier cases may be lost for lack of leisure.

I have been so situated that it was possible to keep short notes from the start of an outbreak. Also, I was in charge of a body of troops under identical conditions and training, so that data were easily compiled.

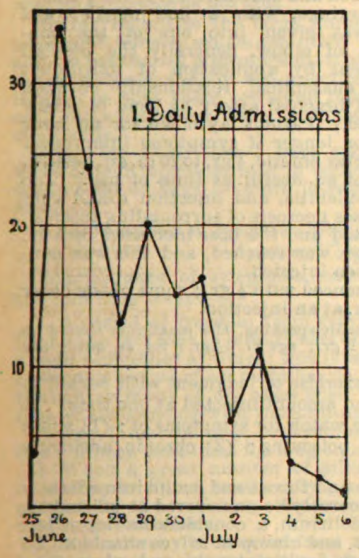
The following notes do not pretend to be more than a record of how one particular set of patients were affected. They are not meant to be a general description of all the features of the present outbreak, but only of a type found in a body of normal adults. The unit in question really consisted of two detachments (A 1 men, with a few exceptions). They were camped in the same field, their tents were side by side, and their work was identical. For all practical purposes they may be considered as one unit. The total strength (all ranks) in camp was 516. The epidemic probably began on June 24th, but the first definite cases were observed on the 25th. The record is closed on July 6th as one unit moved out on that date. The new cases ceased coincidently.

Speaking generally, none of the patients gave cause for any real anxiety as to the upshot of the attack. No more serious condition than one attack of bronchitis (slight) occurred. The cases admitted to hospital (from camp hospital) were only 14 in all, and the usual reason for admission was persistent temperature of 99° F. or over.

The subjective symptoms complained of were headache, usually frontal, pains in back and limbs, soreness or pain in eyes, sore-throat, particularly in the later admissions, cough, and sometimes abdominal pain. The temperature ruled about 101° to 104°, none rising to 105°, and a few not reaching 100°. By the third day the temperature, as a rule, was below 99°. The average stay in hospital, including day of admission and day of discharge, was 3½ days. The first symptom to disappear was the headache and the last the backache.

The earlier cases exhibited a marked tendency to conjunctivitis and the later ones to pharyngitis. Both of these

were slight, but the pharyngitis appeared to cause considerable discomfort. Laryngitis was not uncommon, and cough was frequent and troublesome. The pulse-rate was not rapid, considering the temperatures, and usually fell, when the temperature became normal, to about 80 per min. The tongue in nearly every case was heavily furred. In 11 cases labial herpes was severe.



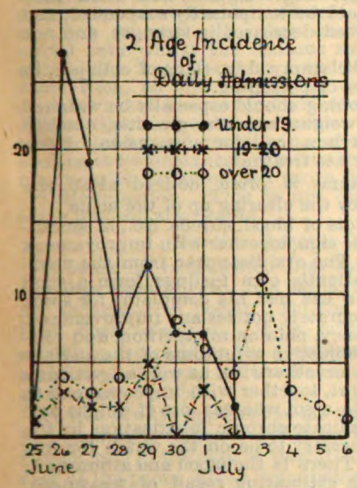
The age of men affected was very interesting. At first the younger men went down, while as time went on it was the older ones who succumbed.

The figures were as follows:—

No. in camp under 19	...	157
Over 19 and under 20	...	72
,, 20		287
Total		516

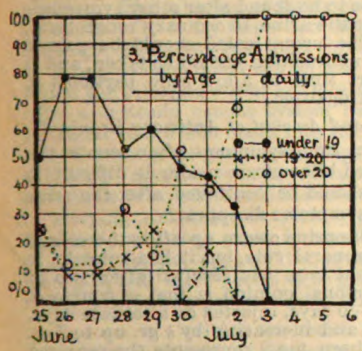
No. of influenza cases:—			
Under 19	... ...	83	or 53%
Over 19 & under 20		16	,, 22·2%
,, 20		50	,, 17·4%
Total	...	149	28·9%*

* Of number in camp.



	Symptoms.	No.	Percentage of cases.
Subjective.	Headache ...	140	94·0
	Frontal ...	88	59·0
	Occipital ..	11	7·4
	General ...	41	27·5
	Pains in back or limbs ...	99	66·5
	Sore throat ..	39	26·2
	Pain in eyes	40	26·9
	(No pains in back or limbs)	14	9·4
Objective.	Conjunctivitis ...	57	38·2
	Pharyngitis.	29	19·5
	Laryngitis...	21	14·1
	Herpes... ...	8	5·3
	Tonsillitis ...	2	1·3
	Bronchitis ...	1	0·6
	Epistaxis ...	2	1·3
	Diarrhœa ...	3	2·0

Treatment of symptoms by drugs was unavailing. Rest in bed till the temperature subsided was the only thing that could be done.



As to methods of prophylaxis, avoidance of confined atmospheres, as far as possible, was insisted upon; morning and evening nasal lavage and gargling with normal saline was carried out. Coughing, spitting, and cigarette-smoking were discouraged.

Tents were struck frequently and bedding put out in the sun daily.

The graphs attached show: (1) total daily admissions; (2) admissions by age, daily; and (3) per cent. admissions by age, daily.

SHORTAGE OF NURSES.—The Queen's Hospital for Children (Hackney-road, London, E. 2) is appealing, with the support of the Bishop of London, for the nursing service at the hospital. The number of beds lying vacant for want of nurses is now 24, with a prospect of further reduction in the near future. The weekly attendances at the hospital number about 2000.

THE SUCCESSFUL USE OF ANTIMONY IN BILHARZIOSIS

ADMINISTERED AS INTRAVENOUS INJECTIONS OF ANTIMONIUM TARTARATUM (TARTAR EMETIC).

BY J. B. CHRISTOPHERSON, M.A., M.D. CANTAB., F.R.C P. LOND., F.R.C.S. ENG.,
DIRECTOR OF THE CIVIL HOSPITALS, KHARTOUM AND OMDURMAN.

AFTER trying and confirming the conclusions of previous workers on the use of intravenous injection of antimonium tartaratum (tartar emetic) in cases of Oriental sore, internal leishmaniasis, and naso-oral leishmaniasis (espundia) as found in the Sudan,[1] in May, 1917, I commenced at the Khartoum Civil Hospital to treat bilharziosis (vesical and rectal) by the same drug. Amongst the natives of the Sudan bilharziosis is not so frequent as amongst Egyptians; still, in the clinic of a hospital such as Khartoum Civil Hospital there are sufficient cases to give the treatment a very fair trial.

The treatment of bilharziosis up to the present has been altogether palliative and unsatisfactory. It has baffled all attempts to find a satisfactory remedy. Time was the sole hope of cure, but as time takes years (a considerable number, perhaps 10)* to effect a cure, and in the meanwhile the patient is running no small risk, to say nothing of the pain and inconvenience of repeated attacks of cystitis and the debilitating effect of loss of blood, anything which promises even alleviation is to be welcomed.

There is no doubt that antimony given as intravenous injections of tartar emetic considerably interferes with the bilharzia and suspends its activities, even when it does not actually kill. My own opinion, based on the cases treated during the last year, is that antimony (antimony tartrate) is a definite cure for bilharziosis, and that the intravenous injections of tartar emetic kill the *Schistosomum hæmatobium* in the blood and render it harmless.

List of Cases.

No.	Age.	Nationality.	Date.	Quantity injected.	No.	Age.	Nationality.	Date.	Quantity injected.
				gr.					gr.
1	21	Egyptian.	5/6/17	15*	7	15	Sudanese.	14/11/17	27
2	21	,,	5/6/17	15†	8	17	,,	3/3/18	25½
3	20	Sudanese.	10/6/17	22†	9	17	,,	5/3/18	29½†
			12/3/18	11	10	17	,,	5/3/18	33½
4	25	Egyptian.	23/10/17	22½‡	11	12	Egyptian.	6/4/18	30
5	17	Sudanese.	4/11/17	20½	12	19	Arab.	17/4/18	—§
6	13	,,	6/11/17	18½	13	11	Shagii.	20/4/18	22

* Treatment suspended. † Relapse. ‡ Treatment not completed. § Details mislaid.

Record of Cases.

These observations are based on 13 cases of *Schistosomum hæmatobium* (see Table); more than 13, however, were treated by the method.

Three of the cases were 13 years of age or under, the remainder from 15 to 21. Three were Egyptians, the others natives of the Sudan. Three had relapses; the total amount of tartar emetic injected in these cases was:—

(1) 15 gr. in 6 injections in 10 days, relapse after 25 days.
(2) 10 gr. in 10 days, relapse after 8 months.
(3) Had 7 injections, relapse in one month.

Two patients were discharged before completion of treatment, being "time-expired" soldiers.

The case (No. 2) which relapsed in 25 days was an Egyptian soldier who had a heavy infection of bilharzia of rectum and bladder, and injections had to be suspended after six had been given in ten days (15 gr.) owing to phlebitis. He was one of the time-expired soldiers who would not remain in hospital after their time had expired.

In Case 4, Egyptian, the injections were suspended owing to the patient being weak, but they were resumed again after ten days. He had 22½ gr. of antimony tartrate in 13 injections in 30 days. He was 44 days in hospital; discharged at own request, being a "time-expired" soldier. The ova were very scanty, if present at all, on discharge, but as ova had only been absent a few days previous to discharge, this case can at most be put down as improved.

* Loos says the worms only live three to five years, while the eggs remain, and are the real cause of the disease.

The following case may be taken as a type.

CASE 7.—Patient, 15, student, Sudanese; pain on micturition and passage of a little blood with last portion of urine for one year. Bilharzia ova found in urine. Injections were commenced Nov. 14th, 1917, with 1/3 gr. antimony tartrate, increased by steps to 2 gr., injections being given every other day. On Dec. 10th (26 days after treatment) his urine became free from ova, after 21 gr. in 13 injections; treatment was continued until the 16th. He had in all 27 gr. in 16 injections in 32 days, without reaction. For three months he reported once a fortnight, and remained free from signs of bilharzia. On May 30th, 1918, his urine was normal to chemical and microscopical tests; he said he was cured, and there had been no signs of recurrence.

In the following case the patient relapsed after eight months:—

CASE 3.—Patient first seen in June, 1917; hæmaturia for five years; had never been free from it; no frequency or pain. When admitted the first time 22 gr. antimony tartrate were given in 20 days in 13 injections. They were generally well tolerated; on three or four occasions moderate reaction, local pain, rise of temperature, and some retching. The urine became clear after he had had 10 gr. ten days after admission; discharged for observation on June 30th, 1917.

Urine remained clear and free from blood and ova for eight months until March 12th, 1918, when it became smoky—microscopic blood was found and two B. ova. Injections were resumed with 1 gr. The next day 2 gr. were given; some reaction, rise of temperature, vomiting, metallic taste, and feeling of weakness. After a day's interval 2 gr. were injected again; he vomited three times, and had metallic taste in throat; injections reduced to 1½ gr. every other day. On one occasion he had nausea, diarrhœa, giddiness, with 1½ gr. He had 11 gr. injected in 12 days; then was discharged at request of his master; ova and blood had completely disappeared from urine. He was seen periodically until May 20th, no blood or ova present on any examination; is presumed cured.

After 22 gr. during first course, and 11 gr. during second course I trust that patient is cured.

CASE 8.—Patient, 17, student, Gordon College, was admitted to hospital for diarrhœa with blood in stools; lateral spiked B. ova were found. Treatment commenced with ½ gr. antimony tartrate; next day 1 gr., continued daily five times; then 2 gr. were injected. Cough, salivation, lacrymation, metallic taste in mouth, and vomiting ensued. After interval of one day 1½ gr. were injected every other day; slight reaction followed first two injections of 1½ gr.; then injections were well tolerated. Stools became free from B. ova after 13 gr. had been injected; patient had 25½ gr. in 19 injections in 28 days. No return of symptoms two months afterwards.

CASE 9.—Patient, 17, student, Gordon College, from Dongola Province; March 5th, 1918. Had passed blood in urine for three years or more; nearly every time blood came at end of micturition; very little pain. In December, 1917, he had come to hospital with same symptoms; received seven injections; was free from symptoms for a month, when they returned. Urine smoky, with heavy brown deposit; B. ova easily found. He commenced with ½ gr. antim. tartr., ½ gr. next day, 1 gr. third day until seventh day, when injections were discontinued owing to dermatitis of both elbows due to iodine. Injections were resumed after five days, 1 gr. being given, increased to 2 gr. next day, 2 gr. being given on two occasions; this was reduced to 1½ gr. every other day for three weeks. Urine became quite free from B. ova 25 days after treatment and remained so. In consequence of relapse patient had 29½ gr. antimony tartrate in 22 injections within a period of 28 days. No untoward symptoms except irritation due to iodine on the skin and reaction on two occasions, when 2 gr. were injected; metallic taste, giddiness, and vomiting once.

CASE 11.—Patient, 12, Egyptian, was infected at Damanhour in Egypt. For two and a half years he has passed blood in urine which, he said, was never free. The boy was anæmic to a degree, had dirty sallow complexion of person suffering from intestinal and other parasites, and was undersized; weight, 4 st. 13½ lb. Large number of B. ova in urine. He was, as usual, a week in hospital under observation before commencing treatment; he improved somewhat. Treatment commenced on April 6th, 1918, with ¼ gr.; two days later ½ gr. After five doses of ½ gr. every two days 1 gr. given on alternate days; then 1½ gr. The first 1½ gr. followed by cough, giddiness, vomiting. 1½ gr. dose was, however, continued for three times with no further reaction; 2 gr. were then given. Giddiness, nausea, and vomiting occurred. After two days this was repeated with the same result. Dose then reduced to 1½ gr. on alternate days; slight reaction. After three doses 2 gr. were again tried; vomiting occurred four times, giddiness all afternoon. Dose reduced to 1½ gr. on alternate days. 30 gr. altogether were given in 23 doses over 49 days.

This was an interesting case; the boy put on weight and his haggard expression became quite a happy one. The urine became normal, B. ova disappeared in about three weeks. He was still in hospital at the time of writing, but all symptoms and signs of bilharziosis had disappeared.

Loos[2] states that the ova remain and produce symptoms after the parent worms have died. This fact might account for the finding of a stray ovum in an apparently cured case; it would also account for the discovery of a small clot containing six or seven ova passed in Case 11 on April 22nd, 1918, 14 days after all other symptoms had disappeared, and subsequent to which nothing was discovered.

Method of Administration.

The method adopted was briefly as follows:—

The cases were all well-marked cases of bilharziosis of bladder or rectum, or both, of average intensity. The ova were easily found in the excretions. A careful note was made of: (1) the patient's (subjective) symptoms; (2) how long he had been infected; and especially (3) whether he had intervals of complete freedom from symptoms.

The patients were not kept in bed, rest having a tendency to allay the hæmaturia and bring about a temporary suspension of symptoms, &c. When possible the patient was under observation for a week previous to treatment, the urine being tested in the morning, when it might be free from blood, and in the evening after day's exercise, when it was more likely to contain blood and shreds.

A 10 c.cm. record syringe, with a fine needle, was used. The injection was given into one of the conspicuous veins at bend of elbow, generally the median cephalic, made prominent by application of tourniquet on upper arm. (The anatomical relationship between median basilic vein and brachial artery at bend of elbow should be borne in mind.) Patient lay down for an hour on bed after injection, or longer if symptoms intervened. The solution used was tartar emetic, ½ gr. to 20 m. aq. destill., and diluted with 2 vols. of aq. destill. at time of use. (Too strong solution causes phlebitis, and injection round vein instead of into vein causes necrosis of surrounding tissues.) The injection was repeated and the dose increased by ½ gr. every other day until 2 gr. was reached, and this was continued until 30 gr. had been injected.

A boy of 10 years commenced with ¼ gr.; some of the older cases had as much as 3 gr. at an injection.

It would appear that, generally speaking, the maximum should be for a boy of about age 10, 1 gr.; age 17, 1½ gr.; for an adult the maximum should be 2 gr.

There is scope for the exercise of judgment with regard to frequency of injection and amount injected at one time. It is essential to be on the watch for symptoms of: (1) acute and subacute antimony poisoning; (2) chronic antimony poisoning.

Metallic taste in mouth and throat and cough immediately after the injection need scarcely be considered as poisoning, but vomiting, giddiness, delirium, a considerable rise or fall in temperature, diarrhœa, and cramp in calves should all be taken seriously. They are danger signals, and when they occur the injections should be temporarily suspended, and when injections are resumed decreased in strength, and not given so often.

Rapid small pulse, cold clammy skin, signs of collapse, in fact, are serious symptoms of poisoning.

Chronic antimony poisoning should especially be watched for. Weakness, loss of weight, anæmia, glossitis, cracked tongue with ulcers, diarrhœa call for suspension of the antimony and for appropriate treatment.

Improvement in symptoms is often noticed after the second or third injection by the clearing up of the urine.

The disappearance of clots of blood, shreds, &c., of smokiness, is the first favourable sign, together with improvement of subjective symptoms. The ova disappear from the urine more gradually. The patient's own feelings form a good guide as to progress. He has had his complaint for some years, and quickly and accurately notices any improvement.

There is also the frequency, pain on micturition, and character of urine, and the objective symptoms of the patient to indicate improvement or otherwise, as well as patient's weight. Increase in weight, together with improvement in symptoms, is a favourable sign, whereas loss of weight and continuance of anæmia indicate chronic intoxication by the antimony. It is more necessary to be on the watch for loss than for gain in weight. There is the blood and albumin in the urine, all valuable in estimating result of treatment. Finally, the microscope is the most valuable guide of all, because ova may continue to be found after other symptoms have cleared up, and after the urine, to ordinary rough tests, has become normal. The urine tested should be passed fresh, that at the end of micturition should be taken, and it should stand for a short time to allow solid particles to settle, or it may be centrifugalised.

When to Stop Injections and Amount of Antimony Required.

The periods of freedom from symptoms often seen in the natural course of untreated bilharziosis render it difficult to say how long injections should be continued after the urine becomes normal and the symptoms disappear.

As previously stated, the urine clears up after the second or third injection, as a general rule, but it is a mistake to conclude that a permanent cure has resulted after two or three injections. My personal opinion is that a course of injections lasting over 15–30 days, injected on alternate days, commencing with ½ gr., and increasing by ½ gr. up to 2 gr. or 3 gr. until 30 gr. have been used, represents the required killing dose. In this connexion it may be said that cases of bilharziosis do not, as a rule, suffer from the intense debility that is found in leishmaniasis, and so the debilitating and poisonous effects of the drug are not so readily produced, and the same amount of watchfulness is not so necessary in cases of bilharziosis as in leishmaniasis. The chronic toxic effects of the drug must be looked for in bilharziosis rather than the acute toxic effects which are more likely to be seen in treating leishmaniasis with antimony.

I do not think that injections of less than 1 gr. each time have much effect on the *Schistosomum hæmatobium*, but

injections of less than 1 gr. are necessary to commence with in order to establish a tolerance for the drug.

We thought that we noticed in cases of boys where a small dose was used to commence with, and where the dose was not increased with sufficient rapidity, that there was a tendency for the bilharzia to establish a tolerance for this drug.

Having regard to the large number of bilharzia worms, male and female, which are often seen in the portal vein and its tributaries post mortem, it may happen that all are not equally affected by the injection. Some are killed, but it may be that there are some remain whose activities are only suspended for a time, thus accounting for a return of symptoms.

From the experience I have gained my opinion is that three or four injections may in some cases effect a cure, but that a total of 30 gr. or more is required lasting over 15–30 days.

Reappearance of Symptoms after Period of Freedom or Apparent Cure.

Reappearance of symptoms may be explained in one of the following ways:—

1. A period of freedom from symptoms may be accounted for by the fact that in bilharziosis clinical symptoms may be absent altogether at times; this is tantamount to saying that antimony has no effect on bilharzia. It is scarcely possible that in so many of the cases tried these natural periods of rest would coincide with the administration of tartar emetic.
2. The bilharzia may be scotched, not killed—treatment has not been continued for long enough.
3. When a great number of bilharzia worms are present some may be killed, others only placed temporarily hors de combat by the antimony treatment. Some may be more resisting than others.
4. As antimony is excreted from mucous surfaces and the bilharzia worm does not like antimony, it may avoid the mucous surfaces (bladder and rectum) whilst the antimony is being excreted. In other words, it will return to the portal vein whilst the mucous surfaces are infected with antimony. In this way its activities may be suspended for some time, as antimony is an accumulative poison, and remains in the tissues for some considerable time.

The bilharzia worms by instinct will find their way back to the bladder and rectum in order to deposit their ova as soon as these organs become free from antimony. Relapses may possibly be accounted for in this way.

5. Re-infection. This is not likely—in any case not for some months afterwards.

Further Points in Treatment.

It must be remembered that tartar emetic is a poison; ¼ gr. has caused death in a child, 2 gr. in an adult.[3] It is an accumulative poison. On the other hand, large doses have been tolerated. It is safe to say that, generally speaking, for children the commencing dose should be ¼ gr. and for adults ½ gr., but the maximum dose should be reached as soon as possible.

It has always appeared to me that the logical and natural way to attack bilharzia would be directly through the blood stream, and in the case of vesical infection through the dorsal vein of the penis, which terminates in the pudendal plexus, surrounding the prostate, the neck, and the fundus of the bladder. The injection of tartar emetic into the veins offers an opportunity to try this where the dorsal vein of the penis is conspicuous. The vein joins the hæmorrhoidal plexus, and so directly communicates with the portal venous system in which the bilharzia worms are located; it also communicates with a systemic venous system by means of the internal pudendal vein which opens into the internal iliac.

Of the two great germicidal drugs we possess—arsenic and antimony—arsenic given as salvarsan and atoxyl appears to have little or no effect on *Schistosomum hæmatobium*, although in sleeping sickness, yaws, and syphilis it displays specific qualities; antimony given in the form of a metallic salt, or as tartar emetic, appears to be a specific cure for leishmaniasis, and there seems to be good reason to believe that it is a specific cure in the case of bilharziosis as well.

Other Successful Results.

In confirmation of the extremely satisfactory results I have obtained during the year in the intravenous injection of antimony (tartar emetic), Dr. V. S. Hodson, who very kindly continued the treatment of bilharzia cases with tartar emetic at Khartoum Civil Hospital during my absence in 1917, and afterwards at Atbara, carried on a series of trials quite independently, sends me the successful results of the treatment of seven cases.

Dr. Hodson has for some years been working at the treatment of bilharzia, and it is of particular interest to have his favourable opinion on the cases treated by antimony. Of his 7 cases, 5 had 4 injections; 1 had 3 injections; 1 had 2 injections. He commences with ½ gr., and injects every other day for three injections, increasing ½ gr. each injection—the interval between 1½ gr. and 2 gr. being three days or longer.

The immediate result of this method was found to be satisfactory, but I am personally inclined to think that three or four injections will not give a permanent result, although sufficient to paralyse the activity of the worm for a time.

Some Necessary Precautions.

Finally, I would point out that the intravenous treatment of both bilharziosis and leishmaniasis by antimony should be undertaken with:—

1. Appropriate and reliable apparatus which is not necessarily elaborate and expensive—e.g., a proper syringe and needle and sterilising arrangements for the same, and small flasks for keeping the solution in, &c.
2. A proper sense of responsibility when injecting remedies directly into the general circulation viâ the vein.
3. The due appreciation of the fact that the drug injected is a poison, and that its reckless use will kill the patient.
4. The exercise of judgment as to dosage and length of time of administration, stopping altogether, suspending, increasing dosage, according to circumstances.
5. And last, but not least, a good note should be made of the case before commencing treatment and a daily note of symptoms during the treatment, examination of urine and fæces, &c., without which any useful conclusion will be impossible. The subsequent history for a considerable time should be watched.

Without these the placing of intravenous injections as routine treatment in the hands of medical officers in outstations and elsewhere whilst such treatment is in the experimental stage will do more harm than good, and will bring discredit, perhaps undeserved, on the remedy.

In conclusion, I would thank Dr. Mustafa Izzedin, who has done so much of the work of injecting these cases, and Mr. J. R. Newlove, who has carried out many of the microscopic examinations connected with the urine.

References.—1. Notes on a case of Espundia and three cases of Kala-Azar in the Sudan treated by the Intravenous Injection of Antimonium Tartaratum, J. B. Christopherson, Jour. Trop. Med. and Hyg., Oct. 17th, 1917. 2. Loos: Cairo Scient. Jour., June, 1910. 3. Anomalies and Curiosities of Medicine, p. 449. See also THE LANCET, 1916, ii., 782; 1918, ii., 45.

A CASE OF ACUTE DELIRIOUS MANIA: RECOVERY.

BY F. WYATT-SMITH, M.B., B.C. CANTAB.

THE combination of fever, mania, constipation, and insomnia in a clinical picture is sufficiently rare to make the publication of the following case desirable, especially in view of recovery having taken place.

A man, aged 28, was discharged from the Army as "unfit" two years ago. Since then, never robust, he has been continually overworking himself at a munition factory at Woolwich, his only holidays being a few interruptions through illness. On June 22nd, 1918, a Saturday, he could not go to work, being flushed, feverish, delirious, and suffering from headache. He continued in this condition until the following Tuesday (the 25th), when, suddenly, unexpectedly, and without any warning, he attempted to cut his throat, and was brought to Constance-road Institution, East Dulwich, struggling violently with four policemen, and admitted. He was so violent that, I being temporarily absent, a neighbouring practitioner was called in, and at 5.20 P.M. gave him I.H. hyosc. hydrobrom., gr. 1/100, and ordered gloves to be used if necessary. The patient slept for three and a half hours. At 11 P.M. I saw him. He was then awake, flushed, with two men standing over him to prevent his falling out of bed, and so restless that I could not take his temperature. As there was a good deal of influenza at Woolwich at the time, I thought he might be suffering from a toxic delirium and gave him tr. quininæ amm., 1 dr. three-hourly; calomel, 5 gr., statim; and paraldehyde, 2 dr.

On the next morning (the 26th) I found that he had had but a few snatches of sleep up to 3 A.M. and none since, and that he had tried to drink his urine during the night. He was talkative, incoherent, resistive, restless, abusive, and obscene, but I thought his physical condition had improved. T. 99·6° F. I ordered him 20 gr. of sulphonal, night and morning. At 3 P.M. he had marked flight of ideas, with rhyming and punning. At 6.30 P.M. his temperature was 102° in spite of the quinine he had been taking, and, after four days illness, made me doubt if he was suffering from the present mild epidemic of influenza, so, thinking that the quinine might possibly be giving him headache, though

he made no complaint of any, I withdrew it, and, his bowels not having been open since admission, I gave him an ounce of senna mixture. At 8 P.M., as he had had no sleep since 3 o'clock in the morning, and very little since admission, I gave him I.H. hyosc. hydrobrom., gr. 1/33. At midnight he had not slept, his delirium was low and muttering, his pulse weak, and his breathing shallow. In fact, he was in an alarming condition. As he was suffering with all four of the cardinal symptoms of acute delirious mania, I supposed he must inevitably die, dared not give him any more hyoscine in consequence, and, *faute de mieux*, and partly to see what it could do in the way of "bucking him up," I gave him 2 oz. of mist. amm. and ether.

On the morning of the 27th, except that his bowels had been open and that, as he fortunately had done all through, he continued to take nourishment well, his physical condition was much the same—namely, T. 103°, P. 132, R. 60 and shallow—he was very weak and had had only 40 minutes' sleep. All the stimulating effect of the ammonia and ether seemed to have been exercised on his brain, and here it had been only too successful, for again he was very noisy, restless, and hysterical. I determined that, like the Nurse in Tennyson, "he must sleep or he would die," so gave him I.H. hyosc., gr. 1/50, at 11.45 A.M. After this he was somewhat quieter, and slept a little at times. He was much quieter towards evening, and his temperature had fallen to 100° at 6 P.M. Throughout the night he was quiet on the whole, groaning and mumbling at times, but he had no real sleep, only dozing occasionally for a few minutes.

June 28th: Though, owing to some misunderstanding, he got no more sulphonal after 8.30 A.M. on the 27th, he now continued to improve steadily. The charge attendant's day report says: "Seems much better. Quieter, dozing and sleeping at times during the day." He continued to take nourishment very well, and his pulse, temperature (99·2° at 6 P.M.), and respirations henceforth ceased to be a feature. His bowels, too, acted well during the night, and gave no further trouble. The night report says: "Moaning and wandering in his talk at times. Fairly well and quiet on the whole. Slept at small intervals, and fairly well after 3.15 A.M."

On the morning of the 29th, the eighth day of his illness, he announced that he felt much better. In fact, he was now quiet and sensible and, except that he was troubled with a little bronchitis, made an almost uninterrupted recovery. (I may interpolate here that I noticed harsh breathing on his admission, and thought that his impatience, with his dyspnœa, might account for his habit of plucking at his throat and tongue, as also, perhaps, for his having attempted to cut his throat, the marks of which were then visible on the left side of his neck.) He was very thin, weak, and exhausted, but on July 3rd he sat up, and on the 11th was transferred to the general wards "time expired."

Did this man suffer from acute delirious mania or not? If not, what was the matter with him? He had all the classical symptoms, though it must be admitted that the constipation was not very obstinate. And then he did not die. These are objections. But, in answer, it may be asked, How marked must the individual symptoms be in order that they may count? and remembered that the authorities do not state definitely that the cases never recover. Against the view that the case was a toxic psychosis and the poison influenza are the facts that (1) the epidemic was a mild one; (2) the delirium was very severe; (3) no complaint was made of pain, except for a little headache late on in the case, unless the uneasy plucking at the throat (? air hunger) is to be so regarded; (4) the "picture" struck me as typically maniacal; (5) and, lastly, after the disappearance of the fever and the delirium a mildly demented condition remained, which seemed to me more marked than the exhaustion of the illness would account for.

The patient's hands and forearms were stained yellow on admission, and I inquired about toluol, but learned that he never went near it. He now tells me that this staining is due to C.E. powder, which he has to handle though he does not make it; but the stuff is said to be absolutely harmless to all who come in contact with it, and no precautions are taken against it.

If this was a case of poison psychosis, then how are we to diagnose acute delirious mania? Has a possibility of intoxication been excluded in all the cases recorded? And, if not, is it certain that this rare combination of fever, mania, constipation, and insomnia is a disease entity at all? If there is such a thing, then I cannot help thinking this was it. And, if so, the fact of recovery from the condition makes doubly interesting a case worth publishing in any event.

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Reviews and Notices of Books.

A Plea for the Insane. By L. A. WEATHERLY, M.D. With Foreword by Dr. T. B. HYSLOP. London: Grant Richards. 1918. Pp. 288. Price 10*s.* 6*d.*

OUR national methods of dealing with mental disorders are far from satisfactory, if only because early treatment is largely denied to persons in danger of mental breakdown. For a poor woman on the verge of melancholia little or nothing can be done; no general hospital will receive her, she cannot be admitted as a voluntary boarder in a public asylum, and convalescent or nursing homes, even if available, cannot give the necessary care and attention. So it comes about that until she becomes worse and can be certified as insane she must remain without effective treatment. There is, moreover, an ignorant public prejudice in relation to mental disease; it is regarded as disgraceful to need mental treatment, and this fact leads to concealment of threatening conditions. Even those who spend their lives in ministering to the insane are often looked at askance; at any rate, the law is often administered as though suspects were being dealt with. The requirements in the way of forms, returns, and reports in hospitals for the insane suggest that abuses, existent in some measure very many years ago, still persist; but it is time that the public ceased to regard these institutions from the point of view of Henry Cockton. But while the amenities of legal shelter for the insane have so much improved, the law in many directions is prejudicial to the interests of the insane, for it raises a mischievous barrier between the general public and the mentally afflicted, and tries to make a hard-and-fast line where it cannot be drawn.

Dr. Weatherly's book, "A Plea for the Insane," is therefore a very timely work. If his attitude to many questions is one-sided, this is the result of personal experience, while a lively style and the recital of cases and stories make the work pleasant reading. Many of his recommendations will obtain the unqualified support of the medical profession. The need for special hospitals or clinics for the treatment of nervous and mental disorders in their early stages is now generally admitted, and that it should be possible for persons who desire it to be admitted voluntarily in public asylums. Few will object to the suggestion that the Lord Chancellor's Visitors should visit all patients whose affairs are administered by a receiver appointed under the 116th section of the Lunacy Act, and that magistrates shall be required to examine in private and not in the public courts persons alleged to be insane and not under proper control. It is widely felt that the larger asylums are much too large and that it is better that patients should be placed in a colony or village, living in small detached houses; also that medical superintendents have too much administrative work, and that the number of patients under the care of assistant medical officers is far too great for proper and effective treatment. Other of Dr. Weatherly's views will not receive such ready endorsement. In reference to the treatment of mental disorders in their early stages Dr. Weatherly proposes that homes should be approved by the Board of Control in which patients may be received, and if necessary detained, upon "notification" to the Board. It would have been interesting if the difficulties inherent in this proposal had been more fully discussed. As regards the poor there can be no two opinions as to the desirability of establishing clinics or special pavilions attached to, or affiliated with, hospitals and universities. The need has been long recognised and repeatedly advocated in these columns. But the question of detention raises serious difficulty, which is greatly increased when wealthy patients are concerned. In America many psychopathic hospitals are conducted entirely on a voluntary basis; so also is the Lady Chichester Hospital at Brighton, which Dr. Weatherly so warmly commends. This question of notification, carrying with it the power of detention in approved homes, requires more hard thinking than Dr Weatherly appears to have given to it. Many persons will question the desirability of establishing what will virtually be new licensed houses throughout the country. That something must be done in this direction all familiar with the subject will admit, but it cannot be said the problem is solved in the book before us. Dr. Weatherly

proposes that lunacy administration should be decentralised and that many of the duties of the Board of Control should be discharged by district commissioners or by committees of magistrates. It seems probable that patients and their friends would frequently prefer that certificates and reports concerning them should be sent to a Government department rather than to some local body of magistrates. The Board of Control is freely criticised, and though no names are mentioned it is not difficult to guess to whom reference is made. The statement, "I want to say, in spite of many faults, the Board of Control are actuated by the very best motives, and have to administer a silly pernicious Act, drafted by God knows whom," does not make full *amende* for a display of bias.

Dr. Weatherly proposes that the Lunacy Act should be scrapped and that the new one should entirely omit the words "lunacy" and "asylum." He does not seem to realise that any word or phrase that may be substituted will soon acquire a similar objectionable meaning and that it is not a matter of words, but of the attitude of the public towards mental disorder that needs alteration.

The law in relation to criminal responsibility is strongly condemned, especially the MacNaghten judgment of 1843, which fixes responsibility by the possession of an ability to know right from wrong. In this connexion several interesting cases are quoted at length. Two trials for murder by a judge whose name is not given are especially noteworthy. One was a case of marked epilepsy, and though the judge summed up strongly against the medical evidence the jury brought in a verdict of "Guilty, but insane." A week later the same judge tried a lad for murder committed without any known provocation. Dr. Weatherly again gave evidence as to responsibility, but the judge ridiculed the view and the boy was condemned to death. He was afterwards reprieved and the event showed that Dr. Weatherly's views were correct, as the lad soon became demented. Later Dr. Weatherly came into personal relations with the judge in question, who apologised to him for his attitude on these two occasions. For Dr. Mercier's views on criminal responsibility Dr. Weatherly finds some hard terms.

Dr. Weatherly's advocacy of the use of mechanical restraint in actively suicidal patients will not commend itself to alienists generally, and several of his remarks about public asylums and registered hospitals are, to say the least, uncalled for. He makes a great point of the lack of proper medical care in the large asylums, and to support this shows the cost per patient for drugs and instruments in county asylums, in registered hospitals, in his former private asylum, and in his present home for early undeveloped cases. This average cost is respectively 4*s.* 4*d.*, 10*s.* 10*d.*, £3 17*s.* 9*d.*, and £17. These figures are interesting, but are quite valueless unless we know what kind of patient is under care and what is included under the head of drugs and instruments. It would be just as fair to conclude from these figures that in Dr. Weatherly's practice too many drugs are given. The attempt to create a prejudice against institutions by means such as this must be strongly censured.

In spite of the defects which we have indicated the book is a valuable one and is truly a powerful plea for the insane; yet it is to be regretted that its value is reduced by the inclusion of ungenerous reflections on many workers as zealous as the author in the same cause. The book is likely to run into further editions, when opportunity might be taken to reconsider some of these passages.

The Errors of Accommodation and Refraction of the Eye and their Treatment. By ERNEST CLARKE, M.D. Lond., F.R.C.S. Eng. Fourth edition. One coloured plate and 92 figures. London: Baillière, Tindall, and Cox. 1918. Pp. 243. Price 6*s.* net.

No very material alterations in this excellent text-book have been made since the publication of the third edition seven years ago, though parts of it have been amplified. The importance of correcting small degrees of astigmatism in the presence of any symptoms of eye-strain is one of the author's strong points, and among these symptoms are now included neurasthenic symptoms in soldiers suffering from shell shock or head injuries; also the continual blinking of the eyes sometimes seen in children. From this point of view it is especially necessary to correct the smaller degrees of astigmatism (under 0·5 D.), the theory being that the unequal contraction of the ciliary muscle is capable of neutralising them in the absence of a correcting lens, but only by expenditure of an undue amount of nervous energy. As this is the view emphasised by the author, we do not understand how he can still be of the opinion that the ophthalmometer is a more delicate test than the method of retinoscopy, for it does not profess to measure the total but only the corneal astigmatism. That of the lens when the ciliary muscle is put out of action, though never considerable, may nevertheless be of great importance, and of this the ophthalmometer gives no indication.

La Gangrène gazeuse. Par M. WEINBERG and P. SÉGUIN. Monographies de l'Institut Pasteur. Paris: Masson et Cie. 1918. Pp. 444. Price 20 francs.

WHILE the subject of this contribution appeals mainly to bacteriologists and laboratory workers, none the less it contains much information useful to the clinician and notably to the surgeon.

The first section of the monograph, devoted to the general question of gas-gangrene infection, is especially illuminating, and its perusal is recommended to all who are interested in the treatment of wounds. The controversy concerning what precisely is the causal agent of gas gangrene is fully discussed, and attention is called to a factor that cannot be sufficiently emphasised—viz., that one clinical entity may be produced by infection with more than one specific micro-organism, and that conditions differing in their clinical manifestations may be due to infection with one and the same micro-organism. In this section the authors attempt to correlate the findings of those investigators who dealt with small groups of cases of gas gangrene prior to the war with the results that have been obtained by themselves and others from recent more precise inquiries. The authors' criticism of the confusion of thought and carelessness of technique which led in pre-war days to the adoption of a chaotic nomenclature, and caused a falsely simple view to be taken of its causation, is fully justified—von Werdt actually described a disease that did not exist. The danger of drawing conclusions from observations based upon the investigation of impure cultures is insisted upon, and for this section of their monograph alone Weinberg and Séguin lay bacteriologists under a debt of gratitude for evolving order from chaos. This diversity of causal organisms and the natural corollary thereof—symbiosis as a factor in the causation of infection—is for the first time appreciated at its true value. The point is well put on p. 31.

"En définitive, la 'gangrène gazeuse,' malgré son apparente unité, n'est, au point de vue pathogénique, ni *une* maladie ni même un ensemble de 2 ou 3 maladies; c'est un état morbide causé par des flores microbiennes extrêmement variées. A nous en tenir aux seuls anaérobies, nous avons trouvé 40 types de flore pour les 91 cas de gangrène gazeuse que nous avons étudiés.

Le problème de délimitation qui est parfois si délicat pour une maladie monomicrobienne spécifique prend donc ici un caractère de difficulté qui le rend presque insoluble."

The second section, in which is given a systematic description of the micro-organisms that play a part in the causation of the disease under consideration, is of more interest to the laboratory worker than to the general reader. Four new species of bacilli—*B. œdematiens*, *B. fallax*, *B. aerofœtidus*, *B. histolyticus*—which have been isolated for the first time by the authors, are fully described, along with the other organisms that have in past times been incriminated as causal agents of gaseous infections. Of the new species, *B. œdematiens*, both because of its apparently frequent occurrence and of its undoubted pathogenicity, is most carefully considered, and an excellent case is made for regarding it as a separate species altogether from *Vibrion septique*. It is refreshing to find that Weinberg indicates in this section that *B. Welchii* may be a species which comprises several sub-groups and suggests that the same may be true of other anaerobic bacilli which have hitherto been defined by cultural reactions alone. A specially valuable feature of this section are the notes pointing out the relationships which the micro-organisms, that have been recently defined, bear to others that have from time to time been described as of importance in the causation of gas gangrene and kindred conditions both in human and in veterinary pathology.

The third section deals with the origin and evolution of gaseous infection and very pointedly emphasises the importance of diversity of infection, of symbiosis, and what might

well be termed "the life-history of wound infection." Attention is called to the valuable information that may be obtained both by blood culture and by examination of tissue from the site of the lesion, and to the special factors—arising from the conditions under which war wounds are received—that tend to cause gas gangrene, as well as to the physical and other factors which in each individual case are adjuvant to its incidence. Finally, the experimental work which led to the preparation of specific sera is fully described. The results of the employment of Weinberg's sera are most encouraging, and his work has made it possible to place in the hands of surgeons and physicians valuable prophylactic and therapeutic reagents.

Professor Weinberg and his collaborator are to be congratulated on the excellence of this work. The matter is well arranged and the whole work is marked by a concise diction and by a logical sequence of presentation that makes it a pleasure to read. The work is a mine of useful information and of helpful suggestion, while due emphasis is laid upon the valuable results to be obtained from careful bacteriological inquiry.

Treatment and Repair of Nerve Lesions. By Mme. ATHANASSIO-BENISTY, House Physician to the Salpêtrière. Preface by Professor PIERRE MARIE, Member of the Academy of Medicine. Edited with a Preface by E. FARQUHAR BUZZARD, M.D., F.R.C.P., Lieutenant-Colonel, R.A.M.C. With 62 illustrations and 4 full-page plates. 1918. Pp. 181. Price 6*s.* net.

Clinical Forms of Nerve Lesions. By Mme. ATHANASSIO-BENISTY, House Physician to the Salpêtrière. Preface by Professor PIERRE MARIE, Member of the Academy of Medicine. Edited with a Preface by E. FARQUHAR BUZZARD, M.D., F.R.C.P., Lieutenant-Colonel, R.A.M.C. With 81 illustrations and 7 full-page plates. 1918. Pp. 235. Price 6*s.* net.

London: University of London Press, Ltd.

WE have already reviewed these excellent compendiums on the occasion of their original appearance in a French edition. In English form they are sure of wide appreciation as they contain a wealth of practical information, based on war experiences, bearing on the protean forms of nerve injury. Symptomatology, diagnosis, prognosis, and treatment are so fully described as to leave little for criticism by way of omission, and still less by way of inaccuracy of statement. We note that the writer rather favours "hersage" as a suitable form of operative treatment in selected cases—i.e., the making of a series of longitudinal incisions in the nerve over the part injured and deformed by local swelling or neuroma-formation. For causalgia apparently hersage has given a good result in some cases, but alcoholisation rests on a securer basis. The illustrations and diagrams add materially to the usefulness of these text-books, which are essentially up to date, and also contain numerous references to the abundant literature of peripheral nerve injuries. The translation is uniformly well done.

JOURNALS.

The Journal of Comparative Pathology and Therapeutics. Edited by Sir JOHN MCFADYEAN and Sir STEWART STOCKMAN. Edinburgh: W. and A. K. Johnston, Ltd. Price 2*s.* 6*d.* quarterly, or 10*s.* per annum.—The June number of this journal is full of good things for others than veterinarians. In a paper on the Histology of the Lesions of Johne's Disease, by Sir John McFadyean, we have an interesting comparative study of the lesions produced by the bacillus of Johne's disease and of those produced by the bacillus tuberculosis. The observations are of special moment in that, up to a certain point, the Johne's bacillus appears to do all the work that the tubercle bacillus achieves, but at this point it stops short and does not bring about the caseation changes so characteristic of tuberculous lesions in cattle. A further differentiating feature appears to be a lesser faculty—or opportunity—of migration on the part of the Johne's bacillus. Principal McFadyean's observations on the formation of plasma cells, giant cells, and on what he speaks of as the "symplasma" stage will be read with interest and profit by those interested in "bovine" tuberculosis, as well as by those who refer to the paper for its account of the histology of Johne's disease.—J. C. Lewis, D.V.Sc., and N. R. Seddon, B.V.Sc., contribute a suggestive but somewhat inconclusive account of "Habronemic Conjunctivitis."—Two papers, one on Castor-seed (*Ricinus communis*) Poisoning in Horses, by G. H. Wooldridge, F.R.C.V.S., the second on Poisoning of Horses with Castor Seeds, by Munroe White, M.R.C.V.S., deal with the symptoms, treatment, prognosis, and morbid anatomy of what is evidently a very serious matter for horse owners during the present shortage of fodder, when there exists such a temptation to "rope in" additional sources of food. Typical gastro-enteritis, emaciation, and exhaustion appear to characterise this type of poisoning, sometimes accompanied by peculiar neuro-muscular symptoms. One important factor in the treatment is, apparently, absolute rest.—Tuberculosis in the Camel, by Major F. E. Mason, A.V.C., has been studied so little that much of what is here set down is practically new, and both veterinarians and pathologists will look forward to further instalments of Major Mason's interesting observations.—The same may be said to apply to the article on Scrapie, by Sir John McFadyean, who, however, breaks a lance in a friendly joust with Dr. J. P. McGowan, who maintains that scrapie is the result of a heavy infection of the muscular tissue of sheep with sarcosporidia.—A Note on Piroplasmosis of the Donkey, by J. A. Griffiths; a review on Veterinary Post-mortem Technic, by Walter J. Crocker, B.S.A., V.M.D.; and an abstract, Blood-sucking Insects as Transmitters of Anthrax, complete a very readable number.

The American Review of Tuberculosis. Baltimore: National Association for the Study and Prevention of Tuberculosis. Price 35 cents.—The June issue gives a striking insight into the thoroughness with which the campaign against tuberculosis is being carried on by influential bodies in the United States of America. Dr. Donald B. Armstrong, the executive officer of the Framingham Community Health and Tuberculosis Demonstration, describes its working since its initiation in December, 1916. During its first year of existence 5000 persons, representing about one-third of the population of Framingham, were voluntarily examined by experts in a search for incipient or neglected tuberculosis. Summer camp accommodation was found for 100 delicate children, about 500 children between the ages of 1 and 7 years were tested with tuberculin, and about 4000 cases of illness or defects other than tuberculosis were referred to local physicians for treatment. These achievements represent only a fraction of the activities of the Framingham scheme. Were it not that Dr. Armstrong could show this scheme already in full activity, with definite results obtained, this whirlwind campaign of a small community to put its home in sanitary order would read like some Utopian project. It is refreshing to find that in the United States at any rate the health reformer who dreams dreams is sometimes able to translate them into action.—A paper by Dr. Forrest B. Ames describes the results of a tuberculosis survey of the residents of Saranac Lake. A modern village of nearly 6000 inhabitants, it has become a centre for tuberculous invalids, about one-fifth of the total population having immigrated there for their health. The health of the indigenous population was found by the house-to-house canvass to be excellent, in spite of poor housing conditions in certain quarters; and the indigenous morbidity and mortality from tuberculosis were exceptionally low. This paper, which confirms the findings of previous investigations into the health of the indigenous population of tuberculosis health resorts, is crammed with tables and analyses, and is another example of the painstaking methods adopted in America to elucidate the problems of tuberculosis.—A third paper by Dr. Walter L. Rathbun is a plea for a more skilled and systematic search for tuberculosis among incoming aliens.

Archives de Médecine Navales.—Dr. Mourron (Fleet Surgeon) of the French Navy discusses in the issue for July the establishment of sanatoriums for the tuberculous invalids of the French Navy and dockyard services. The navy has already two small sanatoriums on the west coast, but Dr. Mourron thinks that sea air is too stimulating for phthisical cases, and proposes that other sanatoriums be established in the south of France. A recent decree has put £40,000 at the disposal of the French Home Secretary for the providing of hospitals for the men of the navy invalided during the war for bacterial diseases of the lungs; that is why Dr. Mourron is considering this question just now. He assumes it will be necessary to provide three sanatoriums—one of 500 beds for early cases, one of 300 beds for developed cases, and a third of 200 beds for advanced cases. He recommends their location near Toulon, in a sheltered valley at an altitude of about 700 feet, already chosen by the Anti-tuberculosis Society of Toulon as the site of its sanatorium. He estimates the cost of buildings at £200 per bed, while maintenance would require about 4*s.* daily, a total expense of £200,000 for building and £75,000 annually, although it is very difficult to estimate the length of stay of the average patient. This sum is more than has been allotted by Parliament, but Dr. Mourron insists that dockyard men shall be allowed to benefit as well as the sailors, and hopes that the expenditure will, by cures and by education of its patients, well repay the country, the loss by tuberculosis being so heavy. When the cost of cure is so high, might it not be more thrifty to pay more attention to prophylaxis by the more extended application of artificial ventilation in the ships of the Fleet?

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 7, 1918.

Coal and the Cult of the Skin.

MANY times already in the course of the war the medical profession has been invited by Government Departments to use its influence in bringing home to the people at large the hygienic lessons rendered urgent by the times we live in. The most recent of these appeals emanates from the Office of the Coal Controller, who warns us that the country is faced with a serious shortage of coal. The outlook to-day, he says, is much graver than is generally realised, the deficit amounting to something like 36 million tons of coal. Coal is the principal and irreplaceable source of power, whether for offence or defence; it is the raw material from which gas, electricity, and steam alike are produced, and a reduction in its supply beyond a certain limit would put an end to essential industries. The Coal Controller draws the lesson that self-denial is called for, that every private consumer should be content with three-quarters of the ration which is legally his due; and he appeals to medical men to help him in enlisting the services of every man, woman, and child in the country in a united effort of economy in the use of coal. To us it appears that the counsel of the medical man might often be of the first value.

It would be easy to enlarge on the hardships which any further restriction in the already scanty coal-supply will involve for the private citizen. The hardship might indeed imply some danger for the old and infirm as well as for the young child, were it not for the prospect already held out of an increased allowance in respect of both extremes of life. We are concerned here rather with the average citizen and his vital needs. Fuel economy affects us chiefly in two directions. In warmer weather, such as at present prevails, our coal is used to cook and, with a growing mass of the population, to heat water for washing. In the winter, to which the Controller is looking forward with anxiety, coal is used in addition to raise the temperature of the home atmosphere above that of the outside air. Economy of coal in relation to the preparation of food is a familiar subject to those who have studied it practically. And it should now be known to every man, woman, or child that to cook any kind of viands they need only be raised to the required temperature by the active use of fuel, when they can be maintained at or near this level by insulation in one or other of the many ways, of which the newspaper cosy is the cheapest type. Alas! this simple fact, fundamental for economy, appears to be hidden from many people. The continuous consumption of coal or gas throughout the day in a private house for cooking either implies a lamentable want of enterprise or a lack of that feeling for the needs of others enjoined on us by proclamation. The using up of fuel to heat water for bathing purposes continues on an enormous scale. Water is very costly to heat, and this attribute of water makes it an admirable medium for circulating warmth about the house, but there is an obviously large waste of potential energy in allowing successive instalments of 20 gallons each of slightly soapy water at 100° F. to run down the bath-room waste. Nothing is more certain than that the daily full hot bath is unnecessary either for cleanliness or for the maintenance of the proper function of the skin. The frequently repeated use of soap and hot water over the whole body removes from the skin the natural fat which is itself a desirable insulating material. We may admit without shame that the hot-bath habit is in the nature of a pleasant indulgence for those citizens whose ordinary avocations do not bring them into close association with dangerous materials, which have to be regularly removed from the skin by drastic ablution.

Turning to winter conditions, it is in the maintenance of the difference between indoor and outdoor temperature that coal is principally consumed in the private house, and the consumption runs up rapidly as the difference becomes greater. In the summer, when indoor and outdoor temperatures are roughly equal, we wear the same clothes both in and out. As the outdoor temperature falls in autumn most of us temporise by dressing more warmly before resorting to artificial heat. The point at which we give in to the cold varies greatly. In Vladivostok there is little to be gained by delaying the day, since the winter cold is so intense that the resident makes no attempt to meet it half-way, but lives indoors in summer clothes at an artificial summer temperature, encasing himself thickly in the skins of beasts when he stirs abroad. But the climate of this country, much as we abuse it, has this in its favour: that the difference between average summer and winter temperature is only slight, so that the fate of the tuberculous patient or the wounded soldier unprovided with artificial heat is no more to be pitied than that of his comrade in the trenches. Those who think otherwise have not sufficiently realised that the skin is not a mere protective crust but an organ with functions as definite as those of the heart or the kidneys—functions with a wide range of adaptation which develop with appropriate use and respond in proportion to demand. Fortunately, in the recent rise of interest in the maintenance of infant health the public has been receiving object-lessons of the first value along these very lines. Skin training, as we know, plays a large part in the education of the infant, and in the modern nursery the judicious use of cold water and of friction leads on to an indifference to the impact of cold air currents and an absence of that sensitiveness which is a nuisance to its owner and a serious handicap in the business of life. "I am cold but not suffering," is the expression of one so trained. It is perhaps unfortunate that the sensations of heat and cold should have any agreeable or disagreeable tone attached to them. The surface

temperature of hands and feet varies greatly in different people, the same temperature to some being a discomfort, while to others it is a matter of indifference. The sensation of heat and cold provoked in the skin is doubtless a physiological response designed, like that of pain, to call attention to the need for adjustment. But the sensation of cold is largely influenced by the condition in which the skin is maintained. If its possessor keeps it in a more or less moist and sodden condition, at the same time carefully removing the natural non-conducting fatty material, heat is transmitted freely through it, and the need is felt for more external warmth. The pampered skin becomes ever more imperious in its demands. It should be borne in mind that each one of us lives, not so much in the climate of the town or even of his house, but in the atmosphere within his own clothes.

We do not suggest that every individual should study the functions of his skin, seeking to discover for himself the limits of compensation within the bounds of safety. But we think that medical men may be of the greatest assistance to their charges by explaining to them that sensations of cold which they find disagreeable can be largely mitigated by common-sense precautions, and will tend to disappear spontaneously when regarded rightly. Sir GUY CALTHROP'S appeal to the public to save coal may prove, as a secondary result, a stimulus to domestic hygiene of the first order. Many will thereby escape from a yoke of which they are almost unaware.

The Names of Diseases.

ACCURATE nomenclature and an understanding of the principles upon which nomenclature is based are of fundamental importance in the progress of any exact science, and although the science of diseases cannot claim to be exact in the same sense as mathematics, its progress, like that of other sciences, depends largely upon the uniformity, consistency, and accuracy with which its terms are employed. For statistical purposes it is essential that the names of diseases should convey the same meaning to all who are engaged in observing and recording them. Multiplicity of names for one and the same disease must lead to confusion, and any lists of diseases should consist of short names comprised in one word, or in the fewest possible words, the names being such as are in common use which yet do not imply erroneous or doubtful theories. The name of a disease should connote its etiology, its general or local site, its characteristic symptoms and physical signs, and the pathological effects which it produces in organs and tissues. But these conditions cannot be satisfied in every case. In some the etiology is unknown, in others the localisation; in some the symptoms and physical signs are not distinctive, in others the pathological consequences on organs and tissues may not be perceptible; in others, again, these morbid changes are all we have to guide us. A nomenclature of diseases cannot therefore avoid including the names of symptoms and physical signs and morbid changes. But symptoms and physical signs are not themselves diseases, and their names should not be used to connote disease when further information is available. The object of a national nomenclature is not educational or dictatorial, it is merely to record and to stereotype for the time being names which are in common use. It is not the compilers' business to alter or correct such names or to invent new ones. Hence, the compilers of a nomenclature are not to blame for including names sanctioned by antiquity although they have long lost their first significance, or names which shock the purist on account of their hybrid and barbarous formation. If generally accepted by medical writers they are retained, if obsolete or becoming so, they are dropped out, or used only as synonyms; their coming and going affording valuable landmarks in the history of medicine.

Classification is of equal importance to indicate the relationship between the diseases and conditions named. Theoretically diseases might be classified according to their symptoms, their causes, their intimate nature, according to the tissues or the systems of the body affected, or according to the parts of the body as they lie anatomically. In the present state of our knowledge the best classification is topographical, diseases being divided into those which affect the body as a whole, and those which affect locally different systems, and the organs and tissues of which they are composed. This method of classification was adopted by the joint committee appointed by the Royal College of Physicians of London which drew up the first Nomenclature of Diseases in 1869, and the compilers of the fifth edition just published have not departed from the general principle. The changes in the new edition are not of a drastic nature. The section hitherto entitled Infective Diseases is now described as Diseases caused by Infection. Intoxications have been relegated to the list of poisons in the appendix. More significant is the splitting up of a heterogeneous collection of diseases called "general" in former issues into three new groups: Diseases of the Blood, Diseases of the Ductless or Endocrine Glands, and Diseases due to Disorders of Nutrition or of Metabolism. While this spells progress there yet remains, to remind us of our ignorance, a large group of disorders classified as "Names of symptoms, groups of symptoms, diseases named with reference to their symptoms, and diseases of which the pathogenesis is not accurately known." And although this tell-tale heading occurs in all sections, it is especially well represented in that of diseases of the nervous system. Under the broad topographical headings subdivision has been carried out on a definite scheme in so far as it applies to individual organs and structures, the sub-headings being—

(1) Inflammation and its varieties; (2) vascular conditions—hyperæmia, hæmorrhage, anæmia, œdema, thrombosis, embolism, necrosis, gangrene; (3) hypertrophy and atrophy; (4) local manifestations of general diseases, such as syphilis, tuberculosis; (5) diseases and disorders of function special to the organ under consideration; (6) local nervous affections

such as atony, spasm, paralysis; (7) degenerations; (8) mechanical results of diseases; (9) cysts and new growths, non-malignant, malignant; (10) effects of parasites; (11) effects of poisons; (12) malformations; (13) injuries; (14) foreign bodies.

Varieties or special forms of diseases are usually indented below main headings; but indented names do not necessarily include all forms of the heading under which they are indented.

Where synonyms must be given, the name of the disease which appears first is that by which it is usually known. The synonym is the Greek, Latin, or English equivalent, and in making a return it is optional to employ the name of the disease which appears first, or its synonym. The compilers of the Nomenclature have decided to omit in this edition the triple column of Latin, French, and German equivalents or translations which formed a prominent feature in previous editions. Their decision, which some may regret, was based principally on the logical ground that the insertion of French and German names was beyond the scope of a British nomenclature. The ambition of the first compilers to be the founders of a truly international nomenclature has not been realised, and, except by international agreement, it is obviously impossible to guarantee the correctness of the foreign equivalents. The omission of Latin and Greek equivalents was dictated by other reasons. The former are often mere translations of English phrases, while many of the names of diseases in common use are already framed upon a Latin or Greek basis, or are hybrid combinations sanctioned by time. No real need therefore exists for a separate Latin column. In so far as the omissions make for simplification they are entirely to the good, and will conduce to the general use of the Nomenclature of Diseases by all medical practitioners for the registration of diseases. It is to be hoped that in its present simplified form the book will be in more frequent use as a work of reference. It not infrequently happens that a medical practitioner having to fill up a death certificate is at a loss in what form to state the primary cause, and for this purpose the Nomenclature should be of great assistance. Uniformity in the return of causes of disease is essential for statistical purposes, and without accurate statistics no effective control can be exerted on the public health.

We have received a copy of the report of the Committee of the Privy Council for Scientific and Industrial Research for the year 1917–18. This is the third annual report issued since the committee was appointed. The past year has seen a great extension of the work of the department, to some of the salient features of which we propose to return in a future number.

WE regret to announce the death in a London nursing home of Dr. Margaret Todd, sometime medical officer to the Edinburgh Hospital for Women and Children, and best known as a writer under the pseudonym "Graham Travers."

THE death occurred at Birmingham on August 28th, in his sixty-ninth year, of Dr. Robert Saundby, emeritus professor of medicine in the University of Birmingham and consulting physician to the General Hospital, well known alike as a clinician, teacher, administrator, and author. We hope to give some account later of his fruitful and many-sided activities.

Annotations.

"Ne quid nimis."

MOTHERHOOD AND INDUSTRY.

THE employment of married women on a vast scale in munition factories has recently created what is largely a new problem in industrial hygiene. The problem is not entirely new, for in the manufacturing centres of the North of England many women have been accustomed to factory work for the greater part of their lives, and in Dundee the Census returns for the year 1911 show that more than 40 per cent. of the married women in the town between the ages of 20 and 24 were occupied before the war in remunerative occupation outside their homes. In Dundee, as we learn from the pages of the Carnegie Report[1] on Scottish Mothers and Children, married women's labour has long been recognised as a contributory cause to an abnormally high infant death-rate and stillbirth-rate. The report of the medical officer of health, Dr. Charles Templeman, for the year 1905 showed that more than half the employed mothers in Dundee worked up to within two months of their confinement, and a special inquiry conducted for the Scottish Insurance Commissioners in 1904 by Miss Mary M. Paterson revealed the further fact that while many women were sent away from the mill some time before childbirth, because their work failed to reach the required standard, it was often only a change to laborious work elsewhere or at home.

But the larger problem is new, since it is only during the war that any considerable proportion of women have entered upon factory employment or that many places have been filled by married women; some of whom have offered themselves doubtless in view of the urgent national need, others on the more usual ground of supporting themselves and their children. In the second of two inquiries made by Dr. Janet M. Campbell into the health of women munition workers, a large proportion of married women were found among the 1183 women examined in eight typical factories, and many of them were employed on heavy work. Dr. Campbell in her report on this inquiry to the Health of Munition Workers Committee[2] touches on some of the difficulties of these women in regard to the most important events of their lives. The married women with homes of their own, she tells us, generally leave the factory in the early months of pregnancy, but a number of others are obliged by financial pressure to work almost up to the time of confinement. In filling factories it is the usual practice to discharge a woman as soon as she is known to be pregnant, and the fear of dismissal may lead her to conceal her condition as long as she can, with results which may well be disastrous to both mother and child. The expectant mother, as might have been anticipated, does not fit smoothly into the rigid industrial routine originally planned for the male worker, and cannot take her place safely in the open labour market.

Expectant motherhood should, many people think, be excluded altogether from the stress of industrial life, and it is instructive, therefore, to note the experience of those who can show good reason

[1] Report on the Physical Welfare of Mothers and Children, Part 2, Scotland, 1917.

[2] Final Report on Industrial Health and Efficiency. 1918. Cd. 9065. Price 2s.

for holding the contrary view. We publish this week part of a report to the Oxford Welfare Conference by Dr. Mary A. S. Deacon dealing with the effect of employment in a filling factory on 1200 women workers over a period of nine months. Of the 575 married women among them more than one-sixth became pregnant during this time, and of these 101 pregnancies so far 65 went on to full term without mishap, 2 terminated prematurely on account of cancer in the one case and syphilis in the other, while 13 abortions occurred before the third month was completed. Mrs. Deacon discusses the employment of these expectant mothers both from the employers' point of view—the efficiency of their work—and from the workers' point of view—the question of maternal welfare. She assumes the necessity of such work under present war circumstances, and endeavours to bring about conditions satisfactory alike to employer and expectant mother. Fortunately, in a filling factory work is graded, and in many cases she found it possible to obtain the temporary transference of pregnant workers from the heavier to lighter operations. In other kinds of factories where such grading is not possible the expectant mothers may be provided with a pre-maternity work-room under the supervision of the factory medical officers, a suggestion made by Dr. Rhoda Adamson[3] from her experience as medical examiner of the National Ordnance Factories in Leeds. Further light on these points will be very welcome in view of the conclusion reached by Mrs. Boyd Dawson,[4] in a recent report on industry and motherhood made over a wide field, that given good food and hygienic conditions there is little, if any, evidence of harm accruing to women from occupations involving severe muscular labour. "We can find no case," Mrs. Dawson writes, "on the grounds of quality of maternity, for the prohibition of any woman to undertake any kind of healthy employment of which she feels herself capable." Here is a fruitful object of study for the scientific factory surgeon.

REMOVAL OF A PROJECTILE FROM THE CAVITY OF THE LEFT VENTRICLE.

AT a meeting of the Académie de Médecine of Paris on August 6th M. René Le Fort reported another case of a remarkable advance made in French surgery during the war—the removal of foreign bodies from the cavities of the heart. This appears to be the first case on record of removal of a foreign body from the cavity of the left ventricle. The history of the patient, whom he showed, was briefly as follows :—

A man, aged 21 years, was wounded on Sept. 21st, 1917, at Verdun, by a grenade fragment which passed through his right arm and penetrated his chest. His initial troubles were hæmoptysis and right hæmothorax from which he quickly recovered. But the projectile, which was described as "intrapericardiac," remained. He suffered from dyspnœa on exertion and cardiac irritability, and could not work. The radioscopic report was that the projectile was situated at the apex of the heart and moved with it. In July, 1918, he came under the care of M. Le Fort, who made an incision in the fifth intercostal space, divided the fifth costal cartilage, turned back the pleura adherent to the pericardium, and opened the pericardium, which contained citrine liquid. Radioscopy showed clearly that the projectile was in the heart. With the gloved hand it could not be felt, but on removing the glove a sensation of altered contour could be felt near the apex. The intercostal incision was transformed into a "hinged shutter," comprising the fourth and fifth ribs. An attempt was made to hold the projectile near the apex while four fine double sutures of silk were passed with a curved needle, confining the projectile. The ventricle was incised at the apex, a grooved director was passed into it, and the projectile, which appeared to be entangled in the chordæ tendineæ, was gently loosened and removed with Kocher's forceps. The four sutures were tied, but one of them broke.* When the heart was set free a jet of blood squirted out to a height of more than 1½ metres. The hæmorrhage was arrested by passing two more sutures. The pericardium was first sutured, and then the thoracic wall in three layers without drainage. The operation at first accelerated the heart's action, but this was considerably slowed at the time of incising the ventricle. The beats fell below 30 for one or two minutes, and then rapidly rose to 56. The respiration momentarily stopped on incising the heart, and the face paled. When the patient was put back to bed the face and lips had lost colour, but this was regained in a few hours. Recovery was uninterrupted. The grenade fragment measured 8 by 4 by 4 mm., and was encrusted with a fragment of endocardium.

Most of the projectiles removed from the heart up to the present were imbedded in its walls. In only 5 of the cases recorded previously by French surgeons was the projectile removed from one of the cavities, and always from the right side—once from the auricle and four times from the ventricle. M. Le Fort has removed 11 foreign bodies from the heart in the course of nine operations—in two cases from cavities of the heart. Only one patient succumbed; all the others were cured.

PULMONARY TUBERCULOSIS AND PREGNANCY.

ALTHOUGH very many contributions to the reciprocal effects of pregnancy occurring in the subjects of pulmonary tuberculosis have been published it is still true that our actual knowledge of the subject remains very imperfect. In respect of active treatment the only conclusion deducible by an unprejudiced student of the literature is simply that each case must be judged individually. A recent investigation by Dr. Th. Begtrup-Hansen[1] affords some new facts of importance. Based on his extensive Scandinavian experience, Dr. Begtrup-Hansen summarises his researches somewhat as follows:—

The clinical material numbered 214 patients—59 from consumption hospitals, 60 from sanatoria, and 95 from lying-in institutions, while an additional 85 cases were gathered from the literature. The material for study was thus fairly eclectic. The first point of inquiry was as to the period of pregnancy at which phthisis appeared or became aggravated, and it is stated that the first symptoms of such were referred by more than half the patients to the first three months. 20 per cent. named the second three months, 16 per cent. the third, and only 4 per cent. specified the puerperium itself; with this anamnesis the results of physical examination tallied very well. When the disease appeared early—i.e., in the first half of pregnancy, its course was distinctly favourable, as shown by decline in temperature, decrease of chest symptoms, but most by pronounced increase in weight. This improvement was most noticeable in hospital and sanatorium, and occurred in all stages of the disease. Puerperal phthisis, on the other hand, behaved altogether differently; 60 per cent. of its subjects got worse, and nearly a third of them died. There were thus, the author concludes, three different phases of tuberculosis in pregnancy. In the first half a critical period with increased vulnerability, then a time of increased resistance in the second half, and, finally, at the puerperium a critical period of grave import. He attempts to explain these findings in what is perhaps a rather roundabout way, relating them with variations of body temperature. Before menstruation the temperature fluctuates and is raised, while it falls during and after the period. During pregnancy the temperature is of pre-menstrual type for the first three or four months and of post-menstrual for the latter half. At the puerperium it is first pre- and then post-menstrual.

If these generalisations are granted the epochs of pre-menstrual type of temperature coincide with the critical epochs of vulnerability to tubercle. Referring to a previous work, the

[3] Maternity and Child Welfare, March, 1918.
[4] The Women's Industrial News, July, 1918.

[1] Internationales Centralblatt für die gesamte Tuberkulose-Forschung, April, 1918.

author explains these temperature fluctuations as due to variations in albumin metabolism, which he found at its height in the first half of pregnancy and in the first week of the puerperium. Finally, the conclusion as regards therapeusis is that conservative treatment in a sanatorium is to be tried in all cases during pregnancy and also after delivery, and that there is no general indication for practising artificial abortion. For this last measure each case, as, indeed, we had surmised, must be judged on individual grounds.

SYSTEMATIC INSTRUCTION IN WAR NEUROSES.

A FIRST course of instruction in shell shock and war neuroses held at the Maudsley Neurological Clearing Hospital having proved successful, with a good attendance of both military and civilian practitioners, the Director-General, A.M.S., has given his approval to a systematic course, extending over three months, which will commence on Sept. 20th. Daily instruction and practice in diagnosis and treatment will be given each weekday, Saturday excepted, from 10 A.M.–12.30 P.M., and from 2–4 P.M.; systematic lectures with demonstrations of illustrative cases on Tuesdays and Fridays at 3 P.M. The syllabus will cover:—

1. The anatomy, physiology, and pathology of the nervous and muscular systems applied to the diagnosis, prognosis, and treatment of shell shock and war neuroses.
2. The physiological and pathological conditions underlying shock—emotional, commotional, and surgical.
3. The methods of examining cases of functional nervous disorders (hysteria, neurasthenia, and psychoses) and the determination of fitness for military service.
4. The methods of differential diagnosis of organic and functional disease and the combined conditions.
5. The diagnosis of conscious simulation (malingering), unconscious simulation, and exaggeration.
6. The general principles of treatment of functional diseases of the nervous system.
7. General aspect of the surgical side of neuro-muscular disabilities.
8. General principles of psychology as applied to war neuroses and shell shock.

The course will be open to all officers in British, Colonial, and American medical services; also to civilian practitioners presenting a letter of introduction from a physician or surgeon attached to a university or hospital medical school. No fees will be charged. Applications should be made to Lieutenant-Colonel F. W. Mott, R.A.M.C., Maudsley Neurological Clearing Hospital, Denmark-hill, London, S.E. 5, who will submit them to the Director-General.

A NEW EMPYEMA TECHNIQUE.

SURGICAL drainage is carried out whenever possible from the most dependent part of a body cavity, but in the case of empyema it is often by no means easy to determine by physical signs the site for incision in order to have gravity entirely in favour of the operator. In the *Military Surgeon* for July, First Lieutenant Thomas R. Sealy, M.R.C., suggests a simple and ingenious technique for discovering the size and shape of an empyema before operation. Having aspirated what pus he can and accurately measured the volume drawn off, he injects through the not-withdrawn needle an exactly equal volume of a mixture of saturated boric lotion with an equal part of mucilage of acacia containing 10 per cent. of barium sulphate or carbonate in suspension. The patient is then at once X rayed, the outline of the empyema is defined, and the chest opened at what is now definitely known to be the most dependent point. In actual practice we believe that several considerations may limit the value of this procedure. In the first place, patients with empyema lie in bed, and the part of the pleural cavity most dependent in the erect position will not be so in the recumbent. Then the empyema patient generally lies on the affected side in order to give the healthy lung more play, making drainage easy wherever the opening is situated. Further, it must not be forgotten that when the cavity of an empyema has been emptied the space left is filled in part by the expansion of the lung, in part, especially in children, by the falling in of the chest wall, and in part by the rising of the diaphragm. An opening made at the most dependent part of the pleura may soon become blocked by the ascent of the diaphragm. Surgeons will, however, find it worth while to bear in mind Lieutenant Sealy's plan.

CAUSES OF DEATH AND INVALIDITY IN AUSTRALIA

THE committee appointed by the Australian Government to report on the causes of death and invalidity in the Commonwealth have brought in their final report.[1] Several of the "progress reports" issued at intervals during the last two years have been noticed in our columns on their appearance. The terms of reference to the committee were briefly as follows: (1) the collection of evidence as to causes of death and invalidity; (2) the indication of suitable measures for their investigation and prevention. The control of public health legislation in Australia at present rests mainly with the Parliaments of the several States, upon whom devolves the duty of maintaining locally an effective Public Health Service. The unit of health administration is the council of each municipality. We are not surprised to learn from the report that the "linking up" of these practically autonomous and independent local authorities leaves much to be desired, and that even where a highly qualified permanent official has been appointed locally he too often lacks competent assistance as well as adequate executive powers. In these circumstances it may well be that the Commonwealth Government would benefit by the experience of the mother country. It has been long recognised in England that, in order to secure the satisfactory discharge of public health functions by widely scattered local municipalities, a coördinating central authority armed with adequate statutory powers is essential. From the present report we gather that the Government of the Commonwealth takes a similar view. It has already assumed, experimentally, certain functions of a preventive character, and, in particular, has committed itself to a rôle of general responsibility, with respect to the maintenance of public health in Australia. In the judgment of the committee there should be, in each State, a competent Minister of Health, each State being divided into districts under the supervision of a medical inspector, responsible only to the supreme authority. The appointment of medical officers of health should be subject to the approval of the same authority, and no medical or other health officer should be removable without that authority's approval. The committee insist that some such organisation as the foregoing is absolutely necessary for progress. All the authorities, central as well as local, must rise to new ideals as to what is implied in the expression "public health." Far from being limited to a merely perfunctory performance of scavenging services, or even to the development of

[1] No. 73. F. 10573. Government Printers, Victoria. Price 3d.

ordinary preventive measures, a public health organisation worthy of the name should mean—in the words of the report—

"The uplifting of the life of the people to new levels, where a robust race would work out its destiny, with the comfort and happiness that are only possible in a well-organised, well-administered State."

Valuable service could be rendered by the Commonwealth in the attempt to secure uniformity in the State health laws and in their administration, in the systematic collection of sanitary data, and in the promotion of health research. Great impetus would be given to progress if the Government would contribute to the cost of appointing medical inspectors throughout Australia, and would invite, at its own expense, an annual conference of the health officers of the several States with the Director of Quarantine. The report is ably compiled, and is signed by three physicians and countersigned by the chairman, Mr. James Mathews, M.P.

WAR-TIME LINIMENTS AND OINTMENTS.

WE referred last week to the Codex Addendum published in the *Pharmaceutical Journal* of August 31st, in which are set out the alternative formulæ for preparations containing lard or vegetable oils, modified in or withdrawn from the British Pharmacopœia, 1914. The addendum, which is published under the direction and by the authority of the Pharmaceutical Society, which alone is responsible for the formulæ and for the publication of them, has been prepared under the auspices of the Scientific Advisory Committee by the Pharmaceutical Society's Codex Subcommittee. We understand that the Home Office Committee appointed in August, 1914, to deal with questions of economy in the use of drugs, propose to draw the attention of the medical profession to these war emergency formulæ in a memorandum which they are issuing on the subject of economy in the use of the substances in question and preparations hitherto containing them. The lard substitute (adeps factitius) is made up as follows: wool fat, 5; hard paraffin, 10; soft paraffin white, 85. Liniment of camphor is made with yellow liquid paraffin, and the other liniments containing liniment of camphor are chloroform, mercury, turpentine, and acetic acid. The liquor cresol saponatus is made up of cresol 50·00 (by weight), linseed oil (by weight) 18·00, potassium hydroxide 4·25, and distilled water by weight to 100 parts. Lard substitute is used in adeps benzoatus, unguenta aconitinæ, atropinæ, cocainæ, iodoformi, and lanæ compositum. Benzoated lard made from lard substitute is suitable for the following unguenta: viz., cantharidini, gallæ, hydrargyri ammoniati, hydrargyri iodidi rubri, hydrargyri oleati, hydrargyri subchloridi, myrobalani, plumbi iodidi, potassii iodidi, staphisagriæ, sulphuris and zinci. No alternative is suggested for ung. hydrargyri nitratis. Lard substitute is also used in the following unguenta: Belladonna, capsicum, mercury (metallic), compound mercury, iodine, and resin. Lastly, tar ointment is made with tar 70 parts, yellow soft paraffin 5 parts, and yellow beeswax 25 parts. The Codex Revision Subcommittee, assisted by two representatives of the Drug Club, may be congratulated on arriving at the above war emergency formulæ, which are generally regarded as quite satisfactory.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Health of Belfast in 1917.

FROM the report of the health of Belfast during 1917, just published, it appears that the Registrar-General estimated the population as 393,000, as against 389,000 in 1916; while the medical officer of health's estimate is 404,115. Under these circumstances, the death-rate of 16·7 per 1000—calculated on the Registrar-General's figures—though equal to the lowest on record, may be even better than it looks. For the 10 years 1907–16, the average death-rate was 18·5. The number of deaths in 1917 was 6557, while the number of births was 8718, giving a natural increase of 2161. The birth-rate continues to fall, being 22·2, while in 1916 it was 24·1. The two unsatisfactory features of the report are the infantile mortality rate, which was 130 per 1000 births, an increase of 17 per 1000 as compared with 1916, and the tuberculosis mortality. Consumption (pulmonary tuberculosis) caused 932 deaths, and other forms of tuberculosis 311. The deaths from consumption show an increase of 102—or more than 12 per cent.—upon 1916, and the total is the highest for the last 11 years. Considering that for some years past more than £30,000 a year has been spent in combating tuberculosis by the City Council of Belfast, the return to the bad times of 20 years ago as regards the incidence of this preventable disease is anything but satisfactory. The weak spot in the maternal and child welfare scheme is the absence of a pre-natal clinic and of provision for maternity treatment.

Ulster Medical Society.

On August 19th, at a meeting of the Ulster Medical Society held in the Medical Institute, Belfast (the President, Dr. W. D. Donnan, in the chair), Major A. Trêves, a French surgeon, gave an interesting account of the steps taken to specialise orthopædic work in France. He emphasised the difference between good and bad amputations, and pointed out that the education of maimed men should be taken in hand as soon as their wounds were healed, and the men convinced that they were still able to work. It had specially to be borne in mind that, as far as France was concerned, 70 per cent. of the soldiers came from country districts and not from cities. Although about 25 per cent. of the maimed were not able to perform the work in which they had been engaged before the war, only 4 or 5 per cent. actually went home saying they would work no more. Major Trêves described fully the methods employed in special workshops in France in teaching men to adapt themselves to other employments. To men requiring artificial limbs he recommended that two appliances should be given when they went home, so that if anything went wrong with one limb they had the other to fall back upon. Special films showing the manufacture of artificial limbs were exhibited and their use in agriculture and carpentry demonstrated. The lecture was much appreciated.

Poor-law Medical Officers' Salaries.

The forced strike of dispensary doctors of the Omagh (co. Tyrone) Union continues, and so far there has been no attendance at the Beragh, Fintona, or Omagh Dispensaries; although it is stated a number of dispensary patients attended, the dispensaries remained closed. The lay press is urging dispensary doctors and boards of guardians "to put their heads together and by mutual good sense to find a reasonable way out of the difficulty" that at present exists in reference to the question of salaries. The whole matter is surely capable of friendly adjustment, but hard-worked dispensary doctors cannot be expected to continue—with the present increased price of living—to do their onerous duties at the pre-war salaries. It is instructive to note that only some £5 10*s.* out of every £100 of salary is paid from the rates, the rest coming from such sources as the Treasury grant under the Probate Duties Act, 1888, and the agricultural grant from the Consolidated Fund under the Local Government Act of 1898. In May of this year it was decided unanimously, at a large meeting of the medical profession held in Dublin, to ask all boards of guardians to make the initial salary for every dispensary £200, rising in 15 years to £300. By a little give and take on both sides this question of the payment of Poor-law medical

officers, which is growing in intensity, might soon be settled. As an earnest of better things the Limavady guardians at a specially convened meeting on August 26th decided to grant to the dispensary doctors increases of £25 per annum.

August 30th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Instruction of Temporary I.M.S. Officers.

A NEW Government school has been opened at Rawalpindi under the command of Major C. Hudson, I.M.S., for the instruction of temporary officers of the Indian Medical Service. The school has three sessions in the year—May 1st to July 21st, Oct. 1st to Dec. 31st, and Jan. 5th to April 14th. All temporary officers will join the school in the first instance, and those already employed will undergo a course of instruction when they can be spared. The syllabus will include discipline, military organisation, practical work in military hospitals, the duties of regimental medical officers and medical units in the field, and also principles of tactics. There will, further, be courses of instruction in military hygiene, practical sanitation, and demonstrations. At the conclusion of each session the students will visit the War and Mayo Hospitals at Lahore and medical institutions at Dehra Dun.

Indore Plague Conference.

At a conference recently called at Indore, Central India, to consider the measures for dealing with plague, attended by the medical officers of the Central Indian States, the following resolutions were agreed to:—

1. That when human or rat plague is present, inoculation of the community with plague vaccine and the vacation of infected dwellings result in a very great saving of life.
2. That vacation of infected dwellings should only be encouraged after arrangements have been made for the temporary housing of the refugees near the town or village site.
3. That uncontrolled evacuation, resulting in the invasion of uninfected localities by numerous plague refugees, may be productive of much harm, and the village and town communities do well in their own interests to afford such people a cold welcome.
4. That organised quarantine measures and the inspection of railway passengers are not recommended.
5. That certain forms of merchandise, especially grain, afford facilities for the transference of rats and rat fleas over long distances, and are more dangerous as vehicles of plague infection than the human being.

The conference was an important one, and attended by the Sanitary Commissioner with the Government of India.

Poisoning in India.

The annual report of the Chemical Examiner to the Government shows that 211 cases of suspected poisoning were submitted to the department last year for investigation, as against 197 cases in 1916. In 124 cases no poison was detected, but in some of these the viscera were already highly decomposed. Poison was detected in 87 cases, the principal poisons found being arsenic, mercury, aconite, and powdered glass. In the United and Central Provinces cases of suspected human poisoning showed a decrease to 367, having numbered 459 and 541 in the preceding two years.

Indigenous Medicine Systems.

The eighth annual session of the All-India Ayurvedic and Unani Tibbi Conference was held at Bombay, with a large gathering of delegates. The Maharaja of Gwalior was a visitor. The Medical Registration Act is regarded as endangering the very existence of practitioners of Indian medical science, and the conference aims at popularising the indigenous system of medicine and producing qualified practitioners of it. The conference claims to have awakened a sense of responsibility among the native practitioners. Medical halls have been opened with approved methods.

New Tuberculosis Sanatorium for Bombay.

The Western Indian Turf Club has given a donation of two lakhs of rupees (£13,000) to the King George Anti-Tuberculosis League for the establishment of a sanatorium and hospital. The Bombay corporation has made grants to the league, and property has been acquired for the erection of the necessary buildings.

August 3rd.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. J. Jaffé, R.A.M.C., attached Somerset Light Infantry, qualified at Aberdeen in 1913, and prior to joining up was in practice at Uitenhage, Cape Province, South Africa.

Major B. C. Tennent, M.C. and bar, R.A.M.C., was educated at Edinburgh, and qualified in 1910. He held appointments at the Great Northern Central Hospital, London, and at the Great Ormond-street Children's Hospital, London, and afterwards practised in New Zealand. On the outbreak of war he returned to this country, and joined the R.A.M.C. in January, 1915. The award of the M.C. and of the bar were recorded in THE LANCET respectively of Sept. 1st, 1917, p. 361, and of Jan. 12th, 1918, p. 78.

Capt. K. W. Jones, D.S.O., R.A.M.C., qualified at Dublin in 1901. He held appointments at the Swansea General and Eye Hospital, and at the Cork-street Fever Hospital, Dublin, and was in practice in Manchester prior to joining up. The award of the D.S.O. was recorded in THE LANCET of Sept. 11th, 1915, p. 628.

Died of Wounds.

Capt. J. S. Wilson, Australian A.M.C.
Major J. Wells, Australian A.M.C.
Major J. Proctor, R.A.M.C.

Accidentally Drowned.

Lieut.-Col. R. H. Bridges, D.S.O., R.A.M.C., was a student at St. Thomas's Hospital, London, and qualified in 1902. Shortly afterwards he joined the R.A.M.C. The award of the D.S.O. was recorded in THE LANCET of June 7th, 1917, p. 894.

Previously Reported Wounded, now Reported Died.

Capt. T. St.L. Leyshon, South African M.C., received his medical education at the London Hospital and qualified in 1906. Prior to joining the South African contingent he was in practice at Knysna, Cape Province, S.A.

Wounded.

Major F. Ellis, M.C., R.A.M.C.
Lieut. S. B. Turner, R.A.M.C., attached Royal Sussex Regt.
Capt. J. V. Duhig, Australian A.M.C.
Capt. L. M. Pigott, Australian A.M.C.
Capt. J. C. McCullough, Canadian A.M.C.
Capt. J. A. MacKenzie, Canadian A.M.C.
Capt. J. C. Eager, Canadian A.M.C.
Lieut. I. Feldman, R.A.M.C., attached Hussars.
Major F. E. Feilden, R.A.M.C.
Lieut. G. F. Rigden, R.A.M.C., attached Lancs Fusiliers.
Capt. G. S. Douglas, R.A.M.C., attached Hussars.
Capt. Q. V. B. Wallace, M.C., R.A.M.C., attd. Tank Corps.
Capt. S. A. W. Munro, M.C., R.A.M.C., attd. Seaforth High.
Capt. D. R. Wark, Canadian A.M.C.
Capt. T. Warner, R.A.M.C.
Lieut. E. Cansfield, R.A.M.C., attached Border Regiment.
Capt. H. C. Trumble, Australian A.M.C.
Maj. A. D. Stirling, D.S.O., R.A.M.C.
Lieut.-Col. A. H. Habgood, D.S.O., R.A.M.C.
Major A. G. S. Wallace, M.C., R.A.M.C.
Capt. J. S. MacKay, M.C., Australian A.M.C.
Major C. R. Merrilees, Australian A.M.C.

Previously reported Missing, now reported Prisoners in German Hands.

Capt. M. Donaldson, R.A.M.C.
Capt. J. A. Gilfillan, R.A.M.C.
Col. A. Milne-Thompson, C.M.G., M.C., R.A.M.C.
Capt. E. H. Jones, R.A.M.C.
Capt. D. M. Smith, R.A.M.C., attd. Northampton Regiment.
Major A. M. Wood, R.A.M.C.

PERMISSION has been granted to Dr. Jessie Anne Scott to wear the Insignia of the Fourth Class of the Order of St. Sava, conferred by the King of Serbia, in recognition of her services as surgeon at the Scottish Women's Hospital at Ostrovo.

THE Local Government Board and the Ministry of Labour have given their adhesion to a scheme set forth in Circular 103 of the Ministry of Pensions, to give disabled officers and men a preference for temporary vacancies now arising in the service of the State. A committee of the Ministry of Pensions is considering the question of the further employment of such men, subject to the reinstatement of former officials now on active war service.

OBITUARY OF THE WAR.

ROBERT CARMICHAEL ROGERS, M.A., M.B., CH.B. EDIN.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain R. C. Rogers, who died of wounds on August 2nd, at the age of 28, was eldest son of D. Rogers, of Murthly, Perthshire. He was educated at Perth Academy, going on to Edinburgh University, where he graduated M.A. in 1910, and M.B., Ch.B. in 1914. After a house appointment at the Royal Infirmary he went into practice in Mid-Calder. In 1916 he received a commission in the R.A.M.C., and early next year went to France as M.O. to the Royal Garrison Artillery. He was wounded in an air-raid last September, and after more than 10 months of suffering, bravely borne in hospital in France, he finally succumbed to his wounds. Captain Rogers married Mary F. Grant, of Kingussie, in 1915, and leaves a widow and one child.

JOHN CAMERON THOMSON TEGGART, M.B., CH.B. GLASG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. C. T. Teggart, who was killed in action on July 21st, was younger twin son of Hamilton Teggart, of Glasgow. He graduated M.B., Ch.B. at Glasgow University in 1912 and then for 18 months held appointments as house surgeon in the Western Infirmary and in the Royal Hospital for Sick Children, Glasgow. When war broke out he was resident surgeon at Johannesburg Hospital, resigning this appointment in 1915 to take a commission in the R.A.M.C. Attached to an artillery brigade, he saw many of the principal engagements on the Western front during a period of three years. He was doing his work amongst wounded gunners during a battle when he was killed instantaneously. His commanding officer writes that Captain Teggart was a capable hardworking officer, whose pluck and keenness were well known throughout the division. "He always shone in positions of danger where initiative and true courage were essential."

Captain ROY ALLAN SILLAR, A.A.M.C., who was accidentally killed on June 30th by a fall from his horse, was a native of Dubbo, N.S.W. Matriculating at 16 years of age, he entered St. Andrews College, Sydney University, and did well both in his medical studies and in the athletic field. After completing his medical course he was resident M.O. at St. Vincent's Hospital, Darlinghurst, and for a few months visiting M.O. at the Women's Hospital there. He enlisted in the A.I.F. at the end of 1917, and in April, 1918, reached England, where he was posted to No. 4 Command Depôt. An officer of Captain Sillar's unit speaks of his strong personality and his bright and sunny nature, which won the hearts of all with whom he came in contact.

WALTER HENRY LLOYD, M.B., B.S. LOND.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. H. Lloyd, who was killed in action in France on August 4th, at the age of 27 years, was son of Walter Lloyd, J.P., of Carmarthen, and nephew of William Lloyd, F.R.C.S. Edin. He was educated at Queen Elizabeth Grammar School, Carmarthen, and took his medical course at Middlesex Hospital, obtaining the Conjoint qualification in July, 1915, and the M.B., B.S. Lond. later while on active service. After joining the R.A.M.C. he was attached for nine months to the 3rd London General Hospital, and in June, 1916, was sent to a casualty clearing station in France. More recently he was transferred to the London Regiment, with which he met his death while attending to wounded.

Captain Lloyd was an enthusiast both at work and play. One surgical chief writes of him as a delightful dresser, always helpful and inspiring. Another who gave him a considerable amount of experience in practical surgery states that he had never met with a more apt pupil. "He was able, skilful, and excellent in his work. But beyond all that he had a special personal charm that endeared him to all who knew him."

ALEXANDER BOYD FOOTT, L. & L.M. R.C.P. & S.I.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain A. B. Foott, who died in Egypt on July 21st, was 26 years of age, and son of the late Dr. St. John Foott, of Cork. He was educated at Monmouth Grammar School and Queen's College, Cork, qualifying in 1914, when he became resident surgeon at the Cork Eye, Ear, and Throat Hospital. He resigned this post in August of the same year to take a commission in the R.A.M.C., going to France in the following November. He was wounded at Loos in October, 1915. He went to India in June, 1916, was invalided home with sandfly fever, and went to France again in November, where he fell a victim to trench fever. In June of the present year he was sent to Egypt, where he died of malaria.

Captain THOMAS WHITMORE, C.A.M.C., who died of wounds on August 8th, aged 29 years, was a native of Dauphin, Manitoba. He graduated in medicine at the Manitoba University in May, 1915, and shortly after joined the C.A.M.C., and left for England in August. He served as Regimental M.O. until June, 1917, when he was posted to Granville Special Hospital, where he remained for a year before going to France to join the 3rd Canadian Field Ambulance, and later the 5th Canadian Battalion, with which he was serving when he received his fatal wounds.

Captain MALCOLM ARCHIBALD MCKECHNIE, C.A.M.C., who died as the result of wounds received on August 8th, aged 29 years, was a native of Gillies Hill, Ontario. He

graduated in medicine at Queen's University, Kingston, in 1914, left Canada for service overseas in November, 1916, and went to France in March, 1917. He was posted to the 6th Canadian Field Ambulance, serving for short periods with various units.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Lieut. J. B. P. Wells, Bedfordshire Regiment, died from wounds as a prisoner of war, son of Dr. A. P. Wells, of Victoria, British Columbia.

Lieut. P. Young, Middlesex Regiment, attached Machine Gun Corps, died of wounds, seventh son of the late Dr. E. Young, of Hawkhurst, Kent.

Lieut. K. S. Courtenay, Dorset Regiment, killed in action, only son of Dr. K. J. Courtenay, of Wareham, Dorset.

Capt. V. J. Whitaker, Lincs Regiment, attached R.F.C., previously reported missing, now officially presumed killed in action, April, 1917, second son of Mr. J. Smith Whitaker, of the National Health Insurance Committee, Buckingham Gate, London, S.W.

Lieut. R. L. Cummings, Australian Flying Corps, accidentally killed, second son of Dr. H. L. Cummings, of Tasmania, Australia.

Second Lieut. E. W. B. Maggs, King's Royal Rifle Corps, killed in action, only son of Mr. W. A. Maggs, of Upper Wimpole-street, London, W.

Major J. H. M. Hardyman, acting Lieut.-Col., Somerset Light Infantry, M.C., killed in action, eldest son of Dr. G. Hardyman, of Bath.

Second Lieut. E. N. Andrews, The Buffs, died of wounds, youngest son of Dr. E. C. Andrews, of Hampstead, London.

Lieut. J. M. H. Gerrard, R.F.A., died of wounds, eldest son of Major-General J. J. Gerrard, C.B., A.M.S.

THE HONOURS LIST.

The decorations conferred upon the following officers are for services rendered in connexion with the military operations in German South-West Africa:—

South African Medical Corps.

C.M.G.—Col. H. J. M. Buist, D.S.O., attached, from R.A.M.C.; Lt.-Col. R. P. McKenzie, R. of O.

O.B.E.—Maj. H. E. Brown; Capt. (temp. Maj.) T. F. Cope.

South African Medical Service.

D.S.O.—Lt.-Col. S. Meyer de Kock; Maj. L. G. Haydon; Lt.-Col. G. H. Knapp; Capt. G. B. Moffatt.

Military Cross.—Capt. J. E. Briscoe, D.S.O. (R. of O.); Capt. G. J. Cillie; Capt. (now acting Maj.) T. J. W. A. Johnston; Capt. J. J. Lynch; Capt. A. E. Oakley; Capt. (temp. Maj.) J. Pratt-Johnson; Capt. (temp. Maj.) R. N. Pringle, D.S.O.; Capt. F. K. Te Water; Capt. (temp. Maj.) J. A. Thwaits; Capt. (temp. Maj.) R. H. Welsh.

The following promotions and decorations are for services rendered in connexion with the military operations in Mesopotamia:—

C.B.—Col. W. H. Starr, C.M.G., ret. pay, A.M.S.

C.M.G.—Lieut.-Col. (temp. Col.) G. G. Delap, D.S.O., R.A.M.C.; Temp. Maj. (temp. Lieut.-Col.) R. Davies-Colley, R.A.M.C.

I.E.—Lieut.-Col. F. W. Gee, I.M.S.; Lieut.-Col. H. G. Melville, I.M.S.; Maj. (temp. Lieut.-Col.) G. Macpherson, I.M.S.; Maj. N. E. H. Scott, I.M.S.; Maj. W. R. J. Scroggie, I.M.S.

To be Brevet Major.—Capt. F. C. Cowtan, R.A.M.C.; Capt. A. MacD. Dick, I.M.S.; Capt. T. J. C. Evans, M.C., I.M.S.; Capt. A. H. Gosse, R.A.M.C.; Capt. S. W. Kyle, R.A.M.C.

D.S.O.—Maj. W. V. Coppinger, I.M.S.; Capt. and Bt. Maj. T. J. Mitchell, R.A.M.C.; Maj. (temp. Lt.-Col.) A. H. Proctor, I.M.S.

Military Cross.—4th Class Asst. Surg. A. N. de Monte, Ind. Sub. Med. Dept.; Temp. Lieut. E. A. M. J. Goldie, I.M.S.; Temp. Capt. J. A. Noble, R.A.M.C.; Temp. Capt. K. N. Purkis, R.A.M.C.; Lieut. (temp. Capt.) R. R. Thompson, R.A.M.C.

The following are the statements of service for which the decorations recorded in THE LANCET of April 6th, 1918, p. 516, were conferred. All are members of the R.A.M.C. unless otherwise stated:—

Military Cross.

Capt. ALAN COLPITTS AINSLEY.—For conspicuous gallantry and devotion to duty. Whilst attending to a man seriously wounded a shell burst within a few yards of his position and knocked him down. Despite this he continued with his work, and showed the greatest coolness and devotion to duty throughout the day.

Temp. Lieut. V. K. APTE, I.M.S.—For conspicuous gallantry and devotion to duty. He attended to the wounded during an action with great courage and coolness.

Lieut. CLAUDE WELLS WOOLLOTON BAXTER, I.M.S.—For conspicuous gallantry and devotion to duty. When under heavy shell and rifle fire he displayed great gallantry and devotion to duty in attending to and evacuating the wounded. His services proved of inestimable value.

Temp. Capt. WILLIAM KENNETH BIGGER.—For conspicuous gallantry and devotion to duty. He personally assisted in getting his wounded away from the dressing station under heavy machine-gun and rifle fire. Previous to this he had gone out from the dressing station on several occasions to tend the wounded at a time when no stretcher-bearers were available. He showed great gallantry and devotion to duty.

Capt. WILLIAM EDWARD HUGH BULL.—For conspicuous gallantry and devotion to duty. When in charge of a bearer section and collecting post he worked under shell and rifle fire, and with a few stretcher-bearers collected and tended a number of wounded cases under conditions demanding the utmost coolness, gallantry, and determination, qualities which he displayed in the highest degree.

Temp. Capt. NICHOLAS MARSHALL CUMMINS.—For conspicuous gallantry and devotion to duty. He gave valuable assistance to a unit after a successful attack in the organisation of stretcher-bearers, and he also organised several parties at night, which he conducted into "No Man's Land," for the purpose of recovering wounded cases. He worked on until every case had been evacuated, when he collapsed from exhaustion. His courage and devotion to duty were of the highest order.

Capt. CHARLES AUBREY GODSON, I.M.S.—For conspicuous gallantry and devotion to duty during an attack. All day he organised stretcher parties and collected the wounded, often under shell fire, and at night searched the whole area covered by the attack and cleared it of all the wounded. It was largely due to his courage and initiative that the evacuation of the wounded was carried out so successfully.

Capt. WILLIAM GOLDIE.—For conspicuous gallantry and devotion to duty when in charge of a collecting station, in advance of the advanced dressing station, during an attack. The rapid and successful evacuation of the wounded was due to his untiring zeal and energy. He showed magnificent courage and coolness under heavy fire, and set a splendid example to those under him.

Temp. Capt. BENJAMIN KNOWLES.—For conspicuous gallantry and devotion to duty. He was wounded at the beginning of an enemy attack, but returned to his aid-post and remained there, attending to the wounded throughout with great determination and coolness.

Capt. PERCIVAL JOHN MOIR.—For conspicuous gallantry and devotion to duty. While he was leading a party of 30 men and 8 camels to a forward position in order to establish an advanced dressing station the party came under heavy shell fire. He at once got his party under cover, unloaded the camels, and then got his medical stores forward under continuous shell fire. His promptness and courage not only prevented casualties, but enabled the advanced dressing station to be established at the earliest possible moment.

Capt. CHARLES NEWTON-DAVIS, I.M.S. — For conspicuous gallantry and devotion to duty. During the attack, and when the battalion was brought to a standstill by frontal and enfilade fire of all kinds, he exposed himself continually in moving from place to place to render aid to wounded cases. It was owing to his courage, devotion to duty, and skilful organisation that the wounded were successfully collected and evacuated.

Temp. Capt. REX STANSFIELD.—For conspicuous gallantry and devotion to duty during an engagement. He carried his medical pannier forward through a heavy barrage and moved about under heavy shell fire over the captured ground, collecting and bringing in the wounded. He set a splendid example of courage and devotion to duty.

Capt. BRYAN MONTAGUE TUKE, Spec. Res.—For conspicuous gallantry and devotion to duty. He went forward himself with the attacking companies, and throughout the engagement kept moving from one part of the line to another in full view of the enemy, attending to the wounded with the greatest promptitude and courage.

Capt. RANKINE GREIG WALKER.—For conspicuous gallantry and devotion to duty. He was in charge of an advanced dressing station during two engagements, and carried out his duties with great courage and skill, often under heavy shell fire.

BROUGHT TO NOTICE.

The names of the following medical officers, all members of the South African Medical Corps, have been brought to the notice of the Secretary of State for the Colonies for distinguished service in the field and in connexion with the campaign in German South-West Africa, 1914–15:—

Capt. C. V. Anderson; Maj. H. E. Brown; Lt.-Col. J. I. Brownlee, D.S.O., V.D.; Col. H. J. M. Buist, D.S.O., attached from R.A.M.C.; Capt. A. W. Burton; Capt. D. Campbell-Watt; Capt. W. R. Chew; Capt. W. S. Cottrill; Capt. D. J. Dauth (R. of O.); Lt.-Col. S. M. De Kock; Capt. J. F. van der S. De Villiers; Capt. J. W. De Vos; Capt. A. D. Edington; Capt. L. K. Edmeades; Capt. R. Friel; Maj. T. A. Fuller (R. of O.); Capt. J. F. R. Gairdner; Capt. A. I. Girdwood; Capt. R. L. Girdwood, D.S.O.; Capt. C. Grobbelaar; Capt. A. Groenewald, M.C. (deceased); Capt. (temp. Maj.) E. T. E. Hamilton (deceased); Maj. L. G. Haydon; Lt.-Col. J. Hewat (R. of O.); Capt. (temp. Maj.) D. Horwich; Capt. G. J. Joubert, M.C.; Lt.-Col. G. H. Knapp; Capt. S. Leibson, M.C.; Capt. C. F. L. Leipoldt; Capt. J. J. Levin; Capt. A. H. Louw, M.C., Permanent Force (Staff); Maj. G. D. Maynard; Capt. W. W. McCowat; Maj. J. R. McGregor; Lt.-Col. R. P. McKenzie (R. of O.); Maj. M. W. McLoughlin, D.S.O. (Supernumerary List); Maj. R. Milner-Smyth; Maj. J. A. Mitchell; Capt. G. B. Moffat; Maj. H. A. Moffat, D.S.O. (R. of O.); Capt. (temp. Maj.) C. T. Moller; Capt. R. C. Mullins; Lt.-Col. H. T. Murcell; Maj. F. H. Napier; Capt. C. M. Neale-May; Maj. A. M. Neethling; Capt. P. la F. Nortje; Capt. A. J. Ortlepp; Maj. (temp. Lt.-Col.) B. A. Odlum (Capt. R.A.M.C.); Maj. M. G. Pearson; Maj. F. Pershouse; Lt.-Col. C. Porter (R. of O.); Capt. J. Z. H. Rosseau; Maj. R. A. St. Leger; Capt. T. L. L. Sandes, O.B.E.; Maj. W. B. Skinner, D.S.O.; Maj. P. Skinner-Clark, D.S.O.; Capt. C. P. Theron (R. of O.); Maj. E. N. Thornton, O.B.E.; Capt. R. M. Truter; Maj. (temp. Lt.-Col.) G. H. Usmar; Maj. P. J. Van Coller; Maj. (temp. Lt.-Col.) A. B. Ward, D.S.O.; Maj. J. H. Whitehead, D.S.O.; Capt. E. F. B. Wilson (R. of O.); Capt. W. O. Wilson.

MENTIONED IN DESPATCHES.

The names of the following medical officers are mentioned for distinguished and gallant services and devotion to duty in a despatch received from Lieut.-Gen. W. R. Marshall, K.C.B., K.C.S.I., Commander-in-Chief of the Mesopotamia Expeditionary Force:—

Army Medical Service.—Col. (temp. Maj.-Gen.) A. P. Blenkinsopp, C.B., C.M.G.; Col. W. T. Mould; Col. W. H. Starr, C.M.G.

Royal Army Medical Corps.—Capt. W. H. Biggs (T.F.); Capt. A. E. Bonham (T.F.); Temp. Capt. D. F. Borrie; Temp. Capt. J. T. Bowman, D.S.O.; Capt. K. P. Brown (S.R.); Temp. Capt. J. A. G. Burton; Temp. Capt. W. M. Cameron (S.R.); Temp. Capt. W. Campbell; Lt.-Col. (Temp. Col.) E. W. W. Cochrane, D.S.O.; Capt. V. Z. Cope (T.F.); Capt. F. C. Cowtan; Maj. and Bt. Lt.-Col. (acting Lt.-Col.) H. J. Crossley; Temp. Capt. L. W. Davies; Temp. Lt.-Col. R. Davies-Colley; Lt.-Col. (temp. Col.) G. G. Delap, D.S.O.; Capt. W. Dunlop (S.R.); Temp. Capt. A. R. Elliott; Temp. Capt. C. L. Emmerson; Lt.-Col. and Bt. Col. M. H. G. Fell, C.M.G.; Temp. Capt. G. J. C. Ferrier (Lt., Canadian A.M.C.); Maj. (temp. Lt.-Col.) F. E. Fremantle (T.F.); Capt. H. L. Garson (S.R.); Temp. Capt. A. T. Gibb; Temp. Lt. (temp. Capt.) G. T. Gimlette; Temp. Capt. E. N. Glover; Capt. A. H. Gosse (T.F.); Lt.-Col. (temp. Col.) S. F. StD. Green; Capt. T. P. Inglis (S.R.); Temp. Lt. E. Jamieson; Temp. Capt. E. Kidd; Capt. S. W. Kyle; Temp. Capt. C. G. MacKay; Temp. Capt. G. S. Marshall; Capt. A. N. Minns, D.S.O., M.C.; Capt. J. P. Mitchell (S.R.); Capt. and Bt. Maj. T. J. Mitchell; Temp. Capt. H. H. Raw; Capt. H. G. Robertson; Capt. E. A. Strachan; Maj. N. D. Walker; Temp. Capt. W. E. Waller; Capt. A. Watson, D.S.O.; Temp. Capt. C. A. Weller; Capt. (acting Maj.) H. M. Williams (S.R.); Capt. F. T. H. Wood (T.F.); Capt. W. B. Wood (S.R.).

Indian Medical Service.—Maj. (acting Lt.-Col.) R. M. Barron, D.S.O.; Capt. A. C. L. O'S. Bilderbeck; Maj. (acting Lt.-Col.) L. P. Brassey; Capt. H. H. Brown; Maj. S. R. Christophers, C.I.E.; Maj. (temp. Lt.-Col.) W. V. Coppinger; Maj. (acting Lt.-Col.) H. M. Cruddas, C.M.G.; Temp. Lt. A. Y. Dabholkar, M.C.; Capt. A. M. Dick; Capt. T. J. C. Evans, M.C.; Lt.-Col. F. W. Gee; Temp. Lt. S. C. S. Gupta; Capt. A. H. C. Hill; Capt. R. W. G. Hingston, M.C.; Maj. (acting Lt.-Col.) H. Innes; Lt.-Col. T. B. Kelly, D.S.O.; Maj. W. H. Leonard; Capt. A. P. G. Lorimer; Capt. R. F. D. Macgregor, M.C.; Maj. F. P. Mackie; Lt.-Col. R. H. Maddox; Lt.-Col. G. McPherson; Maj. W. A. Mearns; Lt.-Col. H. G. Melville; Capt. J. B. de W. Molony; Maj. D. Munro, C.I.E.; Temp. Lt. B. P. B. Naidu; Capt. J. J. H. Nelson, M.C.; Capt. M. A. Nicholson; Temp. Lt. C. E. R. Norman; Maj. (acting Lt.-Col.) A. H. Proctor; Capt. M. Purvis; Maj. W. R. J. Scroggie; Capt. J. L. Sen, M.C.; Capt. A. L. Sheppard; Lt. B. H. Singh; Capt. C. J. Stocker, M.C.; Capt. A. J. Symes; Maj. W. Tarr; Capt. W. O. Walker; Capt. W. L. Watson; Capt. F. P. Wernicke; Lt.-Col. (temp. Col.) C. N. C. Wimberley, C.M.G.; Maj. W. D. Wright; Maj. (acting Lt.-Col.) G. J. G. Young.

Indian Subordinate Medical Department.—1st Class Asst. Surg. G. A. S. Howatson; 2nd Class Asst. Surgs. H. A. Fox, G. H. Lawrance, H. B. Rosair; 3rd Class Asst. Surgs. A. F. G. D'Arcy, D.C.M., H. N. Murphy; 4th Class Asst. Surgs. F. M. Graham, V. M. Matthews, F. C. Vanderwart, J. F. de S. Vincent.

FOREIGN DECORATIONS.

French.

Legion of Honour.—Officer: Dep. Surg.-Gen. A. G. Wildey, R.N.; Col. C. K. Morgan, C.M.G., R.A.M.C. *Chevalier:* Fleet-Surgs. F. J. A. Dalton, C.M.G., R.N.; R. D. Jameson, R.N.; and A. J. Hewitt, R.N.

Croix de Guerre.—Capt. A. D. Edington, South African M.C.; Capt. G. J. Joubert, M.C., South African M.C.; Capt. W. W. McCowat, South African M.C.; Capt. F. Ward, R.A.M.C.; Temp. Capt. C. T. I. Clarke, R.A.M.C.; Temp. Maj. C. M. Row, R.A.M.C.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

N. A. Scott and R. D. Lockhart to be temporary Surgeons.

ARMY MEDICAL SERVICE.

Temp. Col. Sir Charles A. Ballance, K.C.M.G., C.B., M.V.O. (Captain, R.A.M.C., T.F.), relinquishes his temporary commission on re-posting, and is granted the honorary rank of Colonel.

The undermentioned Colonels retire on retired pay: E. Eckersley, F. W. G. Gordon-Hall, C.B.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonels to be acting Colonels whilst in command of a Medical Unit: C. R. Evans, H. Simson, W. Riach.

Lieut.-Col. Harry A. L. Howell to be acting Colonel whilst employed as Assistant Director of Medical Services of a Base.

Brevet Lieut.-Col. (temp. Lieut.-Col) S. L. Pallant, D.S.O., retains the temporary rank of Lieutenant-Colonel whilst in command of a General Hospital.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting:—Majors G. E. Ferguson, A. S. Littlejohns, R. P. Lewis, R. B. Hole; Capt. J. J. O'Keefe.

Temp. Capt. (temp. Lieut.-Col.) C. D. Pye-Smith retains the temporary rank of Lieutenant-Colonel whilst in command of a Casualty Clearing Station.

To be acting Lieutenant-Colonels: Maj. R. G. H. Tate, Temp. Capt. (acting Major) H. Stokes, Capt. (Brevet Major) H. H. Blake, Temp. Major C. E. M. Lowe, Major G. A. D. Harvey.

The undermentioned relinquish the acting rank of Major on re-posting:—Temp. Major C. H. Miller; Capts. A. P. O'Connor, D. C. Monro; Temp. Capts. J. L. Jackson, T. F. Saunders, H. F. Warwick, J. Gibson, R. Hodson, C. M. Kennedy, C. H. G. Prance; Lieut. (temp. Capt.) W. H. Ferguson.

The undermentioned Majors to be acting Lieutenant-Colonels whilst in command of Medical Units: F. E. Rowan-Robinson, R. K. White, D.S.O.

Temp. Major D. Gillespie, having ceased to be employed at the Wharncliffe War Hospital, relinquishes his commission.

Temp. Major A. Stewart to be temporary Lieutenant-Colonel whilst employed at Whipps Cross War Hospital.

Temp. Major E. F. Eliot to be acting Lieutenant-Colonel whilst specially employed.

Temporary Captains to be acting Majors whilst specially employed: G. T. Gifford, S. Brown, W. Brown, W. S. Edmond, N. Dunn, C. M. Kennedy.

Temp. Capt. G. S. Hett to be acting Major (without increased emoluments) whilst specially employed.

Capt. A. C. Hammond-Searle to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Capt. (acting Major) Ernest D. Caddell to be acting Lieutenant-Colonel whilst specially employed.

To be acting Majors: Capts. A. P. O'Connor, F. G. A. Smyth, W. W. MacNaught, T. C. R. Archer, J. L. Wood; Temp. Capts. P. R. Woodhouse, H. Stokes, E. G. D. Pineo, E. Nuttall, G. V. T. McMichael, J. B. Alexander, J. Hendry, J. W. Elliott, F. H. Moxon, J. Gibson, H. F. Warwick, M. W. B. Oliver, J. E. Pellow, F. W. Wesley, A. A. O'Connor, J. M. Forsyth, W. L. Johnson, P. M. Heath, E. W. Milne, H. Parsons, G. W. R. Rudkin, C. A. Brisco.

To be temporary Captains: E. B. Morley, R. L. Davies, J. G. Leslie, S. Melville, G. H. L. Fitzwilliams, N. W. Walmsley, C. McShane, W. Tregenza, G. McGregor, C. A. Skelly, A. R. Rendle.

Temporary Lieutenants to be temporary Captains: C. W. W. James, G. L. Gall, W. G. Cobb, V. M. Walsh, R. W. Rix, C. W. Cunnington, McK. T. W. Steedman, D. Higgins, F. G. Smyth, G. P. Humphry, E. L. Jones, J. I. Greig, C. H. Waddell, D. C. Dobell, J. K. Holland, H. N. K. Kevin, A. C. Farlinger, G. W. Bissett, W. Tudhope, C. U. Whitney, G. T. Drummond, I. Ridge-Jones, W. L. Locke, H. W. Crowe, P. McFadyen, J. Muckart, J. R. C. Gordon, J. E. Measham, L. H. D. Thornton, J. Magill, W. A. Dewhirst, D. G. Pearson, W. C. Fragoso, R. B. Johnston, A. Simpson, D. J. Smith, R. Edridge, H. McC. Fleming, A. F. Miller, R. S. Harper, S. Southall, J. J. Bekenn, O. C. Gruner, S. G. Gordon, J. P. S. Dunn, F. G. Sergeant, W. G. Masefield, A. W. Soper, P. Howe, W. H. Eggar, J. T. B. Hall, M. F. Huston, J. H. Dove, R. G. Ball, A. Vost, T. A. Ross, J. R. McGregor, L. W. Forsyth, T. J. Little, R. T. Stoney, O. G. Evans, A. C. Strain, T. J. Lyons, B. R. Billings, E. S. Ellis, J. R. Liddell, E. L. Clay, J. C. Drysdale, H. B. Ellison, H. Galloway, J. Brown, G. G. Macdonald, G. S. Banks, J. P. F. Waters, A. B. S. Todd, C. M. Pennefather, S. A. Day, A. Dixon, J. R. Prytherch, J. E. Lucas, W. C. Fowler, T. R. Evans, F. O'B. Ellison, J. M. S. Wood, J. T. Hill, C. Peacock, J. H. Fenn, A. S. Wilson, A. S. Griffith, T. F. Pugh, A. C. Sharp, H. Widdas, W. B. Wilson, J. Brierley, N. V. Mitton, A. S. Morley, W. R. Bayne, R. B. Kinloch, A. H. M. Saward.

To be temporary Lieutenants: Hon. Lieut. C. H. G. Gostwyck, T. E. Coulson, A. Leigh, B. H. Stewart, A. W. Eadie, J. A. P. Cullen, R. F. McN. Scott, F. P. R. James, F. W. Hobbs, E. B. Bate, H. F. Hutchinson, E. Burnet, H. J. Cundell, R. M. D. Devereux, J. Loftus.

Temp. Capt. J. Fairley is seconded for service with Egyptian Army.

F. W. S. Stone and A. G. Watson, late temporary Captains, are granted the honorary rank of Captain.

H. Case, late temporary Captain, and J. J. McConnell, late temporary Lieutenant, are granted the honorary rank of Lieutenant.

Officers relinquishing their commissions: Temp. Major A. Johnston (on account of ill-health, and is granted the honorary rank of Major); Temp. Capts. J. S. Ross, J. F. G. Richards, W. C. Lattey (on account of ill-health contracted on active service, and is granted the honorary rank of Captain), C. A. A. Dighton (on account of ill-health, and is granted the honorary rank of Lieutenant), T. Bennett, J. G. F. Heal, R. Power, A. J. Neilson, A. G. Graham, A. Ramsay, A. Wilson, E. R. Tweed, R. Rutherford, M.C. (and to be granted the honorary rank of Captain), S. J. Brennan, W. Dickson, M. Lyons, R. N. Weekes, A. M. J. Halligan, P. G. Temple (and to be granted the honorary rank of Captain), R. H. Bridge, H. P. Hall, F. D. Johnson, C. H. Wilson (on account of ill-health, and is granted the honorary rank of Lieutenant), P. L. Moore, R. W. Statham, J. I. Baeza, (Acting Major) J. P. Good, W. Craik, C. R. Whittaker (on account of ill-health contracted on active service, and is granted the honorary rank of Captain), T. W. N. Dunn (on account of ill-health, and is granted the honorary rank of Captain).

Temp. Hon. Capt. H. P. Thompson relinquishes his commission on ceasing to be employed with St. John Ambulance Brigade Hospital.

Temporary Lieutenants relinquishing their commissions: J. G. Cooper, M. Shipsey, J. P. Doyle, T. S. Greenaway, B. J. O'Donnell, W. J. Taggart, J. A. Brown, P. R. Chevreau.

Temp. Qrmr. and Hon. Major I. D. Carson to be temporary Honorary Major, with pay and allowances, and to retain grading for purposes of pay as a D.A.D.M.S. on relinquishing appointment of temporary Quartermaster.

SPECIAL RESERVE OF OFFICERS.

Captains to be acting Majors: E. R. Lovell, W. F. Wood, L. S. B. Tasker, W. J. Adie, A. J. Gilchrist, C. V. Nicoll, J. P. Davies.

The undermentioned to be Lieutenants: F. K. Escritt (from University of London Contingent, O.T.C.), A. C. Paterson, E. A. Leak (from University of London O.T.C.), J. W. Mann (from University of Aberdeen Contingent, O.T.C.).

TERRITORIAL FORCE.

Royal Army Medical Corps.

Capt. (Brevet and acting Major) J. Ewing, Capt. (acting Major) J. W. Thomson, Capt. (acting Major) J. Morris, Capt. (acting Major) G. M. Benton, Capt. (acting Major) C. H. K. Smith, and Capt. (acting Major) O. W. D. Steel, M.C., relinquish their acting rank on ceasing to be specially employed.

Capt. (acting Major) D. J. Scott relinquishes his acting rank on vacating appointment as Deputy Assistant Director of Medical Services and is restored to establishment.

Capts. J. Tait, R. J. Chapman, W. Simpson, J. Morris, E. Moir, F. Wigglesworth, H. A. Lucas, E. L. Forward, G. Potts, S. R. R. Matthews, L. A. Dingley, A. M. Johnson, W. W. Greer, M.C., and R. C. Neil to be acting Majors whilst specially employed.

Major J. D. Comrie to be acting Lieutenant-Colonel whilst specially employed, and remain seconded.

Capt. (acting Major) W. Simpson and Capt. J. N. Hunt to be acting Lieutenant-Colonels whilst specially employed.

Capt. C. C. Cuthbert, Capt. (Hon. Col.) Sir Charles A. Ballance, and Capt. A. W. Nuthall are restored to the establishment.

Capt. A. E. Ridsdale and Capt. A. N. S. Carmichael to be Deputy Assistant Directors of Medical Services and to be acting Majors whilst so employed.

Capt. (acting Major) A. W. W. Hayles relinquishes his acting rank on ceasing to be so employed.

Capt. W. C. D. Maile relinquishes his commission on account of ill-health caused by wounds, and is granted the honorary rank of Captain.

Capt. H. G. W. Dawson to be acting Major, with pay and allowances of his substantive rank.

Capt. (acting Lieut.-Col.) O. K. Wright relinquishes the acting rank of Lieutenant-Colonel and reverts to the acting rank of Major.
Capt. S. R. Foster, M.C., to be Deputy Assistant Director, Medical Services and to be acting Major whilst so employed.
Capt. (acting Major) F. L. A. Greaves to be acting Lieutenant-Colonel whilst specially employed.
Major (acting Lieut.-Col.) W. A. Burns and Major (acting Lieut.-Col.) A. C. Turner, D.S.O., relinquish their acting rank on ceasing to command a Field Ambulance.
Capt. (temp. Major) R. B. Carslaw to be Major.
Capt. A. Avent relinquishes his commission on account of ill-health and is granted the honorary rank of Captain.
Major (temp. Lieut.-Col.) A. R. Henchley relinquishes his temporary rank on ceasing to command a casualty clearing station.
Capt. H. Middleton relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.
Capt. R. Sanderson is restored to the establishment.
Capt. H. H. Brown relinquishes his commission on account of ill-health.
Major (temp. Lieut.-Col.) C. R. White, D.S.O., relinquishes his temporary rank on ceasing to command a casualty clearing station.
Capt. (acting Major) H. C. C. Hackney relinquishes his acting rank on ceasing to be specially employed.
The announcement regarding Capt. A. McLean which appeared in the *London Gazette* of August 10th, 1918, is cancelled.
Capt. A. McLennan is seconded for duty with a General Hospital.
Lieuts. J. P. M. Dowdall and M. Canton to be Captains.
Capts. A. Ayre-Smith and W. Y. Martin to be Majors.

TERRITORIAL FORCE RESERVE.

Capt. R. W. Simpson, from Attached to Units other than Medical Units, to be Captain.

ROYAL AIR FORCE.

Medical Branch.—H. V. Wells (Fleet Surgeon, R.N.) is granted a temporary commission as Lieutenant-Colonel.
The undermentioned are granted temporary commissions as Captains: P. L. Moore (late Captain, R.A.M.C.), P. T. J. O'Farrell, R. Hall, M. C. Breese, I. de B. Daly.
The undermentioned are granted temporary commissions as Lieutenants: J. G. Bird, J. Ferguson, S. E. Duff.
Dental Branch.—S. C. Turner and V. E. Mills are granted temporary commissions as Lieutenants.

OVERSEA FORCES.

South Africa:

South African Medical Corps: Lieut.-Col. (temp. Col.) A. B. Ward, D.S.O., relinquishes the rank of temporary Colonel.

INDIAN MEDICAL SERVICE.

The King has approved the grant of the temporary rank to the undermentioned:—To be temporary Captain: G. H. K. Macalister. To be temporary Lieutenants: Bola Dayanand Rao, Gopalkrishna Ramrao Padbidri, Pascal Desouza, Jehangir Hormasji Clarke, Duriseti Narayanarao, Inglis Folger Frost, Abdul Kadir Muhammad Mahiuddin, Alexander Noble, Dinesh Chandra Chakrabatti.
The King has approved the relinquishment of the temporary rank of Lieutenant by A. M. Ahmad.
The King has approved the retirement of Lieut.-Col. N. P. O'G. Lalor, in consequence of ill-health.
Cols. C. C. Manifold and P. Hehir become Surgeons-General.
Lieut.-Col. J. G. Gordon has retired from the Service.
Surg.-Gen. Robinson has been nominated an additional Member of the Bengal Legislative Council.
Bt. Col. R. Heard has been appointed Honorary Surgeon to the Viceroy.
Major-Gen. W. H. B. Robinson has been appointed President of the Governing Body of the Bengal Medical Faculty, and Lieut.-Col. C. R. Stevens a member of the Governing Body.

Promotion of I.M.S. Officers.

The differentiation in regard to promotion to which officers of the Indian Medical Service have been subjected during the war has given rise to considerable comment. It is now announced that Captains of the Indian Medical Service will, if recommended, receive accelerated promotion to the same extent as has already been granted to Captains in the Royal Army Medical Corps on account of the war. The extent of such acceleration will be notified in the *Gazette of India* in due course. Acting rank will be granted to an officer of the Indian Medical Service officiating in an appointment in the field under the rules governing the grant of such rank in the Indian Army where applicable.

Two New Indian Surgeons-General.

Owing to the block in promotion which has been experienced for some time past it has been decided, with the approval of the Secretary of State for India, to create, for the period of the war, two additional appointments carrying the rank of Surgeon-General, such appointments to be filled by officers of the Indian Medical Service in military employment. These appointments, which will be created by converting two Indian Medical Service Colonelcies into Surgeon-Generalships, will carry pay at the rate of Rs. 2200 per mensem, and service therein will qualify for additional pension under Army Regulations, India, provided that the minimum service prescribed has been rendered.

DEATHS IN THE SERVICES.

Surg.-Gen. Charles Planck, I.M.S. (ret.), on August 23rd, aged 87. He served in the Indian Mutiny, and was at the relief of Cawnpore and Lucknow, being attached to the 90th Foot. At Cawnpore he was Field Surgeon. Subsequently he became Superintendent of the Agra Central Prison, Inspector-General of Prisons in Burma, and Sanitary Commissioner and Superintendent-General in the North-Western Provinces and Oudh. He retired in 1888.
Surg.-Gen. William George Birrell, of the Army Medical Service, has died at Lochboisdale, South Uist. He qualified M.B., C.M. Edin. in 1880 and entered the Army as surgeon on July 30th, 1881. He served in the Sudan Expedition of 1885, when he received the medal with clasp and the bronze star. He also took part in the Burmese Expedition of 1886-87, when he was mentioned in despatches. His last campaign was the Nile Expedition of 1898, when he was the recipient of the Egyptian medal. He was approaching his fifty-ninth birthday.

Correspondence.

"Audi alteram partem."

INFANT MORTALITY AND MOTHERCRAFT.

To the Editor of THE LANCET.

SIR,—Dr. W. A. Brend, in his letter published in THE LANCET of July 27th, refers to the increase in the industrial employment of women during the war, yet in spite of this there has been no rise in the rate of infant mortality.

Certain factors have tended to prevent any great increase in infant mortality during the past four years; the chief of these may be said to be the diminished birth-rate. In Derby, and generally throughout the country, the birth-rate during the year 1917 was the lowest recorded; the number of births registered in Derby in 1917 was 2332, while the number registered in the year 1913 was 3013, a difference of 681—that is to say, nearly one-fourth of the potential mothers might have engaged in industrial employment without prejudice to the rate of infant mortality. According to the Registrar-General (Sir Bernard Mallet) there were 881,890 births registered in England and Wales in the year 1913, whilst in 1917 the births registered fell to 668,346, a difference of 213,544, or a decline of 24 per cent.

Among other factors which have undoubtedly tended to reduction of infant mortality during the war, or at any rate have tended to prevent any increase in the infant mortality rate, have been (*a*) diminished alcoholism (Lord D'Abernon in a recent lecture delivered at the Royal Institute of Public Health stated: "The statistical and other evidence available indicates that insobriety among women both in public and in the home has, since the first year of the war, decreased to a level far below anything recorded in the past 50 years"); (*b*) climatic conditions during the war have not been favourable to the occurrence of summer diarrhœa—in fact, our last diarrhœa year was 1911; (*c*) other agencies which have helped to prevent increased infant mortality also, in my opinion, include the increased number of welfare centres, creches, &c., the formation of "Baby Week" Council, and generally the greater attention paid to infant welfare throughout the country since the war started; I might also include the maternity benefit obtained under the Insurance Act.

In spite of these factors favourable to infant welfare there has been some increase in the infant mortality rate in Derby. The mean rate during the three years 1912 to 1914 was 89 per 1000 births, that of the three years 1915 to 1917 was 94 per 1000 births, while in the whole of England and Wales the infant mortality rate during the year 1917 was 97 per 1000 births, as against 91 in 1916.

Dr. Ronald Carter, in his letter of the same issue, asks for figures showing the infant mortality among those attending welfare centres and among those not attending. I regret that I cannot give these figures, but certain statistics with regard to the feeding of children during the first three months of life who have been under the direct supervision of our health visitors in Derby are of interest as showing the paramount importance of breast feeding. Between the period Jan. 1st, 1908, and Dec. 31st, 1916, there were 26,532 births registered in Derby, and of these 24,676 were under the direct observation of the women inspectors; the death-rate per 1000 births of children breast-fed was 39·9, while that of the children hand-fed was 156·2, and that of children partly breast-fed and partly hand-fed was 149·8. The death-rate per 1000 births from diarrhœa was 4·0 among the breast-fed, while it was 37·5 among the hand-fed and 44·4 among those partly breast-fed and partly hand-fed.

I think these figures are, to use Dr. Carter's words, "distinctly disconcerting to the polluted atmosphere theorists."

I am, Sir, yours faithfully,

ALBERT E. BRINDLEY.

Public Health Department, Derby, August 20th, 1918.

THE TREATMENT OF WAR NEUROSES.

To the Editor of THE LANCET.

SIR,—Dr. T. Lumsden, in his letter to THE LANCET of August 17th, refers to our paper on war hysteria, and suggests that the methods of treatment we described should be followed by a "a three months' course of Country Host

convalescent treatment" in order to confirm the cure. In our opinion, however, a man who has been cured of hysterical symptoms in a Neurological Centre should remain there and work in the farm, garden, or workshops, until his cure is confirmed. In favourable cases he eventually returns to duty, and from all we have been able to hear the number of relapses is exceedingly small. The martial misfit, who ought never to have been accepted for the Army, is invalided, but he does not draw a full pension, as suggested by Dr. Lumsden, as he is never sent away until he is fit to earn a living in civil life, and we rarely recommend a pension of more than 20 to 40 per cent. Every man when he leaves us has already made arrangements for returning to work; he requires no further treatment, and we do not know of a single man invalided from our Neurological Centre who has relapsed.

The Country Host scheme is even less desirable for neurasthenia than for hysteria. It is absurd to suggest that any layman can take the place of the physician in the treatment of these difficult cases. In addition to direct psychotherapy, a combination of discipline, work, and amusement are required during convalescence, and this can only be obtained in a special hospital.—We are, Sir, yours faithfullly,

ARTHUR F. HURST.
J. L. M. SYMNS.

Seale Hayne Military Hospital, Newton Abbot,
August 19th, 1918.

THE PREVENTION OF VENEREAL INFECTION.

To the Editor of THE LANCET.

SIR,—I read with great interest and satisfaction the letter of "X. Y. Z." which appeared in THE LANCET of August 24th under the title of "40 D." I agree with those who oppose or deny much value to the "40 D" enactment, which has for its object the punishment of women who infect soldiers with venereal disease. The legal difficulty of proving the crime is well-nigh as hard as the medical one of curing the disease. Now, however, that really effective measures of preventing venereal *infection* have been at last established in the case of soldiers, and will, doubtless, become widely known and practised by civilians, the contention of "X. Y. Z." that instruction and facilities for similar prevention in the case of women should be equally disseminated is surely a sound one.

Doubtless the more medical prophylaxis is practised by men the fewer the number of infected women will be; but at this time, especially when the risk of infection is so great and its dire consequences are being spread so widely, it is both reasonable and urgent that the inroads of venereal diseases should be prevented *in both sexes* as effectively as possible and at the earliest available moment.

I am, Sir, yours faithfully,

London, August 28th, 1918. H. BRYAN DONKIN.

THE PSYCHOLOGICAL ASPECT OF 40 D.

To the Editor of THE LANCET.

SIR,—The protests of a certain section of the community against the examination of women suspected of transmitting venereal disease, to which you drew attention in a leading article in your issue of August 17th, may seem to many exaggerated and hysterical, but the psychologist, who studies the indirect effects of laws and who sees more and more the far-reaching influences of apparently unimportant matters, realises that the question is not one to be dismissed lightly or thoughtlessly.

One of the most important points to appreciate in discussing all laws, and especially the regulations we are considering, is that laws, whether they be permanent enactments or temporary regulations, are not impersonal matters, but actual living realities. The cruelest laws and the most heartless tyrannies have often been due to an impersonal method of criticism and to an inability to feel that legislation affects individuals and not abstract classes. In the present instance this evil is especially obvious. The problem is not whether we approve or disapprove of something called Regulation 40 D. It is whether we approve or disapprove of A. B., a young woman, age 23, who has been found to have become intimate with her lover C. D., being practically forced to undergo a physical examination by Dr. E. F., the prison doctor, or by Dr. G. H., whom she knows slightly or by some other doctor of whom she has never heard. Having put matters on the frankly personal basis from which all laws should be considered, we must further face the fact that A. B.'s examination is going to consist of a physical and mental experience possibly, and perhaps probably, very similar to that which she has had with C. D. Anyone who has studied carefully the growth of psychology during the past 10 years will know that I say this advisedly and without the slightest insinuation of improper conduct on the part of the doctor. A physical examination of the parts necessary to discover traces of venereal disease is not the same as a physical examination of any other parts of the body, and every psychologist knows that it arouses certain mental complexes which the physical acts necessary to make a proper examination tend to increase. But there is one very important difference between A.B.'s experience with C. D. and the examination, and it increases the evil effects of the latter. However transitory the relationship between A. B. and C. D. may have been there was some measure of sentiment, if not affection, whereas when similar mental complexes are aroused by a doctor in the course of his examination they are usually impersonal, and the mind, tending to centre on the feeling itself rather than on the person who arouses it, turns what should be a personal complex into a complex impersonal and self-sufficient. We are thus faced by the fact that the more strictly honourable the doctor is in his work the more impersonal will the girl's feeling usually become about matters that should be strictly personal, and what is supposed to be a safeguard becomes from another and a most important aspect a great danger. It must be fully realised, therefore, that Regulation 40 D does not merely place women at the mercy of the State, it places A. B. in the hands of Dr. E. F., who, if he has studied psychology, knows that with the best intentions and the most honourable adherence to the strictest rules of his profession he may do great harm, and do this harm by the very impersonality which his sense of honour dictates.

It must not be supposed that the effects of such an examination are always harmful; they may be negligible and sometimes even beneficial; but, whatever the type of woman we are examining, we are asking her to undergo an ordeal without the natural aid of affection or attraction which under other circumstances would tend to normalise her feelings. We must not forget that we are influencing emotional feelings at a time when they are at their highest and most susceptible, and that even if we do not arouse or increase a definite phobia or mania it is very probable that we are creating a changed attitude of mind towards certain most important questions. To say that the individual must be sacrificed to the good of society is in the present instance irrelevant, for we are spreading an atmosphere of publicity and promiscuity over matters which, in the interests of society as much as in the interests of the individual, should be kept on as intimate and personal a basis as possible.

Our outlook on legislation must be influenced by our growing knowledge of psychology. We must realise that in asking a girl to be examined for venereal disease the State is not merely testing her innocence, but is inevitably also testing her emotional character and her sense of modesty, and many complicated reasons may lead to her refusal. We must also understand that in making an examination of this kind the State does more than ascertain a physical fact about a girl's body, it also performs what to many may be a very serious psychological operation, and one that may lead indirectly to results which society unhesitatingly condemns and heavily penalises.

There must be many who have no special brief for the extension or for the repeal of Regulation 40 D, but who, if they realised the facts which have now become obvious to the psychologist, would demand a little deeper study of psychology by our legislators. If an examination is to become a permanent part of our legal methods of preventing the spread of venereal disease, the State should realise more fully the mental effect of its laws, and make some improvements which might mitigate their severity. The girl, for example, should be told frankly and fully what the examination means, and, whether she prefers the prison doctor or not, she should be always given the opportunity of having anybody present she chooses. There are, I am aware, doctors who insist on privacy in these matters, but there are also many with great experience who insist on the reverse, and

one, at least, of our greatest specialists refuses to perform privately an examination of this kind. It is obvious that when an examination is necessary as part of the legal machinery for the establishment of innocence the conditions of the examination should be made as easy as possible.

The law may often in its punishments produce results far different from those which it intends, but an increased study of psychology in connexion with punishment and with legal procedure will give us more insight into the effect of certain laws and suggest at least a few important alterations. By a little more sincerity and by a little deeper study we may realise that mental cruelty is often worse than physical, and, without unduly erring on the side of mercy or leniency, we may have a more exact knowledge of the effect of certain punishments on particular individuals and regulate them with a greater care and with a finer sense of the true meaning of justice. There are few matters that need a deeper knowledge of the indirect results of legislation than the questions we have been discussing. At a time not very far distant a scientific appreciation of the psychological effect of laws will be an accepted part of our social consciousness, and even to-day Governments are being forced before they legislate to accept scientific advice from many different quarters. Let us hope that the Government in considering such questions as those connected with Regulation 40 D will at least make an effort to face frankly questions of penal psychology which before long will be common knowledge.

I am, Sir, yours faithfully,

CYRIL BRUYN ANDREWS.

Reform Club, Pall Mall, S.W., August 21st, 1918.

THE FUTURE OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—In reference to Dr. Lauriston Shaw's letter in your issue of August 24th I should have thought that Professor Benjamin Moore and myself had made it perfectly clear that *the* form of competition which we would like to see abolished was competition for direct personal pecuniary gain, or, in other words, for patients and their fees. It is surely self-evident that this would be accomplished by the introduction of a whole-time salaried service, but Dr. Shaw confuses the issue by dragging in many other forms of competition which he rightly says such a service would not abolish.

In all walks of life there are forms of competition which it would be impossible, and indeed disastrous, to abolish, and it is so in medicine. There is nothing wrong with competition in itself, but the goal for which people compete may make it good or bad. It is good that men's varying powers should "be used to increase their opportunities of useful service"; it is bad that physical endurance and a plausible tongue should be used in competition to secure pecuniary reward at the expense of men with brains and conscience.

I am, Sir, yours faithfully,

August 26th, 1918. CHARLES A. PARKER.

COLONIES AND AFTER-CARE.

To the Editor of THE LANCET.

SIR,—In their article on Colony Treatment in THE LANCET of August 3rd Mr. P. C. Varrier-Jones and Professor G. Sims Woodhead completely misrepresent the work now done by tuberculosis dispensaries. They state:—

"Most of the consumptives now with us are 'advanced cases.' They flock to our new dispensaries, and the extensive statistics compiled from the records of the visits of these poor unfortunates are accepted as evidence of splendid things achieved."

Now, in point of fact, at no tuberculosis dispensary known to me do the advanced cases number more than 10 to 20 per cent. of all attending patients.

Even more curious is the statement that "Sir Robert Philip's well-thought-out scheme is being distorted and turned to very wrong uses." Now Mr. Varrier-Jones ought to know. He has been a close student of the writings of Sir Robert Philip, as anyone may discover who compares portions of unacknowledged text in Mr. Varrier-Jones's "Work as a Factor in the Treatment of the Consumptive Working Man" (Cambridge, 1915) with the same passages in addresses by Sir Robert Philip. For example:—

Sir R. W. Philip (THE LANCET, 1909, ii., 287) writes:—"It is time that we grasp the larger conception of tuberculosis as not merely the cause of overwhelming mortality and infinite distress, physical and economic, but also a great devitaliser of the race, indirectly responsible for an incalculable amount of other illness."

Mr. Varrier-Jones (1915, loc. cit., p. 6) writes: "It remains for us ... to grasp the larger conception of tuberculosis as not merely the cause of overwhelming misery and distress, physical and economic, but a great devitaliser of the race, indirectly responsible for an incalculable amount of other illness."

Nevertheless, I can see nowhere signs of distortion unless in the article under discussion. The tuberculosis dispensary is a central collecting and distributing station in a given area for the large mass of tuberculous patients. From the dispensary their homes are visited, and large numbers of infected people are thus discovered. The majority of early cases are successfully treated at the dispensary, and are enabled to continue their work by a change from unhygienic to physiological conditions, such as open windows, at home. From the dispensary patients are distributed to open-air schools, to sanatoriums, colonies, and to hospitals for advanced cases.

It is surely folly to send advanced cases, unable to work, to a colony, even if coffin-making were included among the trades of the colonists. Everyone with sanatorium experience knows the depressing influence of a death on the other patients, and colony patients will be likewise affected. Moreover, the general public will rightly object to infectious patients being deliberately set to any occupation concerned with the production of food or raiment. Lastly, there are obvious administrative difficulties in attempting to treat early, febrile, and advanced cases in the same institution. Sanatoriums filled with advanced cases have failed, and so, too, the work of colonies may be brought to nought.

Some enthusiasts cannot understand that the success of any institution for tuberculosis depends on its being coördinated into a harmonious scheme. A few years ago sanatoriums alone were to wipe out the disease, and now the same promise is being made for colonies. This tempts me to conclude with the prophecy that within five years open-air schools will be proclaimed as the one and only solution.

I am, Sir, yours faithfully,

August 21st, 1918. HALLIDAY SUTHERLAND.

URBAN VITAL STATISTICS.

(Week ended August 24th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 10·8, against 10·4 per 1000 in each of the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 9·6, or 0·2 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 2·9 in Wimbledon, 4·7 in Eastbourne and in Rhondda, and 4·9 in Ilford, to 18·9 in Bootle, 20·7 in Wigan, and 22·6 in Rotherham. The principal epidemic diseases caused 420 deaths, which corresponded to an annual rate of 1·3 per 1000, and included 309 from infantile diarrhœa, 35 from diphtheria, 36 from whooping-cough, 29 from measles, 6 from scarlet fever, and 5 from enteric fever. The deaths from diarrhœa showed a further increase, and included 34 in London, 30 in Liverpool, 28 in Birmingham, 17 in Leeds, and 13 in Sheffield. The 710 cases of scarlet fever and 881 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 29 and 22 below the respective numbers remaining at the end of the previous week. Of the total deaths in the 96 towns 119 resulted from violence. The causes of 15 deaths were uncertified, of which 3 were registered in Birmingham and in Liverpool, and 2 each in London and Leicester.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 9·9, against rates steadily declining from 17·4 to 10·0 per 1000 in the five preceding weeks. The 236 deaths in Glasgow corresponded to an annual rate of 11·0 per 1000, and included 28 from infantile diarrhœa, 8 from whooping-cough, 4 from measles, and 1 each from enteric fever and diphtheria. The 53 deaths in Edinburgh were equal to a rate of 8·3 per 1000, and included a fatal case each of scarlet fever and infantile diarrhœa.

Irish Towns.—The 142 deaths in Dublin corresponded to an annual rate of 18·6, or 1·0 per 1000 above that recorded in the previous week, and included 23 from infantile diarrhœa, 4 from whooping-cough, and 1 from measles. The 108 deaths in Belfast were equal to a rate of 14·3 per 1000, and included 17 fatal cases of infantile diarrhœa.

POST-GRADUATE COLLEGE, WEST LONDON HOSPITAL.—During next week clinics will be held each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.

THE Local Government Board has issued an appeal to local authorities to set an example of economy by reducing to the minimum consistent with safety the consumption of coal, gas, and electric current in all undertakings under their control. They are further asked to take every opportunity of impressing upon the public the paramount necessity of economy, as, for example, by care in the use of water which has to be pumped either at the waterworks or at the sewage disposal works, or both.

Appointments.

BOURNE, A. W., M.B., B.C., F.R.C.S., has been appointed Obstetrician in charge of Ante-natal Department, Queen Charlotte's Hospital.
MAY-ATKINSON, H. KING, M.B., Ch.B. Vict. Manch., Medical Officer of Child-Welfare Centre, Manchester Corporation.
PAUL, HUGH L., M.B., Assistant Medical Officer at the Leeds Sanitary Committee's Hospitals.
RICHARDS, W. J., Visiting Physician to Shieldhall Hospital.
SEMPLE, AGNES L., M.B., Ch.B. Aberd., Resident Medical Officer, Dundee Poorhouse.
WATT, J., M.A., M.D., D.P.H. Aberd., Medical Superintendent of the Downs Sanatorium, Sutton, Surrey.

Vacancies.

For further information refer to the advertisement columns.

Berkshire Royal Hospital, Reading.—H.S. £250.
Bethnal Green Infirmary, Waterloo-road, E.—Asst. M.O. £350.
Bournemouth, Royal Victoria and West Hants Hospital.—Res. M.O. £400.
Bristol Education Committee.—School M.O. £500.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Bristol University.—Demonstrator in Physiology.
Chichester, Graylingwell War Hospital.—Res. M.O. £1 per diem.
Children's Infirmary, Cleveland-street, W.—Female Assist. M.O. £300.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Female H.P. and Obstet. Asst. £50. Also Clin. Assts.
Evelina Hospital for Children, Southwark, S.E.—H.S. £160.
Glasgow, Govan District Asylum, Cardonald.—Locum Tenens or Temp. Asst. 6 or 7 guineas weekly. Also Sen. Asst. M.O.
Great Northern Central Hospital, Holloway-road, N.—H.S. £100.
Grimsby and District Hospital.—Sen. and Jun. H.S. £175 and £125.
Hastings, East Sussex Hospital.—H.S. £250.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. 30 guineas.
Hospital for Sick Children, Gt. Ormond-st., W.C.—Asst. Cas. M.O. £100.
Liverpool, Royal Southern Hospital.—Two H.S. and Cas. O.
London University: University College.—Demonstrator in Anatomy. £300.
Manchester Education Committee.—Female Temp. Asst. School M.O. £350.
Metropolitan Hospital, Kingsland-road, E.—H.P. £150.
Ministry of Munitions of War, St. James's Park, S.W.—Two Female M.O.'s. £450.
Much Wenlock, Salop, King Edward VII. Memorial Sanatorium.—Temp. Asst. Med. Supt. £300.
Northampton General Hospital.—Jun. H.S. £150.
Northampton, Northamptonshire War Hospital.—Res. M.O. £1 daily.
Northumberland County.—School Med. Insp. £350.
Northwood, Middlesex, Mount Vernon Hospital for Consumption and Diseases of the Chest.—Asst. Res. M.O. £250.
Oldham Union Workhouse.—Res. Asst. M.O. £300.
Portsmouth County Borough.—Asst. Tuberc. O. £350.
Queen's Hospital for Children, Bethnal Green, E.—H.S. £100.
Queen Mary's Hospital, Stratford.—H.S.
Rotherham Hospital.—Jun. H.S. £150.
Royal London Ophthalmic Hospital, City-road, E.C.—Dep. Bacteriologist. £120. Also Refract. Assts. £100.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Sen. Female Res. M.O. £200.
Plymouth, South Devon and East Cornwall Hospital.—M.O. for Venereal Diseases Department. £500.
St. Helens, Lancs, Pilkington Special Orthopædic Hospital.—Res. M.O. £500.
St. Marylebone Infirmary, St. Charles-square, N. Kensington.—Temp. Asst. Res. M.O.
Salford Royal Hospital.—H.P. £250.
Scottish Women's Hospitals.—Female Asst. M.O.'s for Salonika. £300.
Sheffield Royal Infirmary.—Res. S.O. £200. Also H.S. £150.
Surrey County Council.—Tuberc. M.O. £500
Truro, Royal Cornwall Infirmary.—H.S. £150.
Walsall General Hospital.—Female Sen. H.S. and Anæs. £250.
Warrington Infirmary and Dispensary.—Sen. and Jun. H.S. £250 and £140.
Wilts County Council.—Asst. Sch. M.O. £400.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.
Wolverhampton and Staffordshire General Hospital.—Asst. H.S.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Spilsby, Lincoln.

Births, Marriages, and Deaths.

BIRTHS.

CLARK-JONES.—On August 29th, at Burbage, Marlborough, Wilts, to Dr. and Mrs. Clark-Jones—a daughter.
COPLANS.—On August 26th, the wife of Captain C. Coplans, R.A.M.C., of a daughter.
HELM.—On August 30th, the wife of Captain (acting Lieutenant-Colonel) C. Helm, M.C., R.A.M.C., of a son.
HILL.—On Sept 2nd, at Rutland-square, Dublin, to Kathleen Josephine (*née* Kenny), wife of Captain J. F. Hill, M.C., R.A.M.C., B.E.F., France—a son.
JONES.—On August 26th, at The Manor House, Tamworth, the wife of R. Francis Jones, M.R.C.S. Eng., L.R.C.P. Lond., of a son.
MENNELL.—On August 29th, the wife of James B. Mennell, M.D. Camb., M.R.C.S., L.R.C.P. Lond., Royal-crescent, London, W., of a son.
PARROTT.—On August 30th, at Ross, the wife of Harold W. Parrott, M.B., B.Sc. Lond., of a daughter.
ROBERTSON.—On August 29th, at Westbourne-terrace, Glasgow, the wife of Captain Berkeley H. Robertson, R.A.M.C., of a daughter.

MARRIAGES.

GRAHAM—PAUL.—On August 31st, at St. John's Church, Kensington, Captain James Wells Graham, R.A.M.C., to Jessie Cameron, daughter of W. H. Paul, Park House, Stroud, Glos.
HOWELLS—MILES.—On August 28th, at Llanishen Church, John Francis Howells, Surgeon, R.N., to Dora Gwendoline, youngest daughter of Mr. James Miles, J.P., and Mrs. Miles, The Pines, Penylan, Cardiff.
MARSHALL-SEWELL.—On August 31st, at St. Alfege Church, Greenwich, Captain Reginald Prynne Marshall, R.A.M.C., M.R.C.S. Eng., L.R.C.P. Lond., to Emily Kate, second daughter of Mr. H. B. Sewell, solicitor and coroner, and Mrs. Sewell, of Croom's Hill, Greenwich, S.E.
PENMAN—WALTER.—On August 22nd, at the Parish Church, Bromley, Hugh Forrest Penman, M.B., Ch.B. Edin., Lieutenant, R.A.M.C., to Jessy Dorothy Walter, second daughter of the late William Walter and of Mrs. Walter, Willow Bank, London-road, Bromley.

DEATHS.

BRIDGES.—Accidentally drowned while on active service abroad Lieutenant-Colonel Roland Harley Bridges, D.S.O., R.A.M.C., aged 30.
KIDD.—On August 20th, at White Rock, Hastings, Joseph Kidd, M.D., aged 94.
MAXWELL.—On August 23rd, at Elmsligh-road, Paignton, suddenly, James Burns Maxwell, B.A. Cantab., M.R.C.S., L.R.C.P.
SAUNDBY.—On August 28th, at Hagley-road, Edgbaston, Birmingham, Robert Saundby, M.D., F.R.C.P., LL.D., Lieutenant-Colonel, R.A.M.C.(T.), Emeritus Professor, University of Birmingham.
TENNENT.—Killed in action on August 22nd, Major Bernard Charles Tennent, M.C., R.A.M.C.
WARD.—On August 30th, suddenly, at Wellesley House Hospital, Aldershot, William Alfred Ward, M.R.C.S., L.R.C.P. Lond., L.S.A., Major, R.A.M.C., aged 49.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

EDITORIAL NOTICE.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

Communications, Letters, &c., to the Editor have been received from—

B.—Capt. P. H. Bahr, R.A.M.C.; Dr. G. Blacker, Lond.; Board of Agriculture and Fisheries, Lond.
C.—Dr. H. P. Cholmeley, Forest Row; Dr. Velasquez de Castro, Granada; Dr. F. G. Crookshank, Lond.; Coal Controller's Office, Lond.; Chicago School of Sanitary Instruction.
D.—Dr. R. Donaldson, Reading; Capt. F. C. Drew.
E.—Capt. R. C. Elmslie, R.A.M.C.
F.—Staff-Surg. P. Fildes, R.N.V.R.
G.—Mr. C. R. Gentry, Lond.; Dr. L. Guthrie, Lond.; Mr. J. Galsworthy, Lond.
H.—Mr. G. Hamlyn, Nottingham; Harrogate Wells and Baths, General Manager of.
J.—Major W. Johnson, R.A.M.C.
K.—Messrs. P. S. King and Son, Lond.; Capt. A. M. Kennedy; King's College Hospital Medical School, Lond., Sec. of.
L.—Messrs. Longmans, Green, and Co., Lond.; Mr. A. H. Long, Lond.; Mr. W. Lloyd, Lond.; Dr. A. W. Lemarchand, Barnstaple.
M.—Dr. Doris L. Mackinnon, Dundee; Mr. E. F. Martin, Weston-super-Mare; Dr. J. B. Mennell, Lond.; Middlesex Hospital Medical School, Dean of.
N.—Major A. Néve, R.A.M.C.
O.—Mr. J. Offord, Lond.
P.—Major J. Phillips, R.A.M.C.; Miss A. A. Parson, M.B., Lond.; Miss K. Pilkington, Lond.
R.—Dr. R. R. Rentoul, Liverpool; Dr. Rivers, Barnsley; Major L. B. Robertson, C.A.M.C.
S.—Prof. J. W. W. Stephens; Dr. G. F. Still, Lond.; St. Bartholomew's Hospital and College, Lond., Dean of; Scientific and Industrial Research Dept., Lond.; Prof. E. H. Starling, Lond.
T.—Mrs. Taylor, Glasgow.
V.—Mr. S. K. Vaidya, Lond.
W.—Capt. P. L. Watkin-Williams, D.S.O., R.A.M.C.; Surg. C. P. G. Wakeley, R.N.; Capt. P. Wood, R.A.M.C.

Offices: 423, STRAND, LONDON, W.C. 2.

BOOKS, ETC., RECEIVED.

KING, P. S., AND SON, London.
Race Regeneration. By E. J. Smith. 7*s.* 6*d.*
LAURIE, T. WERNER, London.
Art of Thinking. By T. S. Knowlson. 1*s.* 6*d.*
Chats on Photography. By W. Wellington. 1*s.*
OFFICE OF THE DAIRY WORLD, London.
Soft Cheese Making. By C. W. W. Tisdale, F.C.S., and T. R. Robinson, F.S.I. 3*s.*
PAUL, STANLEY, AND CO., London.
James Hinton. By Mrs. Havelock Ellis. 10*s.* 6*d.*
PHILLIPS, STANLEY, Brondesbury-road, N.W., and W. M. LEONARD, Boston.
Neurosyphilis: Modern Systematic Diagnosis and Treatment. By E. E. Southard, M.D., and H. C. Solomon, M.D. 21*s.*
ROUTLEDGE, GEORGE, AND SONS, London.
Studies in Electro-Pathology. By A. White Robertson, Temp. Major, R.A.M.C. 12*s.* 6*d.*
SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE, London.
Problem of Man's Ancestry. By Professor F. Wood-Jones. 7*d.*
STRATFORD CO., Publishers, Boston, Mass.
Stories of the Steppe. By M. GORKI. 25*c.*
UNWIN, T. FISHER, AND BERNARD QUARITCH, London.
Aspects of Death. By F. Parkes Weber, M.D. 3rd ed. 30*s.*
YEAR BOOK PUBLISHERS, Chicago.
Practical Medicine Series, 1918. Vol. I., General Medicine. By F. Billings, M.D., and B. O. Raulston, M.D. $2.25. Vol. II., General Surgery. By A. J. Ochsner. $2.50.

Medical News.

CHILD WELFARE.—A special course of lectures on infant care for health visitors, nurses, midwives, school teachers, and others will be held from Sept. 16th to 20th in the lecture theatre, University College, Nottingham. The lecturers include Sir Francis Champneys, Dr. Mildred Burgess, and Dr. Mary Scharlieb. The fee for the course is 10*s*., or 1*s*. 6*d*. for a single lecture, the text-book being "Mothercraft."—Another special course of lectures will be given at Swansea, in the Secondary School for Boys, on Saturdays, beginning on Oct. 5th and ending on Nov. 2nd. The fees and text-book will be the same as above.—At 1, Wimpole-street, London, W., from 5.30 to 6.30 P.M. on Mondays, from Sept. 30th to Dec. 16th, an elementary course of lectures on infant care will be given in preparation for the elementary certificate of the National Association for the Prevention of Infant Mortality, the lecturers being Dr. F. Truby King, Mr. H. G. Adamson, Dr. H. C. Cameron, Dr. Maurice Craig, Captain F. Vincent Denne, Dr. T. N. Kelynack, Dr. Eric Pritchard, and Miss Norah March. The fee for the course is 5*s*. Application forms and full particulars may be obtained from the Secretary, National Association for the Prevention of Infant Mortality, 4, Tavistock-square, W.C. 1.

ROYAL MEDICAL BENEVOLENT FUND.—The following is a continuation of a summary of cases relieved:—

Daughters, aged 56 and 53, of M.R.C.S. who practised at Kingscliffe and died in 1890. Each has an income of £11 6*s*. from dividends. They obtain occasional work as governesses, but at present without work. Each relieved three times. £9 each per annum. Voted £9 in 12 instalments.—Widow, aged 51, of M.R.C.S. Eng. who practised at Bampton, Oxon, and died in 19.6. Was left with limited means and one daughter, now aged 19, who is training for a teacher. Income from dividends, £10. Brother pays the rent and helps a little. Relieved twice, £20. Voted £10 in two instalments.—Widow, aged 55, of L.R.C.P. & S. Edin. who practised at Blackpool and died in 1912. Applicant left without means. Friends provide about £30, and she is now endeavouring to support herself by taking paying guests, but owing to ill-health can only do so on a very limited scale. Relieved twice, £10. Voted £5.—Daughter, aged 68, of M.R.C.S. Eng. who practised at Liverpool and died in 1881. Applicant lost her income by the failure of an Australian bank and is a permanent invalid dependent on friends and help from the Fund. Relieved five times, £60. Voted £12 in 12 instalments.—Widow, aged 73, of L.R.P.S. Glasg. who practised at Rochdale and died in 1899. Was left unprovided for at her husband's death and her children, all of whom are married, can only help a little, and applicant is too old to work. Relieved once, £12. Voted £12 in 12 instalments.—Daughter, aged 37, of M.D. Dub. who practised at Moorcroft and British Guiana and died in 1884. Applicant was left without means and suffers from tuberculous glands, so unable to work. Relieved 12 times, £110. Voted £10 in two instalments.—Widow, aged 76, of M.B. Edin. who practised at Ladswade and died in 1913. Her late husband died after a very long illness and all their savings were exhausted. Applicant is now dependent on help from friends and help from the Fund. Relieved once, £12. Voted £12 in 12 instalments.

Subscriptions may be sent to the acting honorary treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W. 1.

LONDON INTERCOLLEGIATE SCHOLARSHIPS BOARD.—The following Medical Scholarships have been awarded:—*University College:* Bucknill Scholarship: I. W. Gallant, Central Foundation Boys' School, and University of London, University College. Medical Exhibitions: H. Rosenberg, Central Foundation Boys' School, and University of London, King's College; B. Deane, Botham School, York; *proxime accessit*, Rachael Halperin, University of London, University College. *King's College:* Warneford Scholarships: P. B. Wilkinson, Plymouth College; M. G. L. Perkins, Westminster School, and University of London, King's College; L. H. Savin, Christ's Hospital, Horsham. *Westminster Hospital Medical School:* Natural Science Scholarship: M. Stieber, University of London, University College. *King's College Hospital Medical School:* Science Scholarship: Christine P. Francis, Brighton High School. Arts Exhibition: W. P. H. Sheldon, Bancroft's School. *London (Royal Free Hospital) School of Medicine for Women:* St. Dunstan's Medical Exhibitions: Margaret E. Reynolds, North London Collegiate School; Ellen M. Howard, St. Paul's Girls' School. Isabel Thorne Scholarship: Ethel A. Perrott, Bromley High School. Mabel Sharman-Crawford Scholarship: Dorothy N. L. Leverkus, London (R.F.H.) School of Medicine for Women.

THE CANCER DEATH-RATE IN LEICESTER.—In his annual report for 1917 Dr. Killick Millard, medical officer of health for Leicester, says the deaths from cancer and malignant disease numbered 255, equivalent to a rate of 1·17 per 100,000 of the population, the highest rate yet recorded in the borough.

THE death is announced of Mr. Damer Harrisson, Colonel, A.M.S. (T.), lecturer on clinical surgery in the University of Liverpool and honorary surgeon to the King.

Notes, Short Comments, and Answers to Correspondents.

HERB-GROWING AND BOTANIC DRUGS.

THE Royal Horticultural Society in a recent circular urges on educational authorities and commercial corporations the importance of developing the vegetable wealth of the Empire. The dislocation in the vegetable drug traffic due to the war has already had an effect in stimulating the study of medical botany and the production of books dealing with various aspects of the subject. Dr. Thomas Blair, in his preface to *Botanic Drugs* (Cincinnati, Ohio: The Therapeutic Digest Publishing Company. Pp. 394), remarks that there are 19 countries with well-based pharmacopœias recognising 550 botanic drugs. Dr. Blair anticipates a growing market for these medicinal products, and he presents the reader with a careful record.—The author of *Histology of Medicinal Plants*, Dr. W. Mansfield (London: Chapman and Hall; New York: John Wiley and Sons. Pp. 305. Price 13*s*. 6*d*. net), is professor of histology and pharmacognosy in the College of Pharmacy attached to Columbia University, N.Y., where he has had many years' practical experience in examining powdered drugs for commercial purposes. An account is given of the various plant tissues and the cells composing them, the book going on to deal with the histology of roots, stems, barks, flowers fruits, and seeds. Many excellent original illustrations embellish the text.—A fourth edition has also just appeared of Professor L. E. Sayre's large *Manual of Organic Materia Medica and Pharmacognosy* (Philadelphia: P. Blakiston's Son and Co. Pp. 606. Price $4.50), which contains, along with a very full introduction to the study of the vegetable kingdom, details of preparation of all vegetable drugs and practical chapters on such matters as the insects injurious to drugs. More than 300 illustrations are given.—Attention may be called to the exhibit at the British Scientific Products Exhibition (now being held at King's College, London) of home-grown vegetable drugs by the School of British Medicinal and Commercial Herb-Growing. Mrs. H. Grieve, principal of the school, is president and advisory expert to the British Guild of Herb-Growers, which represents a movement to recapture permanently from Germany and Austria the herb-growing industry. In a leaflet which may be obtained from Mrs. Grieve (The Whins, Chalfont St. Peter, Bucks) a full list is given of the medicinal plants which may be grown in this country.

MEDICAL MEN AND THE VOLUNTEER OBLIGATION.

A RECENT Circular (R. 224) sent down by the Local Government Board and the Scottish Office to local and appeal tribunals deals with the duties and obligations of the Volunteer Force. Every person exempted by a tribunal is liable to be called on for Volunteer service unless the tribunal orders otherwise, and this liability rests equally on the medical man. The line, however, taken by the Medical Tribunal is that doctors should not be called on as a rule to join as Volunteers, as their services are too urgently required for medical work, and the exemption certificates so far issued have invariably contained an order stating that the applicant should not be liable to join the Volunteer Force. This will protect all who apply to the Medical Tribunal, and until their cases have been considered by the tribunal they cannot be called on to perform duty as Volunteers.

THE CARE OF THE FOOT.

ALTHOUGH it is abundantly true that an army marches on its belly, the foot requires some consideration. Major T. Rugh, in charge of military orthopædics at the office of the Surgeon-General, U.S. Army, tells us (*American Journal of Orthopedic Surgery*, August, 1918) that the Munson shoe has solved all the difficulties of corns, callosities, ingrown nails, overriding toes, and blisters of the feet. Intelligent care is now being applied to soldiers' feet on this side of the Atlantic. Under the title of "First Aid for Foot Troubles" (London: Scientific Press, Ltd., 1*s*. 3*d*. net.) Mr. E. G. V. Runting, President of the Incorporated Society of Chiropodists, has written a little book designed to render the soldier more efficient, and also, as Dr. A. W. Oxford points out in a foreword, with the aim of popularising throughout the country the work carried on at the headquarters in London. After emphasising the need for patience and attention to detail if battalion chiropody is to be carried out effectively, the author gives detailed instruction in the care of the nails and the treatment of their malformations, describing the various pads—corrective and protective—that have been found of service in chronic cases among soldiers. The importance is great of keeping the feet of marching men as healthy as possible, and the book should prove useful to this end.

CONDITIONS OF SERVICE AND OF PAY FOR SPECIAL RESERVE, R.A.M.C.

FROM inquiries received from time to time it is evident that the conditions of service and of pay in the auxiliary R.A.M.C. branches are not as well known as they might be, and the following summary of conditions prevailing under the Special Reserve may be useful for reference:—

First appointments will be made to the rank of Lieutenant, on probation. (*Para. 71, Regulations for Special Reserve, 1911 (latest).*)

A candidate for the R.A.M.C. must be under 30 years of age, and either (*a*) registered under the Medical Acts, or (*b*) a member of the Officers Training Corps who has completed that portion of the curriculum of a student of medicine which at the time of his appointment places him in a position to obtain diplomas or degrees entitling him to be registered as a medical practitioner in two years from the date of his appointment. (*Para. 81.*)

Application for commissions in the Special Reserve of Officers will be made on Army Form B 201, which will be forwarded to "The Secretary, War Office, London, S.W.," through the officer commanding his contingent, if the candidate is a member of the O.T.C., or through the officer commanding his unit, if a member of the Territorial Force. (*Para. 82.*)

If the candidate holds a commission in the Territorial Force, the officer commanding the unit to which he belongs will certify (on Army Form B 201) as to his fitness for the Special Reserve. It will not be necessary for him to resign his commission in the Territorial Force: his commission [in Territorial Force] will be determined [i.e., will cease to exist] as from the day preceding date of appointment as probationer to the Special Reserve. (*Para. 83.*)

On appointment to a commission the candidate will receive instructions as to his probationary training, usually through a General Officer Commanding-in-Chief. (*Para. 85.*)

On completion of his probationary training, and passing prescribed examination, and being satisfactorily reported on, he will be confirmed in his commission, with effect from date of first appointment on probation. (*Para. 86.*)

Liabilities and Conditions of Service.—An officer of Special Reserve of Officers will be liable to undergo training for the period and at the place which may be prescribed for his branch of service (six months recruit training), but not outside the United Kingdom without his own consent. (*Para. 93.*)

Liability to be called up for army service at home or abroad, at a time of imminent national danger of great emergency, when the Army Reserve is called out, until his services are no longer required. (*Para. 95.*)

Such liability extends from date of joining Special Reserve of Officers until expiration of a year from date of completion of his probationary period; and so on from year to year, until he attains 40 years of age. (*Para. 96.*)

Promotion.—Eligible for promotion to Captain after 3½ years, and to Major after 12 years' service.

Commission in Regular Forces.—An officer R.A.M.C. Special Reserve may, if otherwise eligible, compete for a commission in the R.A.M.C. (*Para. 113.*) An officer of Special Reserve, when called out for service in national emergency, will be eligible for commission in Regular Forces, if not over 30 (if a subaltern), or 40 (if of higher rank).

Pay, Additional Pay, Extra-duty Pay, and *Allowances* of officers of *Special Reserve* called up during an emergency will be in all respects similar to those of a regular officer of same rank and arm of service. (Quarters 3*s.* daily, fuel and light 1*s.* 1*d.* + 6*d.*, servant.) (*Para. 413.*) Special grant of £50 as compensation for disturbance and for kit, if called up during an emergency. (*Para. 419.*) Outfit allowance of £20 (one-fourth to be refunded for each year or portion of a year that he fails to complete of the period of four years, except in cases of sickness). (*Para. 426.*)

THE CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE.

THE director of the Division of International Law, Mr. James Brown Scott, has done well to bring out at this time two volumes having an important bearing on international relations. The first of these is a collection of papers relating to the Controversy over Neutral Rights between the United States and France, 1797–1800 (pp. 510, price 15*s.*), and deals with the difficult question of armed neutrality; the second volume recapitulates the Declaration of Independence, the Articles of Confederation, and the Constitution of the United States (pp. 100, price 4*s.* 6*d.*), documents which the editor justly claims to be fundamental to the world's development. In so far as these books contribute to the intelligent pacification of the peoples of the earth, they will have helped to produce an atmosphere in which the peaceful art of medicine can flourish once more. Both books are published by the Oxford University Press in New York.

SPECIFIC PARAPLEGIA IN CATTLE AND HORSES.

Mr. William Scott, F.R.C.V.S., of Bridgwater, has been experimenting with a vaccine in connexion with a specific paraplegia which has recently been affecting cattle rather frequently. The disease is local in its occurrence and soured pasture and the poor nutritive value of hay and roots appear to have made the bovines peculiarly susceptible to a form of paralysis which leaves them unable to rise for weeks at a time. The investigator has obtained a vaccine from cultures made from an organism found in the spinal fluid of animals affected. The fluid was extracted by means of a lumbar puncture between the fourth and fifth or fifth and sixth vertebræ. In 31 cases the injection of the vaccine produced very good results. The treatment is new and the great prevalence of the disease has not been noticed before, although isolated cases have been recorded from time to time. Mr. Scott deserves commendation for his enterprise in conducting a line of investigation and treatment which has not hitherto been tried. The only other disease in animals in which inoculations are prepared from spinal material appears to be rabies. Direct interference with the spinal column has been rarely undertaken to produce therapeutical results, but intraspinal anæsthesia has been brought about in dogs by puncture in the sixth interlumbar space and injecting cocaine, stovaine, or novocaine. In Mr. Scott's cases a louse (*Hæmatopinus tenuirostis*) was found almost constantly affecting the ailing subjects, and this louse harboured a bacillus identical with that found in the host's blood. Four similar cases of paraplegia were met with in equines.

A USEFUL FIELD INCINERATOR.

Major C. S. Williamson, M.R.C., United States Army, describes in the *Military Surgeon* for July a form of incinerator suitable for a large base camp where there is some scarcity of fuel, which he calls a "multiple-shelf incinerator." It is built of brick lined with fire-brick, 12 ft. high, and internal measurement is 4½ × 6 ft. It has six shelves 3½ × 6 ft., placed alternately right and left, and there is a fire-grate below. The fire is started with 200 lb. of wood, the garbage is dumped on the top plate to a depth of 4 in. or so, and after it has dried a little it is pushed over on to the second plate, and another charge introduced. The second plate, after a little more drying, gives up its charge to the third, and so on. Ultimately there will be a layer on the sixth plate, dry, and an inch thick, which will take fire itself, and should be then, but not till then, pushed on to the fire-grate, when it will burn and dry the succeeding charges. The incinerator will burn 10–15 tons of garbage in 24 hours, and will deal with fæces if mixed with the garbage in equal quantities. Clearly the available garbage should be so managed that the incinerator is never empty, but kept, by judicious feeding, always burning. The device deserves attention.

COLONIAL HEALTH REPORTS.

Gilbert and Ellice Islands.—Mr. E. C. Eliot, the Resident Commissioner, in a report to the Colonial Office, writes: The following table gives the births and deaths for 1916–17 as contrasted with the past three years:—

	Gilbert Islands.				Ellice Islands.		
	1913–14.	1914–15.	1915–16.	1916–17.	1913–14.	1915–16.	1916–17.
Births ...	891	773	817	701	161	142	136
Deaths ...	734	967	626	628	155	100	94

At Ocean Island there has been an increase in the death-rate, mainly owing to the serious drought. Since the close of the year 1916–17 a considerable number of Banabans (Ocean Islanders) have died, in spite of the efforts made by the Government in the importation of fresh vegetables, lime-juice, &c. Steps have been taken to prevent the northern spread of elephantiasis from the Samoan Group. Ordinance No. 6 of 1917 provides for medical inspection for microfilaria of all persons wishing to travel from Samoa to this colony. A considerable amount of research work in connexion with pulmonary tuberculosis and in the use of salvarsan or equivalent preparations in filariasis has been undertaken by the medical department, which has received commendation and encouragement from members in England of the Advisory Medical and Sanitary Committee for Tropical Africa. A substitute for salvarsan is now being obtained from Japan. The necessity for constant supply of this valuable preparation is still urgent, both in cases of syphilis and yaws.

W. H. K.—The suggestion that cœliac disease may be due to the use of the dummy or pacifier is open to the objection that this disease frequently begins at an age when they are not in use. Moreover, the pacifier is very common, whereas cœliac disease is rare.

M. D. O'C.—Although it was not until the fifth day of the fever that many tertian parasites were found in the peripheral blood stream, their presence was obviously possible in the blood of the organs. The old view that Laveran's bodies are pseudo-parasites would imply that altered red corpuscles can conjugate in the stomach of the mosquito, and produce oocysts, sporoblasts, and sporozoites. Doubtless cases of malarial fever have been recorded in which Laveran's bodies could not be discovered in the blood, but how is a diagnosis of malaria at all to be made without finding parasites? The toxin of the malaria parasite has not been isolated, but neither has that of the spirochæte of syphilis.

Dr. F. G. Crookshank writes to disclaim any connexion with an unregistered practitioner of somewhat similar name who has recently made application for certain hospital appointments in London.

A Lecture

ON

THE PREVENTION AND ARREST OF LICE-BORNE DISEASES BY NEW METHODS OF DISINFECTION.

Delivered before the Royal Society of Medicine on July 17th, 1918.

BY COLONEL WILLIAM HUNTER, C.B., A.M.S.,

PRESIDENT OF THE ADVISORY COMMITTEE FOR PREVENTION OF EPIDEMIC DISEASES IN EASTERN WAR AREAS, 1915–1917; COLONEL IN CHARGE OF BRITISH MILITARY SANITARY MISSION TO SERBIA, 1915; CONSULTING PHYSICIAN TO THE EASTERN COMMAND.

INTRODUCTORY.

THE subject of this lecture relates to the prevention of lice-borne diseases—typhus, relapsing fever, and trench fever. I am not concerned with the evidence as to the lice-borne character of these diseases, nor with the life habits of lice, nor with the degrees of heat required to kill them, but I have been greatly concerned with killing them in masses by an overwhelming amount of steam in the presence of which all life is impossible. My interest has been not in costly and complicated appliances for disinfecting—usually not available when and where they are required and insufficient to meet the needs when they are—but in simple methods, available at all times and absolutely efficacious in killing body vermin, easily improvised, easily worked, extremely effective, the very "Columbus egg of simplicity and efficiency," as they were described by one enthusiastic Serbian official. This interest, born of a great necessity, in dealing with the appalling conditions I had to face in Serbia in 1915, has given the subject of disinfection a new importance in my eyes, and it has been my experience to extend that interest to conditions prevailing in Eastern war areas.

These results have been from time to time officially recorded in reports submitted from the Serbian and Eastern Mediterranean war areas, where my duties for two and a half years have lain—first as O.C. of the British Military Sanitary Mission of 25 R.A.M.C. officers sent out to Serbia in February, 1915; and subsequently from July, 1915, to June, 1917, as President of the Advisory Committee for Prevention of Epidemic Diseases in all the Eastern war areas. These duties throughout have related to preventive work against all infectious diseases, among which lice-borne diseases have been among the most prominent and difficult to deal with.

The origination of two new types of disinfectors, called the "barrel disinfector" and the "railway van disinfector" respectively, was the first work of the British Military Sanitary Mission sent out, at the request of the Serbian Government, at two days' notice and under the most urgent circumstances, by the War Office on Feb. 15th, 1915, under my charge, to deal with the great epidemics of typhus and relapsing fever and typhoid fever then raging in that country.

On our arrival we found that the whole country was ravaged by these infections without any available measures for disinfection or equipment, even in the largest hospitals, to meet the urgent conditions. The barrel disinfector was devised by my colleague, Lieutenant-Colonel G. F. Stammers, R.A.M.C., on March 7th, three days after our arrival in Nish, and was set up and put into use the following week in Kragujevatz, the headquarters of the Serbian Army.

The railway van disinfector was devised by the same officer about ten days later to meet the needs of disinfection of troops on a larger scale, and to form a part of the *British Sanitary Train for Inoculation and Disinfection*, which we had decided to form for the work of the mission.

DISINFECTION ON THE LARGEST SCALE BY RAILWAY VAN DISINFECTORS.

The principle of primary importance in connexion with disinfection against lice-borne diseases is the necessity of carrying out disinfection on the *largest possible scale* and in the *shortest period of time*—the object in view being in any individual unit to kill off within a period of a few days every living thing in the clothes and on the body that may have possibly contracted infection and be capable of conveying such infection.

This principle is carried out—with a rapidity and efficiency unapproached by any other method of disinfection—by the current steam railway van disinfector. Simple and eminently practical, this type of disinfector, originally devised as above stated, was first put into use in Serbia. It was subsequently introduced under my direct personal supervision in Egypt in February, 1916, with modifications which added seven- to ten-fold to its working capacity and rapidity of action. The results were closely watched all the time till I left Egypt in June, 1917.[1]

The van disinfector both in principle and efficiency is totally different from other various contrivances—e.g., steam pressure boilers *on* trucks ("truck-disinfectors")—which have been put into use on railways for purposes of disinfection. The principle of its action is disinfection *by current steam*, supplied by and directly discharged in greatest volume and force into one or two ordinary railway vans (suitably adapted) by the railway engine, which conveys them along the line to the place most conveniently adjacent to the troops. (Figs. 1–3.) The cost of adaptation is only £30 to £40, the working of it simple and easy.

There is, of course, nothing new in the principle of using current steam as a disinfecting agent. What is new, and what I claim to the credit of the English Sanitary Mission in Serbia, is the application of this principle for purposes of widespread disinfection by new methods and on a larger scale than had ever before been devised.

Rapidity of Disinfecting Action.

The working capacity of the railway van disinfector here described is very large, and the arrangements simple to carry out, as shown in Figs. 4 and 5.

Each double van is capable, from my personal knowledge and observation, *if fully employed*, of carrying out disinfections at the rate of 500 kits with 1000 blankets and 500 overcoats every 2 hours; of 2000 kits with 4000 blankets and 2000 overcoats in a day of 8 hours; of disinfecting over 10,000 kits with 20,000 blankets and 10,000 overcoats in 4 days; and 18,000 kits with 36,000 blankets and 18,000 overcoats in 9 days.

With one disinfector alone I have disinfected the kits and blankets of a hospital with 1000 beds in 4 hours; the kits, blankets, and camp bedding of 4000 prisoners of war in 16 hours; of 1500 camel corps men in about 12 hours.

Divisions of troops can be dealt with at the following rate: 8000 men in 4 days, 15,000 in 12 days (3800 of these being done in one day); of 16,000 in 12 days; 10,000 in 4 days; and 18,000 in 10 days.

As regards *ordnance clothing*, this can be disinfected, in sackfuls at a time, at the rate of many thousands of articles every 2 hours, tens of thousands daily, and hundreds of thousands weekly.

A most striking illustration of the advantages of this rapidity was afforded in one instance, where a van disinfector which had just disinfected a division of 18,000 troops in 12 days in one area went off about 500 miles to a centre in Southern Europe, where some cases of typhus had occurred among the native labourers. It disinfected the whole of the troops and labourers (1500 in number) in three days, and was back at work again in its former area disinfecting another division on the fourth day.

In the first three months of their work the two van disinfectors carried out the disinfection of 170,000 kits, 170,000 overcoats, 340,000 blankets, and great masses of ordnance clothing. Since that time the disinfectorr in use have been the most prominent and effective measure of preventive work in Egypt, each double van disinfector being capable of carrying out in the simplest and most efficient way in all parts of the war area—up to railhead—disinfection of troops and native labourers to the number of 60,000 men monthly. The total number of disinfections carried out in 12 months (May, 1916, to April, 1917) among a monthly average of 40,000 labourers was 495,000—an average of over 40,000 a month.

This rapidity of work does not apply to all railway van disinfectors as such, but only to the original Stammers's van disinfector as modified by me in Egypt (Cairo Van 5511). The feature of this latter form is that the volume and force of steam are so great, and its method of dispersion

[1] The circumstances there did not permit any definite information to be furnished regarding its working capacity before the Mission left Serbia early in June, 1915.

from the pipes so arranged that it is possible (for the first time in the history of disinfection) to disinfect bundles of clothing in bulk without unpacking or spreading them out. The advantage of this in connexion with disinfection against lice-borne diseases is obvious, since it permits clothes to be disinfected without any handling of individual articles.

Comparison of Working Capacity of Double Van Disinfectors with Other Types of Disinfectors in Army Use.

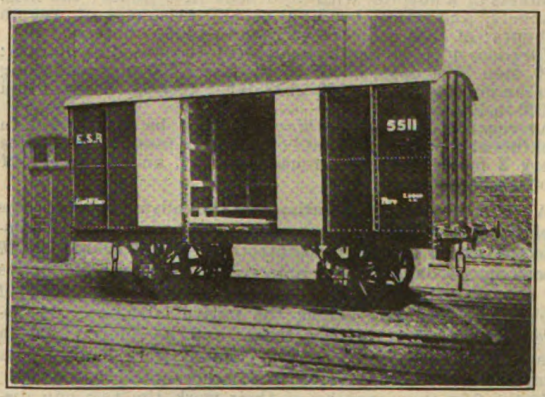
The working capacity in two hours' time of the double van disinfector as compared with that of all the chief types of disinfectors in use in the Army is indicated graphically in Chart 1 for (*a*) blankets, (*b*) kits (exclusive of overcoats) respectively. The figures for the other types of disinfectors are those officially given in "Notes for Sanitary Officers, B.E.F., France, 1917" (W.O., 1918), p. 42.

TABLE I.—*Two Hours' Working Capacity. (Time Required to Load, Disinfect, Dry and Unload.)*

Type of disinfector.	No. of load.	No. of blankets.	No. of "kits."*
A. Portable steam disinfector	2	16	12
B. Newman steam and formalin ...	2	20	12
C. Thresh portable	2	60	40
D. Thresh fixed	2	80	60
E. Thresh on Foden lorry (2 chambers)	2	240	140
F. Lyon portable M.O.	2	120	70
G. Lyon fixed M.O.	2	120	70
H. Lyon fixed L.O.	2	260	120
I. Lyon No. 2 D.	2	120	70
K. Lyon No. 13	4	40	32
L. *Double van Disinfector (Cairo van 5511)*	1	1500	500†

* Exclusive of overcoats. † + 1000 blankets + 500 overcoats.

FIG. 2.



A unit of the van disinfector (Cairo Van 5511) with doors wide open to show the internal adaptation.

TABLE II.

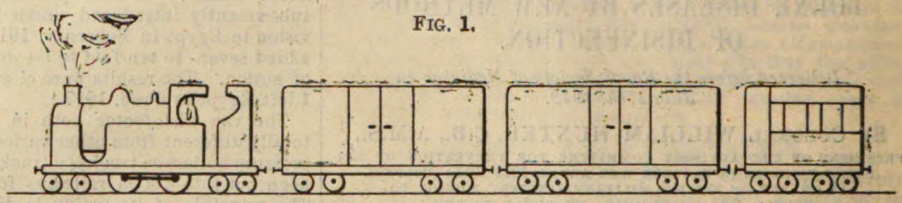
—	First 7 days (one van).	First 4 days (double van).	First 3 months	First 12 months.*
No. of days	7	4	101	—
No. of hours' use of steam	22	24	—	—
No. of troops disinfected	2400	5,850	170,000	495,000
No. of kits	2400	5,850	170,000	495,000
No. of blankets	5370	10,500	341,000	493,000
No. of overcoats	1631	3,500	168,000	?
Ordnance clothing	62 sacks.	3,500†	‡	?

* Average of 40,000 labourers. † Sleeping mats. ‡ Large masses.

The double van disinfector can deal with 500 men at a time. It was found to work with absolute uniformity, the exposure given being an hour for van full up with kits, and 15 minutes for the overcoats, which were thrown in loosely. Many of the kits were extremely lousy when collected, and examination showed that in every case all the lice and their eggs were dead and shrivelled up after disinfection in the van.

The results of the first eleven days' and first three months' work of the two disinfectors, the records of which were carefully kept, are shown in Table II., while the scale on which kits, overcoats, and blankets were dealt with from day to day during the first three months by two van disinfectors is graphically shown in Chart 2.

FIG. 1.



The current steam railway van disinfector as introduced into Egypt in 1916.

RELAPSING FEVER AMONG NATIVES IN EGYPT.

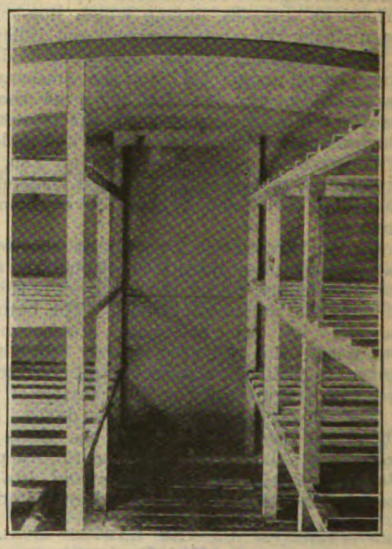
The course of events may here be briefly summarised in a narrative form.

Being satisfied from my previous experience in Serbia in 1915 that the available means of disinfection were altogether inadequate to meet even a moderate incidence of relapsing fever, I suggested that the circumstances of an outbreak of relapsing fever among the native labourers in Egypt could best be met there also by the use of the railway van disinfector.

I submitted my proposals, and got permission to form the type of van disinfector I suggested. It was formed in the railway works at Cairo from a steel van and old engine which I selected and found available. The work was most expeditiously and thoroughly carried out. The adaptations, which were made in four days, included, in addition to other modifications, the use of a small railway engine for the combined purposes of locomotion and production of steam, instead of a small heating engine employed in Serbia, and proved on the first trial by me two days later to add enormously to the rapidity of action and efficiency of the van as a disinfector.

They enabled me to dispense with all the delay inseparable from unpacking, spreading out, and repacking of the clothes disinfected. This adaptation made it possible for the steam to penetrate in great volume and force into the centre of even the largest bundles of clothes. This was proved by numerous tests — eggs being boiled hard, potatoes cooked, cultures sterilised, flies enclosed in test-tubes killed, and, most conclusive of all, a self-registering thermometer — even when enclosed in its case — closed in at both ends and put into the centre of the largest bundle, registering temperatures of 102° to 105° C. (215° to 220° F.) as early as half an hour after the steam was turned on from the engine into the van.

FIG. 3.



Interior view of the same van.

I spent the first fortnight in testing its working in all classes of work in which it could be required, and in each and every direction the results obtained exceeded expectations.

FIG. 4.

The double van steam railway disinfector in use in Egypt. Two queues, each of 250 men, are seen approaching to deposit their infected kits in the vans. The disinfection was completed in one hour, the overcoats in 15 minutes, the men were bathed, and the whole process was completed in two hours. 2000 men were dealt with on this day in the course of eight hours.

Four other similar disinfectors with double vans were subsequently formed.

Efficacy of Van Disinfectors in Prevention of Relapsing Fever.

A study of the results obtained in Egypt showed the closest relationship to exist between the incidence of the disease and the amount of disinfection carried out in the unit affected.

If the disinfection can be carried out rapidly in the whole of the unit the disease is thoroughly arrested.

Place A.—In this place the outbreak was the first to occur and the sharpest. This was the first place I disinfected with the van disinfector (Feb. 25–27th, 1916). I made it a test disinfection. The kits and blankets of 485 labourers (viz., 485 kits, 485 blankets, and 333 overcoats) were thoroughly disinfected. The men all bathed during the disinfection; the heads of some 50 men were shaved; and then finally to complete the disinfection I had every single article of clothing or bedding found in their tents collected in large sacks, brought to the disinfector, and thoroughly disinfected. The time taken for the whole process was 5 hours.

At the same time I disinfected completely (in 6 hours) 347 kits, 195 overcoats, and 694 blankets of the unit in which the relapsing fever cases had occurred; 80 kits and 1057 blankets of the field ambulance and the stationary hospital concerned in dealing with these cases (in 3 hours); and finally 62 large sacks (two full van loads) of ordnance clothing (in 4 hours).

The result of the first seven days' work served to establish conclusively its exceptional merits and efficiency. I asked that another one should be formed, with two vans attached instead of one. This was immediately done, and completed as before in a week's time; I found it ready in the railway works in Cairo on my return on Saturday, March 18th.

It was arranged that it should be sent the following morning to a siding adjacent to a large hospital, where I carried out the disinfection of 850 large hospital kits in two fillings of the vans in the course of 4 hours; and of 500 camel drivers in the afternoon; of 1800 camel drivers the following day; and of 3500 Turkish prisoners on two following days.

The sequel to the disinfection—of an exceptionally complete character carried out at Place A—was complete arrest of infection. Only three cases occurred in the next 12 months instead of over 50 in the month when the disinfection was carried out.

Place B.—The course of events in this place was also most interesting. This was the seat of the largest labourer camps, the number up to December, 1916, averaging 3000–4000 men. The monthly incidence of the disease in the first months of 1916 was very high, amounting in April and May to 6·68 and 6·15 per cent. of the number of labourers. Up to May no disinfections were carried out, but from May onwards a steadily increasing disinfection was commenced and continued throughout the year.

From July onwards the whole of the labourers were being disinfected at least once, and from August onwards two or three, and sometimes four, times a month.

The disease was practically stamped out; the incidence during the following winter was only 16 cases instead of 530 cases in three months of the preceding year, rising only once to 0·39 per cent., at a time when elsewhere it was as high as 8·35 per cent.

If the whole of the unit cannot be disinfected within at most 2–3 weeks (i.e., the incubation period of lice-borne diseases), then the disease continues to occur, although lessened in incidence, men becoming reinfected with infected lice from those who have not been disinfected.

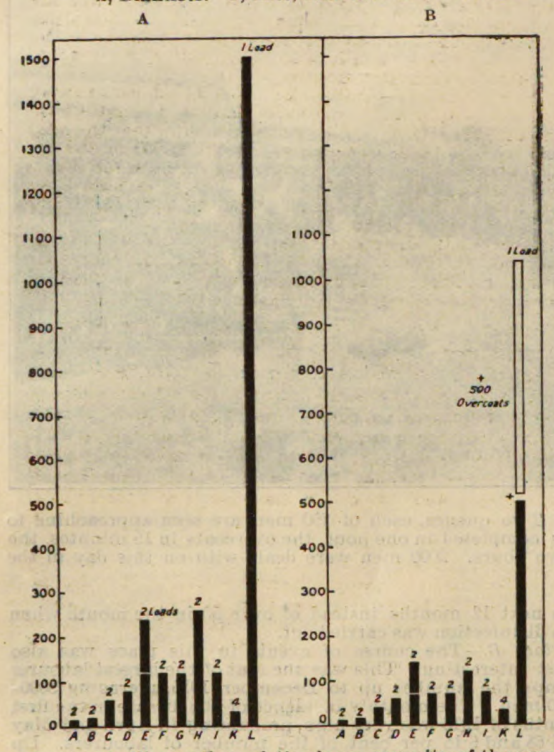
This is the prime reason why hitherto lice-borne diseases have continued to propagate themselves for a certain, and sometimes (e.g., trench fever) indefinite, period, apparently in

FIG. 5.

Part of the same queue as in Fig. 4 showing the bundles of infected clothing which are placed unopened in the van. The large size of the bundles is shown.

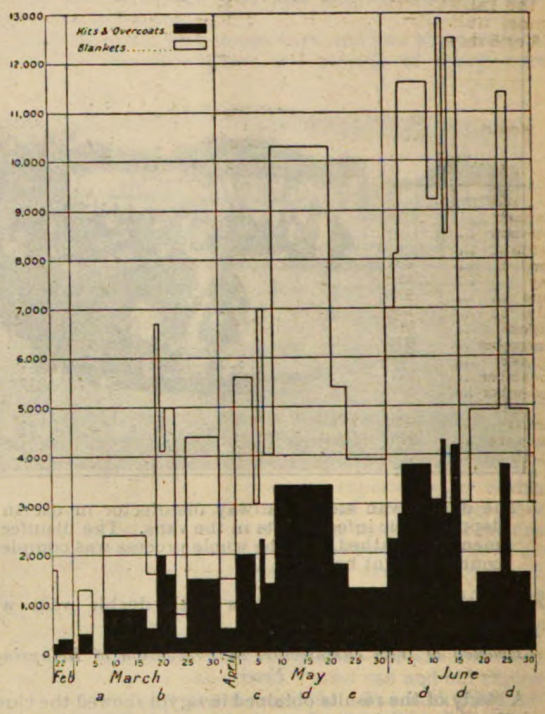
CHART 1.

A, Blankets. B, Kits, exclusive of overcoats.



A graphic illustration of the large capacity of the van disinfector compared with other types. (See Table I. for key to lettering.)

CHART 2.



A graphic record of the achievement from week to week of a double van disinfector.

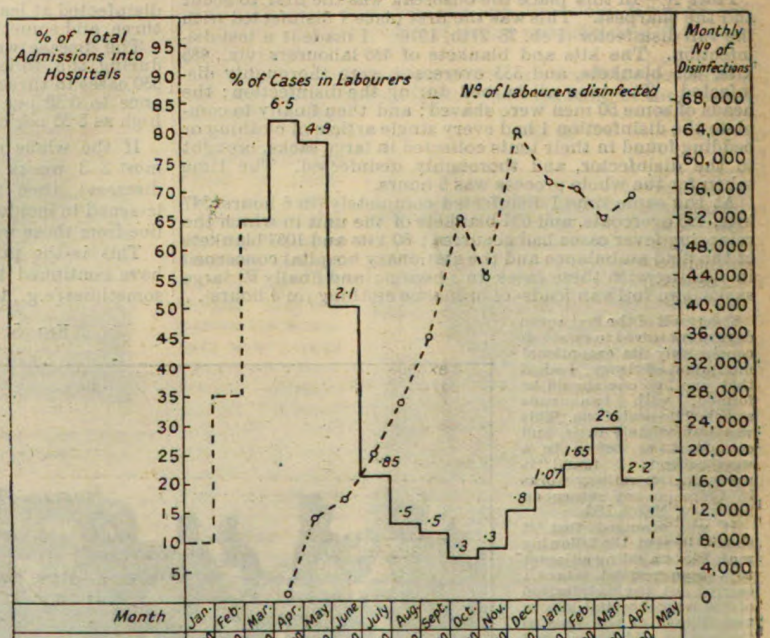
spite of what may be an amount of disinfection absolutely large, but quite insufficient to cover the whole of the affected unit within the incubation period of the infection.

The above conclusion is well illustrated by a study of the incidence of relapsing fever in labourers' camps in Egypt, of which the following is a sample.

Place C.—One of the largest and most important labourers' camps was at Place C, an important railway junction of the Egyptian railways. The incidence in this group early in 1916, before disinfection was commenced, was high—viz., 10 per cent. in April and 4 per cent. in May. When disinfections were commenced in June they did not cover in any month all the labourers in camp up till December. The result was that although the incidence fell it was never entirely arrested, and it rose again as high as 4·5 per cent. the following winter.

It is to be noted that, although inadequate when commenced in arresting the incidence, the actual amount of disinfection in the following five months (June to November) was considerable. In terms of what has hitherto been considered possible, it might even be deemed satisfactory—viz., 3000 to 8000 men monthly—averaging 4000 in a body of men averaging about 6000. It represents a daily average of about 130 men—approximately the steady work of two portable Threshes. Nevertheless, it did not suffice to check the disease for the reason which I emphasise—viz., that disinfection to be effective in arresting a louse-borne disease in any area should be capable of being applied to the whole of the individuals in that area within a maximum period of 2–3 weeks; and if the infection be severe within a shorter period of one week, and repeated, if necessary, a week or ten days later.

CHART 3.



Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Nº of Labourers	20,000	20,000	20,000	20,000	21,000	28,000	28,000	32,000	35,000	38,000	44,000	48,000	51,000	50,000	54,000	50,000	-
Nº of Cases	50	400	1,000	1,322	1,048	592	241	172	185	119	152	401	553	839	1,442	1,132	-
% of Labourers	-	-	1·0	6·5	4·9	2·1	·85	·53	·52	·31	·32	·82	1·07	1·65	2·6	2·2	
% of Total Admissions	-	-	66	82	78	50	22	13	12	7	8	16	19	24	29	20	
Nº of Disinfections	0	0	0	0	12,000	14,000	19,400	27,000	35,000	53,000	64,000	64,000	58,000	57,000	53,000	56,000	
% of Labourers	-	-	-	-	57	50	68	84	103	140	100	133	113	114	98	112	

Incidence of relapsing fever among labourers and its control by disinfection.

In the case of groups numbering as many as 6000 to 8000 men this requirement may seem a counsel of perfection—desirable, perhaps, but not practically obtainable under military conditions. This is no longer the case; for, by use of the railway van, disinfection can be carried out on an almost unlimited scale. Such numbers can be dealt with in 4 or 5 days.

TABLE III.—*Place C.*

Month.	No. of natives.	No. of cases.	Per cent. of natives.	Per cent. of hospital admissions.	No. of disinfections.	Per cent. of labourers.
1916						
January ...	?	?	?	?	—	—
February ...	?	?	?	?	—	—
March	?	?	?	60	—	—
April	2963	309	10·43	83	—	—
May	4308	195	4·53	64	—	—
June	3864	120	3·11	34	2,749	71
July	3464	100	2·86	31	—	—
August ...	5876	56	0·96	12	3,305	56
September ..	6082	80	1·31	17	4,286	70
October ...	7601	64	0·84	13	8,023	105
November ...	9254	97	1·05	18	6,126	66
December ...	8495	195	2·29	35	10,834	127
1917						
January ...	8094	274	3·38	37	11,116	136
February ...	8347	215	2·58	36	7,837	93
March	8946	343	3·83	46	16,379	180
April	8737	443	4·55	41	25,011	280

The incidence of relapsing fevers in other groups of labourers in the area illustrates the same points.

Summary of Results in Egypt.

The sequel showed the following results:—

(*a*) The incidence was very effectively controlled by the amount of disinfection which it proved possible to carry out by means of van disinfectors among the natives, and its threatened incidence among the troops was immediately checked and controlled. (Chart 3.)

(*b*) The incidence among the *natives*, which when at its height, affected 6·5 per cent. of the labourers in any one month, never exceeded 2·6 per cent. in any one month in the following winter.

(*c*) Instead of constituting, when at its height, as much as 82 per cent. of the total admissions into hospital in any one month, it did not in any month exceed 30 per cent. (Chart 3.)

(*d*) Instead of affecting in any one month as many as 15 per cent. of the labourers in any one locality, it remained in nearly all places on a very low level—below 1 per cent. In only two places did it exceed 5 per cent., and even in these cases the incidence was at once checked by the extra and immediate disinfection which it was possible to bring to bear by means of the van disinfector.

(*e*) Its spread to the *troops* was effectively prevented or controlled.

The total number of cases among them in the four months (March to June) following the introduction of the van disinfectors in February, 1916, was only 143—all cases then ceasing.

Although this incidence was a small and satisfactory one, having regard to the large number of troops and the presence amongst them of so many cases of relapsing fever among the native labourers, the number appeared to me to be relatively large, in view of the exceptionally large amount of disinfection that had been carried out among the troops during this period.

I therefore made a close analysis of the cases, ascertaining in each case the place and date of their reporting sick, whether in the Northern Section van, where van disinfectors had been chiefly at work (over 150,000 disinfections), or in the Southern Section where the van disinfectors had been little in use (only 7000 disinfections).

The interesting result that appeared was that out of the total 143 cases that had occurred—March to June—only 30 had occurred in the Northern Section among its large

	Natives.		Troops.	
	% of total number.	% of total cases.	% of total troops.	% of total cases.
Northern Section ...	60·0	50·0	80·0	20·0
Southern Section ...	40·0	46·0	20·0	80·0

number of troops (80 per cent. of the total troops), whereas no fewer than 113 cases had occurred in the Southern Section among its small number of troops (less than 20 per cent. of the total troops.)

There was thus a marked difference between the spread of the disease to the troops in the Northern and Southern Sections respectively.

(*f*) In the Southern Section reliance had been placed on the large disinfecting station at Place F to carry out the disinfection necessary in its neighbourhood. Nevertheless, the number of cases among the troops at this place was the largest in any place, totalling 91 cases out of the total of 113 cases in this Southern Section.

The official data regarding the amount of disinfection carried out by this large disinfecting station, equipped with four of the largest steam-pressure boilers, show that the total number of troops disinfected was about 32,000 in the six months, a number which one double van disinfector (Cairo Van 5511) is capable of disinfecting, as shown on more than one occasion, in 14–21 days—e.g., 10,000 in 4 days, 18,000 in 9 days, 3800 in 1 day—a total of 31,800 in 14 days.

While stationary disinfectors can only be used for those in their neighbourhood, the van disinfector can carry out this large number of disinfections daily over an area of 100 miles or more whenever and wherever they are required.

LICE-BORNE INFECTION AMONG TROOPS IN THE FIELD.

It is clear from the foregoing that to deal effectively with such conditions the disinfection must be capable of being brought to the troops, so as to be accessible to them wherever they are; it must be capable of dealing with them rapidly and in great numbers at a time, in order to interfere as little as possible with military duties; and be easily improvised on the spot and capable of being easily and expeditiously worked without need of special knowledge or technique or special personnel.

All these requirements are in my experience met—in a manner unapproached by any other type of disinfector—by the van disinfector (Cairo). Looking back at the circumstances in the Egyptian war area and on the results which I followed for a year and a half, I feel satisfied that in the absence of this form of disinfector the problem of relapsing fever in the war area would have occasioned military difficulty and materially impeded the prosecution of the campaign. Before the introduction of the van disinfectors among the natives nearly one-fifth of the average number of labourers were attacked by relapsing fever, but by disinfection on the largest scale by this disinfector the disease was effectively arrested or stamped out or controlled.

(*To be concluded.*)

THE RÔLE OF THE SCAPULA IN THORACOPLASTY.

BY JOSEPH E. ADAMS, M.S. LOND., F.R.C.S. ENG.,
CAPTAIN, R.A.M.C. (T.); SURGEON WITH CHARGE OF OUT-PATIENTS TO ST. THOMAS'S HOSPITAL, ETC.

SOME ten years ago I performed an extensive thoracoplasty on a man, aged 21, who had a left-sided empyema containing no less than 10 pints of pus, drained for several weeks without any evidence of expansion of the lung or any sign of the displaced heart returning to its proper place. He was exhibited before the Royal Society of Medicine in January, 1910,[1] 18 months after operation, in a very good state of health, with very little deformity beyond flattening of the chest on the affected side, and physical signs pointing to the existence of a healthy lung on this side of rather more than half the normal size.

I was congratulated on the very satisfactory result, which those present appeared to attribute to the fact that the plastic operation was performed six weeks after the original drainage of the pleural cavity and the consequent expansion of the lung before the visceral pleura became very thick. Personally, I do not think this good result would have been obtained if the chest wall had been "allowed to fall in," as is usually said in text-books to be the object of a thoracoplasty, and I attributed it to the use of the scapular muscles to obliterate part of the cavity, to pull up the diaphragm, and to pull on the lung by movements of the arm, when the scapula was made to occupy the place of the excised ribs. Recent experience has confirmed my opinion, and it seems to me that hardly any case of old-standing empyema is likely to resist surgical intervention provided a proper use of the scapula and the muscles attached to it is made and every

[1] Transactions of the Royal Society of Medicine, Clinical Section, January, 1910.

effort is directed towards closure of the chest at the operation. The whole secret of success in recent war surgery of the chest has been shown to depend on the closure of the chest wall, and, if the expansibility of the lung remains, there is every prospect of complete cure even from severe lesions. I have recently operated along the same lines in the case of an empyema where another surgeon had operated twice and left a wide gaping wound after 15 months' treatment which showed no sign of closing. The first operation performed was decortication of the lung, and the second aimed at the division of adhesions between the parietal and thickened visceral pleura. Such operations are doomed to failure unless steps are taken to close the thoracic cavity, and this cannot be done by merely dissecting up skin flaps and bringing them across the mouth of the cavity; the lung will not expand if it lies exposed at the bottom of an open wound against atmospheric pressure, and my operative procedure aims at the closure of the cavity with muscle and the favouring of expansion of the lung both by active movements and conditions of intra-thoracic pressure.

Notes of Case: Description of Operation.

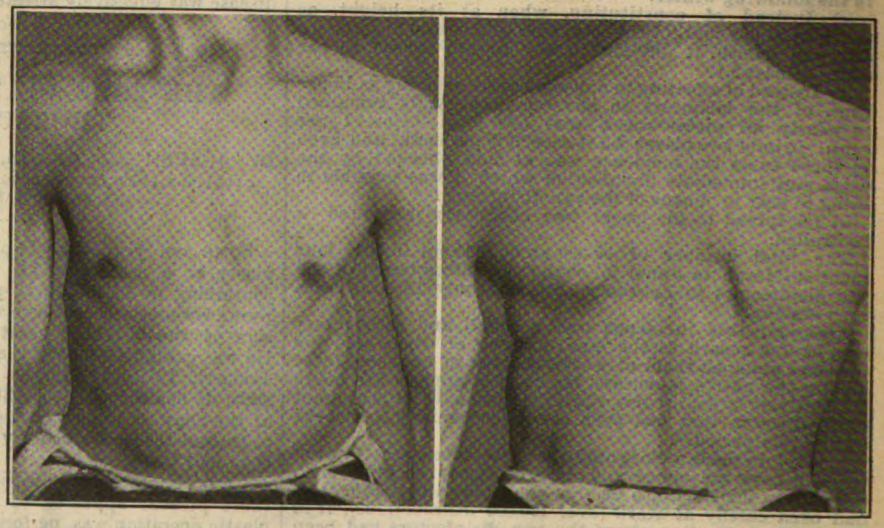
The notes of my case operated upon in 1908 are as follows:—

Patient, aged 21, a pale and thin man with marked respiratory distress, lying on his left side and perspiring freely. There was evidence of a total empyema on the left side; some tubular breath sounds were audible over the upper half of the lung, but they were absent over the lower half, and neither vocal fremitus nor resonance was conducted at all. There were no adventitious sounds. His respirations were 40 to the minute and the pulse-rate 120. The heart was displaced so far to the right that pulsation could be felt in the right axilla. Very shortly after admission the left side of the chest was aspirated, and seven pints of greenish-yellow, sweet-smelling pus were drawn off. Some few hours later two inches of the left seventh rib were resected just behind the mid-axillary line. Not less than three pints of pus escaped, some thickened fibrin was removed from the pleural cavity, and a drainage-tube just entering the pleura was fixed in the wound. From this pus the pneumococcus was grown in pure culture. The drainage of the empyema was satisfactory, taking into account the large size of the abscess cavity, and at the end of three weeks there was very little discharge. Four weeks after operation the heart was still displaced beyond the right border of the sternum, and there was very little evidence of function in the left lung. X ray examination revealed abnormal transparency of the left chest, with a thin strip of shadow, to the left of the median vertebral opacity, in which the collapsed lung lay.

At the request of the physician, Dr. T. D. Acland, I undertook a second operation to secure closure of the cavity and expansion of the lung. The patient was anæsthetised with chloroform and rolled over on to his right side. The left arm was pulled a short distance across the chest and a long incision, parallel to, and 1 inch behind, the vertebral border of the scapula, terminating in the original mid-axillary wound, was made down to the level of the ribs and intercostal muscles. This incision split the trapezius and the latissimus dorsi and the lower part of the rhomboideus major, leaving a large portion of them attached to the scapula. Portions of the sixth, seventh, eighth, and ninth ribs were then resected subperiosteally; 6 inches of the seventh and eighth being removed, 2½ inches of the ninth, and a smaller portion of the sixth rib. The intercostal muscles, periosteum of the ribs, and thickened parietal pleura were next cut away with scissors, and such vessels as bled were easily secured by underpinning with catgut sutures. There was very little loss of blood and the shock of this part of the operation, which is commonly supposed to be one of its dangers, was very slight. The resulting wound was an open trough, comprising the whole pleural cavity, with the shrunken lung at the bottom, lying close against the thoracic spine. The lung though shrunken was still expanding a little with inspiration and the visceral pleura was not greatly thickened.

The next step in the operation consisted in suturing the muscular flap attached to the scapula to the lower portion of the lung and the diaphragm, the visceral pleura being just thick enough to hold catgut stitches when lightly tied; the scapula was then pushed into the cavity so that it occupied approximately the place of the resected ribs, and the stumps of the trapezius and latissimus dorsi were freed from the overlying skin and sutured to the surface of the muscle attached to the vertebral border of the scapula. The object of this procedure was immediately to lessen the size of the pleural cavity and to secure for the lung a space, half the size of the original pleural cavity, which it might be able to fill when its expansion was aided by the movements of the left arm and the pull of the muscles passing from scapula to lung. The cavity was gently sponged out with saline, but it did not appear sufficiently clean to close without drainage; therefore, a large rubber tube was left in the wound, its upper end reaching to the bottom of the new pleural cavity and its lower end emerging through the skin incision at its lowest anterior limit. The rest of the skin incision was closed with interrupted salmon-gut stitches. If I had done this operation to-day I might have risked the infection and closed the wound completely (leaving a new-formed pleural cavity part of whose bony wall would be formed by the scapula, divided into the upper pneumothorax and a lower space occupied by muscle). There was a good deal of discharge for a few days and the patient complained of slight pain on respiration. His left arm, which was not anchored by the bandage, he declined to move to any extent as this caused considerable pain. In a few days the patient's condition was markedly improved and breath sounds were audible over the front of the left chest. A fortnight after the operation breath sounds could be well heard all over the front of the chest down to the level of the skin incision and at the back to within 1 inch of it; the heart had returned very nearly to its correct position, and a radiogram revealed a pulmonary shadow extending midway between the left sternal border and the outer chest wall; expansion of the lung could be seen on the fluorescent screen, but there was less than the normal amount of brightening of the lung on inspiration. The patient soon began to look fat and well

FIG. 1.



Condition 18 months after operation.

and the amount of discharge steadily diminished. After five weeks in bed he was allowed to get up and he walked about the ward without any respiratory distress. The wound finally healed ten weeks from the time of operation and has never given any trouble since.

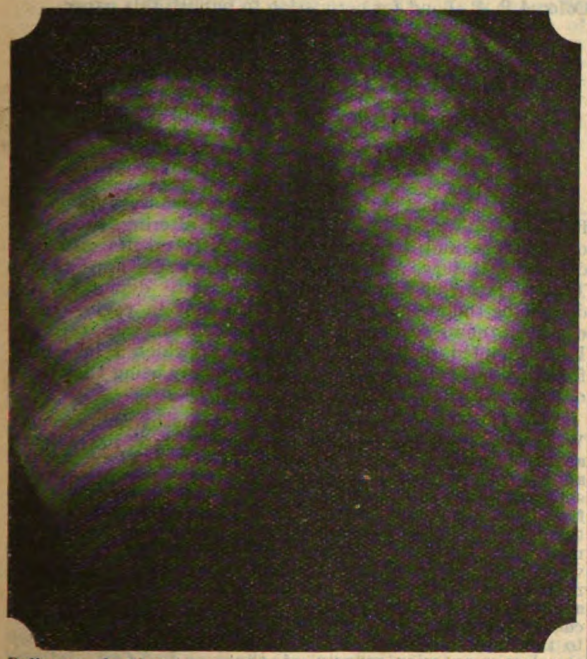
Subsequent Condition.

The condition 18 months after operation was as follows, the absence of any marked deformity of the chest being well shown in Fig. 1. There is some flattening of the left side of the chest and slight deviation of the dorsal spine with convexity of sixth to twelfth dorsal vertebræ to the left, presumably due to the pull of the scapula. The movements of the arm are perfectly free. The left chest is resonant from the apex to the site of the scar; breath sounds are normal in front as far down as the scar, and posteriorly down to 1 inch below this level; irregular breath

sounds can be heard as low as the eighth rib in front and a little way below the scar at the back. Vocal resonance and fremitus are both present. There is fair visible expansion of the upper part of the left chest on inspiration. No adventitious sounds. Skiagraphy shows equal movement of the diaphragm on both sides, but the left cupola is a little higher than the right. The right lung is seen from apex to upper border of the eleventh rib, the left lung from apex to upper border of ninth rib.

Examination on April 25th, 1918, revealed the same physical signs except that the right side of the chest was more developed, and therefore the relative sizes of the two sides of the chest showed to the disadvantage of the side which had been operated on. Auscultation and percussion gave the same results as in 1909, and the heart was in its

FIG. 2.



Radiogram showing the area of functional lung, the elevation of the left cupola of the diaphragm, and the slight deviation of the spine with convexity to the left. Taken ten years after the operation.

normal position. The patient was up to his normal weight, and the only inconvenience was dyspnœa on exertion, and for this reason he had very properly been rejected by the recruiting board. X ray examination showed a bright lung equivalent to rather more than half that present on the right side. The left cupola of the diaphragm was the higher, and it rose obliquely towards the outer chest wall.

Fig. 2 is a radiogram of the chest taken ten years after operation, which shows a large proportion of active lung on the affected side and practically no deformity of the chest.

The recent case which I have operated upon on similar lines unfortunately died suddenly of endocarditis, but the post-mortem examination afforded an opportunity of ascertaining that this operative procedure had secured firm adhesions between the scapular muscles and the lower part of the lung and diaphragm; the lung itself was considerably more expanded than it had been at the time of operation.

A careful review of the literature of thoracoplasty reveals the fact that the scapula is usually regarded as an obstruction, and a partial resection of it is recommended by some authorities. In my view, however, the bone of the scapular body may be utilised to take the place of resected ribs, and its muscles may be of value in securing mobilisation of the lung and raising of the diaphragm, both essential factors in healing of these cases.

Devonshire-place, W.

HOSPITAL SUNDAY FUND AT BRISTOL.—£4166 have been raised in Bristol as the result of the Hospital Sunday collections; this amount exceeds all former records by more than £1000.

Mr. J. Wickett, of Redruth, Cornwall, has given 1000 guineas to the funds of the West Cornwall Miners' and Women's Hospital.

GUNSHOT WOUNDS OF THE KNEE-JOINT WITH SEPTIC ARTHRITIS.

BY ARTHUR NEVE, F.R.C.S. EDIN.,
MAJOR, R.A.M.C.; SURGICAL DIVISIONAL OFFICER, WAR HOSPITAL, DARTFORD.

NO further evidence is now required that most knee-joints which have been perforated by bullets or severely wounded by shell fragments, with injuries of the bones, may be saved by timely measures. Much credit is due to the overseas surgeons who have worked out the various methods and the careful technique by which this is achieved.

Our concern in this country is not with such cases, which only need rest and massage to complete the cure, but with the critical and threatening cases arriving in convoys, it may be from 7 to 14 days after being wounded, in which signs of infective arthritis are already well marked.. It is such cases which tax the judgment of the surgeon as to the compatibility of conservation of the limb with safety to life.

The articles[1] by Sir George Makins, Colonel Barling, and other surgeons now with the B.E.F. in France show that the importance of the subject has been recognised, and also that the infective cases with septic arthritis, especially when associated with bony damage, stand in a separate category of infinitely greater impending danger than the others. The figures point to the gravity of the infected cases, which are not totalled separately. On a total of 845 cases of knee-joints of all kinds operated upon, of which a large majority may well have been free from septic arthritis, the amputations were 19 per cent. and the deaths 8·5 per cent. Max Page on a total of 70 cases gives 25 as infected, amputations 10, deaths 5 = 20 per cent. mortality. Rankin gives 29 cases of excision with 8 deaths, but of these 3 were due to other complications; 3 others were finally amputated. These and other figures emphasise the seriousness of the condition when once sepsis develops.

The more recent convoys from France received at Dartford have shown many encouraging results from early operation in France, with excision of the wound, removal of foreign bodies, thorough cleansing of the joint, and primary suture. At the time of writing there are 10 healed cases in this hospital, not one suppurating and not one amputated for arthritis. A year ago similar injuries would have arrived here in a highly septic condition. We never amputate septic knees speedily after admission. If the man was passed by the surgeons abroad as fit for the journey and not requiring immediate amputation we may so far endorse their opinion as to carry on conservative treatment until he has got over any special exacerbation due to the transit.

Drainage.

Of late much has been written about the difficulties of drainage of the knee-joint, with all its bursæ and pouches. Some of us had been working at these problems long before the war.

The kernel of the question is how to obtain adequate *posterior* drainage, for the back of the joint is swathed in ligamentous and muscular structures, with interstitial bursæ and tendon sheaths, and in close contact with the posterior ligament is the popliteal artery. Obviously, any drainage-tube behind the crucial ligament would risk hæmorrhage. But postero-lateral incisions on both sides should be made to the synovial pouches behind the condyles by the method of Labey adopted by Campbell and Gill.[2] This is much simpler than Payr's method.

Anterior drainage is comparatively easy. The simplest way is to make an incision 1 inch long into the suprapatellar pouch on the side nearest to the surgeon, push curved forceps through to the other side, cut down on the points, and with them grasp a medium-sized drainage-tube, which is thus drawn through. Then the same procedure on either side of the ligamentum patellæ. This usually needs to be combined with posterior drainage. The excellent suggestion has been made that a patient should be placed and kept face downwards, with dependent drainage through an anterior wound and tubes, but this is only a temporary expedient.

[1] Makins: Brit. Med. Jour., 1917, i., 799. Barling, Gray, Rankin, Ogilvie, and Max Page: Ibid., 1917, ii., 277, 288. J. Campbell and H. F. Woolfenden: THE LANCET, 1917, ii., 185. T. S. Novis: THE LANCET, 1917, ii., 12. E. Garside Dixon: THE LANCET, 1918, i., 404.

[2] Brit. Med. Jour., 1917, i., 798.

Transverse incision.—To obviate the need for multiple incisions, especially the posterior ones, some surgeons practised long transverse anterior incisions; and Peck further recommended putting up the knee at an acute angle, with the anterior flap everted and the joint widely open. In 1915 I saw some such cases at Brighton, and in 1916 five of the worst cases here were treated by Peck's method. In our experience this is very unsatisfactory. In spite of the widely open joint, treated by continuous or intermittent irrigation, pus tracked behind the joint, the discharges were profuse and dressings very painful. All these cases and those seen at Brighton came to amputation. In two cases the tibia and fibula had become subluxated backwards and upwards. During 1915 I saw some other cases with what might be called *fancy* incisions—such as one 9 inches in length splitting the patella and another with four huge vertical incisions down the front and sides.

Fullerton has advocated early *partial excision with separation of the bones* and free lateral drainage. Our experience of this has not been favourable; one case required amputation, and another died from pulmonary abscess secondary to a bed sore. Theoretically, when carried out in conjunction with the Carrel method it sounds promising.

It should be noted that our cases here present themselves too late for *early* excision, but only in what Sir George Makins calls the *intermediate* period. With regard to this he says:—

"It can only be undertaken with the definite intention of following it at once by an amputation if the procedure is followed by local extension of infection and signs of systemic absorption. It has, however, proved that excision may be a successful alternative when the severity of the general and local signs seems to indicate amputation as the only resource."

When performed for infective arthritis without extensive bone damage, excision of the limited type advocated by Fullerton may be regarded as a method of insuring thorough drainage, as well as obtaining a clean surface by removal of comminuted bone. In many cases some form of irrigation seems valuable.

In 1915 many of us were using normal saline, or weak iodine, or permanganate solutions. Then came Dakin's hypochlorite. Continuous irrigation certainly saved some limbs, but we could not fail to see that the solutions too often poured along the gutters without flushing the whole road, that they ran out through the tubes, or trickled over the surface without reaching the pockets or all the joint pouches.

That is where Carrel's technique is valuable, instilling the antiseptic into every recess; but Carrel is not himself very optimistic about the method as applied to developed sepsis of the knee. In our hospital it certainly appeared to save three joints. But it should also be noted that the Carrel method is not easily carried out in conjunction with that thorough dependent drainage which is a cardinal principle of knee surgery. Of late flavine irrigations have been similarly used.

Statistics.

During the two years covered by this report, 1916 and 1917:—

1.	Total knee-joint cases treated (not including some in which the joint was secondarily affected)	86
2.	Acute septic arthritis	31
3.	,, ,, ,, with bony injury	15
4.	,, ,, ,, without bony injury	16
5.	,, ,, ,, treated by Peck's method	5
6.	,, ,, ,, amputated after ditto	5
7.	,, ,, ,, treated by free incisions and drainage	26
8.	,, ,, ,, amputated after ,, ,,	10
9.	Total amputations (= 17·3 per cent. of total cases, 48·3 per cent. of septic cases)...	15
10.	Mortality (= 12·9 per cent. of total septic cases)	4
	,, after amputation (= 13·3 per cent. of amputations)	2
	,, without ,, ...	2

Cause of death.—Toxæmia, 1; abscess lung, 1; phthisis, 1; tetanus, 1. Early amputation would probably have saved three of these cases.

The knee-joint figures for 1918 up to September show a great improvement on the above.

Summary.

1. In the earliest stage of infective traumatic arthritis an attempt should be made by tapping and distending the joint with some antiseptic, such as flavine or iodoform emulsion, to abort the sepsis. This is being successfully done in France. Good fixation of the limb is essential.

2. When sepsis is established *thorough* drainage is essential; anterior lateral incisions do not suffice; the Peck method is not successful. Suprapatellar, antero-lateral, and postero-lateral incisions should be used in combination.

3. If there is bone damage excision is desirable in most cases, and the bone surfaces may be kept apart.

4. Carrel's method offers the only effective way of introducing an antiseptic fluid into the recesses of the injured joint.

5. With other methods burrowing of pus very frequently occurs, with abscesses tracking up and down the limb and septic absorption; and amputation is apt to be performed too late, when the vital powers have succumbed to the prolonged strain and sepsis has become generalised with a perhaps fatal result.

My acknowledgments are due to the various surgeons associated with me in this hospital, and to Lieutenant-Colonel R. P. Bond for permission to publish this paper.

THREE PLASTIC FACIAL OPERATIONS.

BY R. LAKE, F.R.C.S. ENG.,
SURGEON, ROYAL EAR HOSPITAL, ETC.

DURING the last decade there have been very numerous improvements in plastic operations for altering the shape of the nose and repairing the unsightly results either of disease or injury, and last year a long paper appeared in THE LANCET by Captain Seccombe Hett[1] depicting and describing the methods that are at present in vogue (many of them new) for repairing the effects of war injuries. I am tempted to report three cases in which I have performed plastic operations, one of them only being the result of injury.

CASE 1.—A young man, brought to me by Dr. Thomas Wingrave, was desirous of having his nose so altered as to render his race less obvious. The method adopted is depicted in Fig. 1, and was commenced by separating the ala nasi on one side from the cheek, the incision going through the fold between the ala nasi and the face. The ala nasi was then retracted and the mucous membrane of the septum divided by a curvilinear incision, with the concavity forwards, commencing close to the nasal bone and ending just at the lower anterior margin of the cartilaginous septum. The muco-perichondrium was reflected in both directions, and a strip of cartilage, semicircular in shape and about 3/16 inch in width and the whole length of the incision, was removed. The anterior portion of the nose was then pushed upwards until the two cut surfaces of the cartilage came in contact; it was rotated on itself in an upward direction until the inferior aspect of the nose was at right angles with the upper lip. The cut surfaces of the mucous membrane were joined with a few catgut sutures and the ala nasi sewn in place, and two thin rubber splints inserted just to hold the nose in position during healing. The result was extremely good and quite satisfied the requirements of the patient.

FIG. 1.

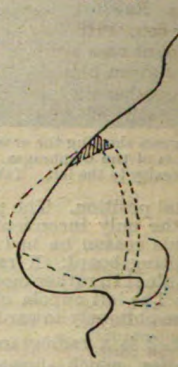
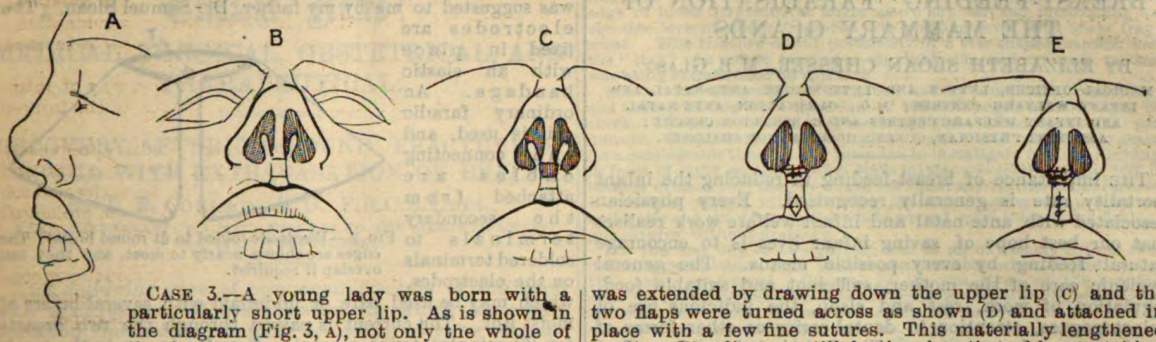


FIG. 2.

CASE 2.—An officer in the R.A.F., as the result of an accident, had a large depression in the cartilaginous portion of his nose and a gravely deflected septum. (Fig. 2.) The latter I removed by a submucous resection, taking a strip of the cartilage about 1/16 inch square. By means of a long angular knife a bed was made in the subcutaneous tissues in the depressed part of his nose, and the strip of cartilage was slipped in. As, however, this strip was not quite sufficient a second was inserted at a later date, having been taken from the nose of a brother officer who had an ordinary submucous resection performed. This practically restored the nose to its original shape.

[1] THE LANCET, 1917, ii., 892.

FIG. 3.



CASE 3.—A young lady was born with a particularly short upper lip. As is shown in the diagram (Fig. 3, A), not only the whole of the teeth but a large portion of the gum were visible. The various stages of the operation are shown in the figures. The first stage was to make two transverse incisions across the centre of the upper lip, one just at the base of the nose and the other about midway between the lip and base of the nose. Next, two skin flaps were dissected out on either side from the surface of the septum, just within the vestibules of the nose. These are shown dissected out (B). The upper incision was extended by drawing down the upper lip (C) and the two flaps were turned across as shown (D) and attached in place with a few fine sutures. This materially lengthened the lip. The lip was still further lengthened by stretching the lower incision (D) and turning it from being a transverse into a vertical one, and sewing the edges together with a few fine sutures (E). The eventual result was extremely good, the whole of the gum and nearly the whole of the teeth being covered by the upper lip. No scar was visible at all, and the appearance was materially improved.

Cavendish-place, W.

A NOTE ON

THE TREATMENT OF MALARIA BY DISODO-LUARGOL.

BY W. A. MURRAY, M.B., C.M., D.T.M. & H.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS;
AND
R. W. HAROLD ROW, B.Sc., F.L.S.,
PROTOZOOLOGIST TO THE MALARIA DEPARTMENT, 4TH LONDON GENERAL HOSPITAL.

A PAPER on the successful treatment of two cases of malaria by disodo-luargol, by Dr. Louisa Hamilton and Dr. Morna Rawlins, having appeared in THE LANCET of April 6th, 1918, we thought it our duty to try the same treatment on a series of cases in this department, with the results given below.

Altogether six cases have been selected for this investigation, each of which was positive on admission to the hospital—i.e., had asexual parasites in the peripheral blood. The treatment in all cases precisely followed the method described in the above-mentioned paper, save that in two cases it was not possible to carry it through to the end. Blood examinations were made daily in all cases.

Notes of Cases.

CASE 1.—Contracted malaria in G.E.A. in October, 1916; had many relapses from time to time, but was not in hospital. Admitted here 24/7/18 with a temperature of 104° F. and *P. vivax* present in large numbers. The first two doses of disodo-luargol had no effect on either the temperature or the parasites. Unfortunately, after ten days' treatment the patient developed measles, the disodo-luargol course was abandoned, quinine given, and the case was transferred to the M.A.B. hospital at Tooting.

CASE 2.—Contracted malaria in Salonika in September, 1916, had many relapses, and was invalided home. Admitted to this hospital 22/5/18, with temperature 101°, enlarged spleen, and *P. vivax* in fair numbers in the blood. After the first injection the temperature dropped to normal and the asexual parasites disappeared from the peripheral blood. This continued until the seventeenth day, when he had had four injections (the last on the twelfth day), and then the temperature shot up to 105°, though no asexual parasites were found in the blood. An attack of pneumonia followed, and the last three injections of disodo-luargol were not given. He recovered normally, and no further attacks of malaria have as yet occurred. It should be noted, however, that after recovery from pneumonia he was given quinine hydrochloride gr. x daily.

CASE 3.—Contracted malaria in Salonika in August, 1916, and invalided home after many relapses at the beginning of 1918. Admitted here 8/5/18 with a temperature of 104°, a much enlarged spleen, and *P. vivax* present in the peripheral blood. The temperature continued to show a regular, though slight, tertian rise until three days after the third injection, after which it remained normal or subnormal for a week, and did not rise above 99° during the rest of the course. Asexual forms of *P. vivax* remained in the blood until the day after the fourth injection, while three days later *P. falciparum*, both "rings" and "crescents," appeared, though unaccompanied by a rise of temperature, and the crescents remained until some time after the end of the treatment. Eleven days after the completion of the disodo-luargol course *P. vivax* reappeared, and two days later there occurred a frank relapse with a temperature of 104·2°. He was then put on to full doses of quinine and quickly recovered, but was invalided out of the Service for other reasons.

CASE 4.—Contracted malaria in G.E.A. in March, 1917, had several relapses, and returned to England in March, 1918. Admitted here 17/6/18 with temperature 99·8°, anæmia, and enlarged spleen. *P. vivax* present in large numbers. The temperature became normal two days after the first injection, but asexual parasites remained until the second day after the third injection (i.e., for ten days after the commencement of treatment). Asexual parasites reappeared the day after the last injection; the patient's general condition, however, was much improved, and there has been no clinical relapse to date.

CASE 5.—Contracted malaria in Salonika in April, 1917, had many relapses, and was invalided home in May, 1918. He was admitted here 25/6/18 with normal temperature, much enlarged spleen, and enlarged liver. *P. vivax* was present in the blood. One day after the second injection of disodo-luargol his temperature went up to 101° and the asexual parasites, which had never disappeared, showed a distinct increase in numbers. The temperature became normal two days after the third injection, but the parasites have persisted throughout the course, and since.

CASE 6.—Contracted malaria in Salonika, in September, 1916, and was invalided home after many relapses on 24/5/18. He was admitted to this hospital 24/6/18 with a temperature of 100°, spleen much enlarged, and *P. vivax* present in the blood. His temperature has not risen above 99° since the first injection of disodo-luargol, but the asexual parasites remained until four days after the third injection, and reappeared four days after the termination of the course.

Results.

Of the above six cases we have thus been able to carry out the complete treatment in four, with the following results. In one case a clinical and parasitic relapse occurred 11 days after the end of the treatment; in one case the asexual parasites have never disappeared; in the other two cases, although the parasites disappeared, in each case they have reappeared—in one immediately, in one four days after the last injection. Consequently, there is no case in the four in which the disodo-luargol can be considered to have been even temporarily successful, for the presence of asexual parasites in the blood means that a clinical relapse must be regarded as only a question of time. Further, the comparatively long time taken for the asexual parasites to disappear from the blood (16, 10, and 12 days, respectively, in Cases 3, 4, and 6, and not at all in Case 5) does not lead one to anticipate that disodo-luargol is likely to be so effective in the treatment of malaria as quinine, which normally achieves this same result in four days.

There is also a technical point to be mentioned in connexion with the use of this drug. The solution being almost black, it is difficult to be certain that the needle is in the vein, as the back flow of blood cannot be seen, and if the fluid be injected into the surrounding tissues, as happened to us on one occasion, considerable irritation is caused.

In addition to the six cases described above, we have had under observation in this hospital five patients who had partial courses of disodo-luargol at another hospital, and four of these cases have had relapses, both clinical and parasitic, while here.

To summarise our results, we think we have shown that disodo-luargol is no specific for malaria, and in our opinion there are several reasons, both clinical and technical, to render it far less suitable for use than quinine.

In conclusion, we wish to express our thanks to Colonel Sir Ronald Ross, consultant in malaria, and to Lieutenant-Colonel Sir Nestor Tirard, O.C. 4th London General Hospital, for permission to publish these notes.

BREAST-FEEDING: FARADISATION OF THE MAMMARY GLANDS.

BY ELIZABETH SLOAN CHESSER, M.B. GLASG.,

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THE importance of breast-feeding in reducing the infant mortality rate is generally recognised. Every physician associated with ante-natal and infant welfare work realises that our best hope of saving infant lives is to encourage natural feeding by every possible means. The general hygienic care of the mother, sufficient and suitable food, regulation of work, rest and sleep, the judicious use of galactogogues, attention to dental caries or other forms of sepsis, are each important. The baby's habits also affect the supply of milk. If the infant is allowed to take the breast night and day at irregular intervals the supply of milk is at once jeopardised. There are women, of course, of the perfect nursing type, whose milk seems unaffected by insufficient diet, hard work, even excess of alcohol. The average woman, however, is very largely influenced by physical and psychical causes, and many hundreds of women complain that the "milk goes" in spite of faithfully carrying out the doctor's orders. These are the cases which call for some special treatment, and it was in considering the "failures" amongst my nursing mothers that I conceived the idea of trying electrical stimulation of the mammary glands.

Description of Method.

As a general routine, every nursing mother at my infant centres is advised with regard to diet, her teeth are attended to, and she is recommended to lie down for 1½–2 hours every afternoon when the baby is asleep. This, of course, cannot be managed in all homes, but by insisting on its importance and by advising the mother as to the regulation of her duties, &c., it can be carried out in the majority of cases. The baby is put to the breast every three hours for the first three months of life—viz., at 6 A.M., 9, 12, 3 P.M., 6, and 10, and every four hours from four months old. No night feed is permitted unless in special circumstances. If the baby's gain is not satisfactory a test meal is given according to the usual practice.

Immediately before a feed is due the baby is weighed naked, except for a napkin in case of bladder or bowels acting during the test. He is then given one breast for 12 minutes and weighed again; put to the second breast for

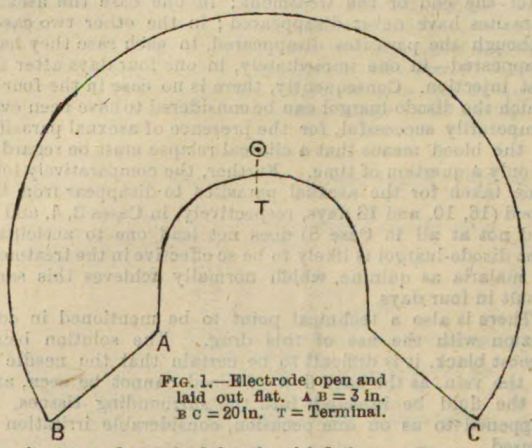


FIG. 1.—Electrode open and laid out flat. A B = 3 in. B C = 20 in. T = Terminal.

12 minutes and weighed for the third time. The amount of milk taken from both breasts is easily estimated. If the milk is insufficient, such a galactagogue as lactagol is ordered, and the mother may be advised to take extra proteid or fat, or both.

If after two or three weeks the infant's gain in weight is still unsatisfactory, my practice now is to stop galactagogues and apply faradisation. This is undertaken at Leyton Town Hall, where our average weekly attendance of mothers is 40–50, and I also send suitable cases from Leytonstone to the Town Hall for treatment.

I use two hollow cone-shaped flexible zinc electrodes. The circular bases fit round the breasts, and they can be adapted evenly to the surface of the glands. This form of electrode was suggested to me by my father, Dr. Samuel Sloan. The electrodes are fixed in place with an elastic bandage. An ordinary faradic coil is used, and the connecting cables are attached from the secondary terminals to soldered terminals on the electrodes, which may be used bare or underlaid with several layers of moist lint. The current is passed through the two breasts for 20 minutes twice a week. I prefer to apply the treatment three times a week if it can be arranged.

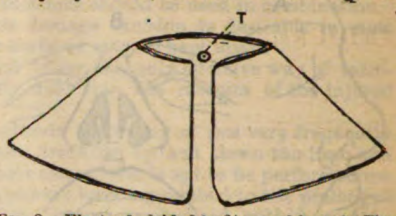


FIG. 2.—Electrode folded to fit round breast. The edges are shown nearly to meet, and they can overlap if required.

The patient feels a gentle tingling, there is no discomfort or pain, and the only inconvenience consists in having to strip to the waist so that the electrodes may be properly applied.

Results.

The results of the treatment have surpassed my expectations. I give below a few typical cases taken from the first series of 12 cases which have had faradic treatment:—

CASE 1.—A poorly nourished infant of 5 weeks suffering from constipation and vomiting after meals; weight 8 lb. ¼ oz. Breast-fed every 2½ hours. Breasts well developed; right nipple very small (a nipple shield was ordered). Physical examination negative. Instructions were given with regard to suckling, and the mother was cautioned against allowing the baby to have the milk too fast. The child was to be fed every three hours and no night feed allowed. Test feed; 2¼ oz. was the total obtained from both breasts. In four weeks the child had gained an average of only 1 oz. per week. Electric treatment twice a week was then ordered and this was continued for five weeks. The average weekly gain became 4 oz. per week, and the two weeks following the cessation of electric treatment the gain was 5 oz. per week. The mother declared that after two or three treatments she felt stronger, "the milk flowed into the breasts and poured away." The baby became contented, the vomiting ceased, and constipation diminished.

CASE 2.—Child of 4½ months; weight 12 lb. 7 oz.; had not been thriving. At the second attendance the following week, the child weighed 12 lbs. 4½ oz.—a loss of 2½ oz in spite of the usual instructions. Test feed demonstrated that the child was having only 2 oz. of milk from the mother. Breasts flabby, no sensation of fullness at feeding time. Electric treatment was therefore ordered twice weekly. In two months the child gained an average of 4 oz. per week. Baby contented and thriving, formerly cried continually. After two treatments the mother said she felt the breasts fuller, and this improvement continued and was maintained after cessation of treatment.

CASE 3.—Child of 5 months; 12 lb. 3 oz. Before electric treatment was started it was only possible to draw off a tablespoonful of milk at feeding time. Baby was having two bottles of 6 oz. daily to supplement breast-feeding. After four weeks of electrical treatment baby required only 3 oz. of humanised milk once daily in addition to breast. Average gain 4¾ oz. per week.

CASE 4.—Child of 3 months; 9 lb. 13½ oz.; poorly nourished, not gaining. After two electric treatments the mother said: "The milk now runs in when I nurse baby, and did not do so before." After nine electric treatments: "Baby quite satisfied, ample milk." Average gain 3¾ oz. weekly, in spite of the fact that the child had an attack of bronchitis during treatment.

Of a first series of 12 consecutive cases, 2 must be eliminated, as they were only able to attend for electric treatment twice. Of the remainder, 5 had from 8–10 treatments, 5 were sufficiently improved in from four to seven treatments. In every case the child improved in health and an average gain in weight of 3½ to 5 oz. a week was maintained. In 6 cases the average gain in weight prior to beginning electric treatment was 1½ to 2 oz. a week; in 4 cases the treatment was started at the first or second attendance of the child at the clinic, as the test meal showed that the infant was having less than half the required amount of milk from the breasts and the case seemed urgent.

I had intended to send a specimen of mother's milk in every case to a laboratory for analysis before and after treatment, but in most cases only a teaspoonful to a tablespoonful of milk could be extracted from the breasts which, when sent to the laboratory, was found to be useless for any complete examination. In giving faradic treatment it may be necessary for a couple of weeks to supplement the mother's milk by cow's milk or artificial food. This interferes with the experimental part of the work, but it is interesting to find that with several treatments the milk is so improved in quantity and quality that extra feeding can gradually be reduced and given up entirely.

I have to thank Major J. F. Taylor, medical officer of health of Leyton, for allowing one of his health visitors, Nurse Dodds, to carry out the bi-weekly treatments under my directions.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

RECOVERY AFTER COMPOUND FRACTURE OF SKULL WITH EXTRAVASATION OF BRAIN.

BY T. E. COULSON, M.D., F.R.C.S.EDIN.,
TEMP. LIEUTENANT, R.A.M.C.; SURGEON TO THE MERTHYR GUEST HOSPITAL, TEMPLECOMBE.

THE following case of compound fracture of the skull with extravasation of brain matter, in which immediate operation resulted in complete recovery, may be of some interest:—

On June 13th, 1918, a boy, aged 9, was riding in a wagon in a hay-field with two girls, when the horse "bolted." One of the girls jumped out over the side of the wagon, the wheel went over her leg, and she sustained a compound fracture-dislocation of the ankle-joint. The other girl became frightened, seized the child and threw him out of the wagon over the side, both wheels going over his head. She herself then climbed out over the back and escaped unhurt.

Photograph of patient on June 26th, 13 days after operation.

This happened at about 4 P.M., and the boy was admitted to the Merthyr Guest Hospital at 4.30. When I saw him at 4.45 he was semi-conscious, vomiting almost continuously, blood and cerebro-spinal fluid coming freely from both ears. There were two wounds, each about the size of a threepenny-piece, on right side of head, one about 2 inches above right ear and the other about halfway between right ear and right eye; from the former of these brain matter was oozing in considerable quantity. There was a linear depressed fracture on both sides of head running from before backwards. Temperature subnormal; pulse 90 per min.; pupils dilated and equal; no paralysis of face or limbs.

I operated at 5 P.M. After shaving the head and painting it with chloroformum iodi an incision was made from a point 1½ in. behind right ear vertically upwards for 3 in., then directly forwards for 5½ in. to a point 1½ in. above centre of right eyebrow. This curved incision ran ½ in. above line of depressed fracture on this side. At posterior end this fracture was star-shaped, one "limb" of star pointing downwards in front of right ear (from this brain matter was oozing), one pointing behind right ear, one upwards and backwards, and the main fracture forwards to the point 1½ in. above centre of right eyebrow. The centre or "body" of the star was missing altogether, but was eventually found beneath the parietal bone, between it and the dura. It was withdrawn and discarded.

Attention was now turned to the main depressed fracture on this side. The lower fragment was depressed beneath the upper, so that the latter overhung the former by about ¼ inch. I therefore cut away with bone forceps a wedge-shaped piece of upper fragment about its centre and, introducing an elevator, lifted up lower fragment on a level with upper. There followed a good deal of hæmorrhage, which, however, ceased in a short time. The fracture on left side extended from the point 1½ in. above centre of right eyebrow, where fracture on right side ended, backwards to the left to a point 3½ in. above left ear, and then directly backwards for 1½ in. I made an incision about ½ in. below line of this fracture. The illustration shows line of incision on this side.

On the left side upper fragment was depressed beneath lower fragment to extent of about ¼ in. I applied a ¾ in. trephine to edge of lower fragment at angle above left ear, and introducing an elevator levered upper fragment into position level with lower fragment. This fracture ended posteriorly in a star-shaped manner, but the "star" was not so marked as on right side, and no brain matter was being extravasated on this side.

The various manipulations described had by now taken some time, and the boy having lost a good deal of blood he began to show signs of shock. The pulse became very weak and fast; it had risen to 130 per minute. Respirations became "catchy," and would occasionally cease for a considerable time. I had intended to investigate fracture running in front of right ear from which brain matter was coming away, but it became evident that the boy would not stand any further procedure, so I contented myself with swabbing the brain matter away with an antiseptic and stitching up the whole wound with interrupted fishing-gut sutures, without drainage.

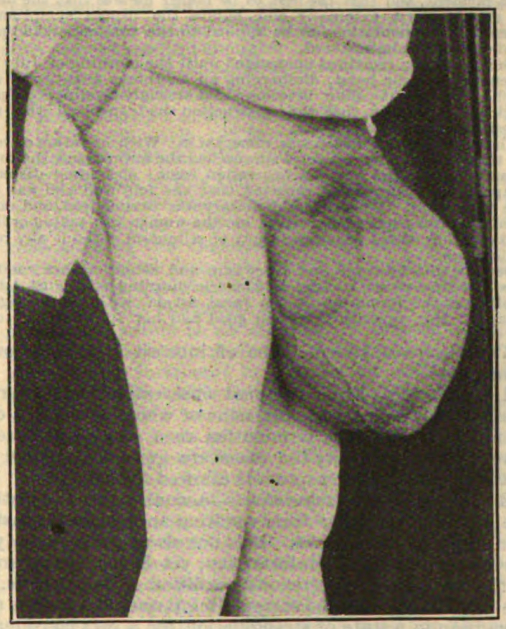
For the first day or two patient was in an extremely critical condition, semiconscious, very violent and irritable when roused; pulse 120; temp. subnormal. Calomel gr. iii. was given on the evening after the operation and after this had acted on the following evening he became much quieter and more rational. On June 16th he was able to answer questions rationally, took his food well, and began to have control over bladder and rectum. The stitches were removed on June 22nd and all bandages taken off on the 26th. On June 23rd, 24th and 25th there was very slight watery blood-stained discharge from both ears and a very slight amount of epistaxis on June 25th.

The boy is now up and about and appears perfectly normal in all respects with the exception of slight deafness in left ear.

RADICAL CURE OF A VERY LARGE INGUINAL HERNIA.

BY C. P. G. WAKELEY, M.R.C.S. ENG., L.R.C.P. LOND.,
TEMPORARY SURGEON, R.N., H.M. HOSPITAL SHIP "GARTH CASTLE."

Dr. J. A. Browne's case of large inguinal hernia,[1] which was reported in a recent number of THE LANCET, aroused my interest because I had a very similar case under my care several years ago, when I was house surgeon to Mr. Albert Carless at King's College Hospital. The enormous size of the hernia can be seen from the photograph; it was a left oblique inguinal hernia and descended to the patient's knees, causing great inconvenience in walking. The patient, aged 50, was a very tall man. He stated that he had noticed the rupture for over 10 years. The hernia could be reduced with difficulty, but could not possibly be controlled by any form of truss or bandage. The penis was completely hidden,



and could only be located at the bottom of a small depression at the upper part of the swelling. Micturition was difficult at times. The opening of the canal admitted four fingers easily. The patient was kept on his back with the foot of the bed raised for two weeks previous to the operation. A radical cure was performed; the left testicle, which

[1] THE LANCET, 1918, ii., p. 106.

had atrophied considerably, was excised and the inguinal canal completely closed. A large portion of the skin of the scrotum was removed. Quite 12 feet of small intestine were found in the hernial sac, together with most of the pelvic colon. The hernial sac was completely excised and the wound healed by first intention. I saw this man a year after the operation, and he stated that the result was excellent and that he had experienced no trouble at all. It seems to me that with a hernia of such a size and duration the best form of treatment is to excise the testicle, which is often functionless, and completely to close the inguinal canal.

A CASE OF

STRANGULATED INGUINAL HERNIA WITH EXTERNAL RUPTURE OF THE SAC.

BY HAROLD F. RENTON, M.D., B.S.LOND., M.R.C.S., L.R.C.P.

ALTHOUGH it is usually taught that a hernia of the bowel presenting through one of the common abdominal orifices and in a strangulated condition may rupture and discharge its contents externally, yet no such condition had come before my notice until I was called upon to treat the following case.

On July 19th, 1917, I was asked to see a lady in the country with a severe attack of vomiting which nothing relieved. On entering the room I smelt a strong fæculent odour. The patient, aged 50, was in bed propped up with pillows; breathing short and painful. The face was drawn and anxious, pupils dilated, tongue dry and coated with brown fur. At intervals she was seized with a violent attack of vomiting; vomited matter brownish fluid and typically fæcal. Pulse rapid and almost impalpable; temperature subnormal. The abdomen was very distended and tympanitic; marked peristalsis, localised to umbilical area and typically "ladder" in character, indicating the obstruction was involving small intestine. In right inguinal region was a large swelling, black in colour, from which came the powerful fæculent odour. The swelling, surrounded by an area of inflammation, was tympanitic to light percussion.

A diagnosis of strangulated inguinal hernia was made, and it was clear that the hernial contents were gangrenous. It was elicited that the rupture had been present four years; it had not given rise to any pain or discomfort until onset of present acute attack some four weeks previous to my visit, when she was seized with acute pain in the swelling. Absolute constipation followed, as well as persistent vomiting, which had existed during the whole of the four weeks.

It was obvious that patient was too ill to undergo any operation at that moment, and that the best to be hoped for was that the hernial sac should burst externally and relieve the urgent symptoms. I ordered hot fomentations to be applied to the tumour, and a limited fluid diet to be administered.

The condition remained unchanged until the morning of July 23rd, when the tumour burst, discharging an enormous quantity of semi-fluid fæces, bright yellow in colour and strongly alkaline. Thus the original observation that the obstruction had involved the small intestine was supported.

The prompt amelioration was remarkable. With cessation of vomiting the pulse and temperature approached the normal and the tongue became clean. The anxious expression went; abdominal distension disappeared. The patient reported that she felt well and was quite free from pain. A liberal fluid dietary was commenced, and on the third day after rupture of hernial sac the woman was taking ordinary food together with a generous supply of stimulant without any return of sickness.

Despite this, however, and every care and attention, her condition slowly became worse, and she died on the morning of August 1st, one week after the formation of the fæcal fistula, with all the signs of collapse. Her appetite remained good and her spirits bright up to the end.

This case would seem to be of interest for the following reasons:—

1. *Its rarity.*—From personal observation, and after discussion with medical friends, none of whom had seen a case, I conclude that such a termination to a strangulated hernia is very rare. Probably the cases are generally handed over to the surgeon before rupture is allowed to take place.

2. *Duration of strangulation.*—According to the patient, she had been suffering from vomiting and absolute constipation for some four weeks. It is not always wise to rely too much upon a patient's information, yet from the appearance of the hernia, the gangrenous condition of its contents, and the inflammation of the surrounding tissues the bowels must have been in a state of strangulation for a very considerable period. Remembering how rapidly collapse and death supervene in a case of unrelieved intestinal obstruction, the long duration of the woman's suffering becomes all the more remarkable.

3. *Cause of death.*—It had been hoped that after rupture of the hernial sac, and with relief of the acute symptoms, the woman's condition might have improved sufficiently to enable her to undergo an operation for closure of the fæcal fistula, but despite a generous dietary and free stimulation she steadily lost ground. The colour of the fæces and their strongly alkaline character showed that the portion of small bowel involved in the hernia was at a very high level. It seems clear that death was due to the cutting off of an enormous portion of the absorptive area of the intestinal tract. But for this fact no doubt is entertained that the woman's life could have been saved.

It will naturally be asked why I did not at once open the hernial sac, and some doubt may be expressed as to the possibility of any patient living so long with obstruction at such a high level in the bowel. As a result of my first examination I came to the conclusion that the woman would only last a few hours and that no treatment could postpone the end. The local treatment was employed with the sole intention of doing something to relieve her suffering. Two methods of procedure offered themselves had I decided to operate. First, by general anæsthesia, which would certainly have hastened the end; and, second, by plunging a knife boldly into the sac. As it had not been determined what was the cause of the obstruction, and as this might possibly have been due to the sudden entry into the sac of some new and healthy organ, a haphazard incision might have resulted in injury of a grave nature, to an otherwise healthy organ, and the last state of the patient have been, if possible, worse than the first.

It is certainly more difficult to give a satisfactory answer to the second question. Unfortunately, I have not ready access to the literature on the matter, although it must be admitted that the general teaching is that the higher the level in the bowel at which lies the point of strangulation, so much the more severe is the shock, and rapid the end.

My deductions as to the possible position were based upon clinical observation before rupture of the sac—namely, the site and character of the peristalsis, and later, upon the fluid, yellow nature, and strongly alkaline reaction of the discharges when rupture had taken place. In any case, it would be interesting to hear expert opinion on this point.

Doncaster.

New Inventions.

A NEW RUBBER MASK SPECIALLY DESIGNED FOR GENERAL ANÆSTHESIA WITH ETHYL-CHLORIDE AMPOULES.

AN ingenious apparatus for general anæsthesia with exact dosage of ethyl-chloride as gauged for each particular case has been brought to my notice. It is so constructed that the whole of the ethyl-chloride contained in each graded glass ampoule is administered gradually, fully, and without loss. The whole apparatus consists of one piece of rubber; it is therefore pliable, easily carried, convenient to handle, and thoroughly sterilisable. The interior of the mask communicates through a short wide-bore tube by a T-joint with another tube running at right angles. One limb of the T receives the ampoule, the other limb is closed at the end, and is armed in the centre of its blind end with a pin projecting into the centre of the lumen. This limb receives the umbilicated end of the glass ampoule of ethyl-chloride. When the ampoule is pressed home the pin first impinges on and then perforates the umbilicated end, and the ethyl-chloride vapour streams out along the short wide tube on to a gauze pad suitably placed and held in position by a rubber band. The vapour diffuses throughout this pad, from which it is breathed by the patient. This pad is easily removed after each case and replaced by a fresh one. The rubber band keeps it lightly but firmly in position. There is no waste of ethyl-chloride and the dosage is exact. If one ampoule proves insufficient, it can, when exhausted, be quickly supplemented by another full ampoule of any desired capacity, the change requiring a minimum of time or trouble. If before introduction the glass ampoule is slightly moistened, no difficulty will be experienced in pushing it smoothly into the tube to the full extent required to cause the pin to puncture it at the desired moment. I have tried this mask on myself and find that it fits quite comfortably.

The makers are the Anglo-French Drug Company, Ltd., Holborn, London. F. C. BARLOW, L.R.C.P. & S. Edin., Camberwell, S.E. L.F.P.S. Glasg.

Reviews and Notices of Books.

War Wounds of the Lung: Notes on their Surgical Treatment at the Front. By PIERRE DUVAL. Authorised English translation. Bristol: John Wright and Sons, Ltd. 1918. Pp. 100. Price 8*s.* 6*d.*

WE have already noticed (THE LANCET, Sept. 8th, 1917, p. 393) Dr. Pierre Duval's admirable monograph, "Les Plaies de Guerre du Poumon," and commend it again to our readers in its English guise. A new chapter added to the translation brings the author's experience up to January of the present year, and concludes with a sentence epitomising his whole teaching: "Lung wounds are analogous in every respect to any other battle wound, and must be treated according to the same general principles."

The translation emanates from the 36th Casualty Clearing Station, B.E.F., which has been in close association with the Auto-Chir. No. 21, Armée Française, of which Duval is médecin-chef, and the dedication gives occasion for an expression of that mutual esteem and admiration which is making the Anglo-French entente a real and permanent thing. Both text and illustrations are well done and the external trappings of the book very pleasing.

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1. *The Treatment of War Wounds.* By W. W. KEEN, M.D., LL.D., Emeritus Professor of Surgery, Jefferson Medical College, Philadelphia. Second edition. London and Philadelphia: W. B. Saunders Company. 1918. Pp. 276. Price 8*s.* 6*d.*
2. *American Addresses.* By Sir BERKELEY MOYNIHAN, M.S. Lond., F.R.C.S. Eng. London and Philadelphia: W. B. Saunders Company. 1917. Pp. 143. Price 7*s.* 6*d.*

TWO attractive little books published in the United States of America will help to bring recent remarkable developments in war surgery before the medical world of the great republic of the West.

1. Dr. Keen has enlarged his bird's-eye view of English and French surgical practice on the Flanders front. He has collected his material from many sources, and the volume will be read with interest as the considered judgment of a veteran surgeon, whose detachment allows him to see relative values in a mass of new and absorbing work. The short bibliographies attached to some of the chapters may give a useful hint for the war surgeon's library.

2. Sir Berkeley Moynihan has collected in one volume the addresses on gunshot wounds and injuries delivered last autumn in Chicago and other American cities, giving his own conclusions on the treatment of the many new phases of surgical diseases for the benefit of his American colleagues. We commented at the time of their delivery on these crisp and enlightening summaries, and commend them in their present form to the reader's notice.

La Suspension dans le Traitement des Fractures: Appareils Anglo-Américains. By P. DESFOSSES and CHARLES-ROBERT. Preface by M. PIERRE DUVAL. Paris: Masson et Cie. 1918. Pp. 172. Price 4 frs. 40.

THIS latest fascicle of the Collection Horizon is an admirable example of the war manual at its best. M. Desfosses is surgeon to the *Hôpital britannique* in Paris, and M. Robert is a pupil of Major Sinclair who has applied the latter's methods in the famous Auto-Chir. 21 to which M. Duval is attached. The manual starts with a description of the suspensions known by the names of Blake, Sinclair, and "Balkan," going on to their detailed application to fractures of the extremities. Each stage in the application is abundantly illustrated. M. Duval in his preface frankly acknowledges his preference for the Thomas splint, but many other ingenious forms appear in the text. The little book is a safe technical guide to the successful treatment of gunshot fractures of the limbs.

An Index of Prognosis and End-Results of Treatment. By Various Writers. Edited by A. RENDLE SHORT, M.D. Lond., F.R.C.S. Eng. Second edition. Bristol: John Wright and Sons, Ltd. 1918. Pp. 770. Price 30*s.*

WE are glad to see a second edition of this useful work of reference, to which fresh material has been added in view of recent experience on tetanus, gas gangrene, septic peritonitis, and gunshot wounds. The account of tropical diseases has been rewritten by Sir Leonard Rogers. We miss any allusion to the now very important disease, trench fever, but the editor disarms criticism in regard to possible omissions by pleading that he and many of the contributors are serving overseas, and the same war conditions which are vastly extending our knowledge of certain groups of diseases are making it exceedingly difficult to ascertain the "end-results" which are the subject of this book. The appearance of a new edition as soon as possible after conclusion of the war will be very welcome. The publishers' share in the book is all that could be desired.

An Introduction to the Physiology and Psychology of Sex. By S. HERBERT, M.D. London: A. and C. Black, Ltd. 1917. Pp. 136. Price 3*s.* 6*d.*

THE author has already expounded with some success the first principles of heredity and of evolution to a lay audience, and at the desire of the Feminist Club of Manchester has now endeavoured to do the same in a field where many others have failed before him. In this he has been largely successful. The elementary facts of the biology and physiology of sex are rendered in the "simple yet scientific manner," which the author has set before himself. In sex psychology "facts" are less easy to define, and some of the simple assertions made will require modifying in the light of present-day experience. It is, we believe, misleading to state boldly, "To man love is an episode; to woman it is her whole life"—and the statement is not altogether in harmony with the forecast, in the concluding pages, of a new sexual order with which we are in general agreement.

The Practical Medicine Series. Vol. I., General Medicine. Edited by F. BILLINGS, M.S., M.D., assisted by B. O. RAULSTON, A.B., M.D. Series 1918. Chicago: The Year Book Publishers. 1918. Pp. 621. Price $2.25.

THIS is the first volume of a series of eight, to be issued at about monthly intervals, covering the entire field of medicine and surgery, and primarily intended to keep the general practitioner in touch with the newest developments of his science and art. The medical literature of America, England, France, and Switzerland is abstracted for this purpose, and as far as work on this side is concerned, abstracted with care and discretion. We can therefore recommend the series to any who are prepared to face a yearly reading of some 5000 pages in order to keep abreast with current medical thought.

Nutrition and Clinical Dietetics. By HERBERT S. CARTER, M.A., M.D.; PAUL E. HOWE, M.A., Ph.D.; and HOWARD H. MASON, A.B., M.D. Philadelphia and New York: Lea and Febiger. Pp. 646.

THE authors of this ambitious book, who are all members of Columbia University, New York, start from the assumption that dietetics must be deduced in part from an accurate knowledge of the chemistry of foods and of nutrition, but in greater degree from the results of actual clinical experience. Their qualifications render this combined method possible within the covers of a single book inasmuch as the first-named author is an associate in clinical medicine, the second an assistant professor of biological chemistry, and the third an instructor in diseases of children. And the result is a book which will be of real value to the clinician at a time when nutritional problems have largely to be solved on the basis of what is possible rather than what is theoretically advisable. The book is divided into four parts, the first dealing generally with foods and normal nutrition, in which the subject of energy requirement is fully treated; the second takes the various foods seriatim and discusses their particular values and deficiencies; the third is a short part devoted to feeding in infancy and childhood; and the fourth part goes into the dietaries of various diseases and the special régimes proposed for them. An appendix contains tables of food values arranged in a variety of useful ways. The authors, although basing their conclusions largely on their personal experience, are careful also to include due notice of the work of others—e.g., Bardswell's and Chapman's diets in tuberculosis, Joslin's useful résumé of Allen's starvation treatment for diabetes. Their remarks on metabolic problems are always interesting and often stimulating, as in the sections on the causes of

obesity, the food adapted to brain workers, and the appropriate diet for athletes. In the latter connexion they note how easy it is to acquire the habit of large eating and of continuing it after the necessity for it is past, as in the case of "farmers'" indigestion, which they suggest is due to persistence in a large dietary during off seasons, when little muscular effort is demanded. All through the book the influence of new thought on old problems is clearly discernible. The work cannot fail to be a useful vade mecum to the modern practitioner.

"One Thing I Know, or the Power of the Unseen." By E. M. S. London: John M. Watkins. 1918. Pp. 146. Price 3*s.* 6*d.*

IT would not be difficult to ridicule E. M. S.'s autobiographical account of her illness and recovery through the devoted treatment of an unseen spirit whom she calls "Dr. Beale," and yet its evident sincerity wins respect. We are told that E. M. S. had been bedridden for 15 years, and for the past six years had been unable to sit up in bed for more than two minutes without knocking herself up for six or nine months. Exertion such as this made her utterly exhausted, and her pulse rose to 140. She sometimes required food 30 times in the 24 hours, and so on. She had consulted over a dozen medical men, had taken tonics, sedatives, glandular extracts, had Nauheim and Kneipp cures, massage, rest cures, hypnotism—all to no purpose. The "earthly" medical man, whose report is given, states that there was no indication of insanity or hysteria, but, as we read the case, the disorder was clearly functional.

The story as told is no uncommon one in practice. The gravity of the matter lies in the fact that legitimate medicine failed, whilst recovery followed under the influence of several women with so-called psychic powers. Such cases are worth careful scientific study. It is surely a reproach to medicine when patients such as these remain ill for long periods of time and recover by means such as are here described.

Dr. Beale, we are told, died many years ago, and after a deep sleep devoted himself to work on earth, using the body of a Miss Rose and other persons possessing "psychic" qualities. Dr. Beale also had a kind of home in the unseen world where he treated recently arrived spirits who were in trouble. His treatment was interrupted by his being suddenly called to higher spheres for a course of instruction. Fortunately, he left a useful locum-tenent, "Dr. Prentice." We are also told how the possessing spirit is apt sometimes to forget the body of the instrument and "the doctor has been known to ask if his trousers were muddy or his tie straight, and has really been annoyed to find upon looking down that he had on petticoats and a lace collar"!

The fact remains that the patient recovered, and the important question is how it came about. We find two methods of treatment which are novel. By means of magnetic massage Dr. Beale (i.e., Miss Rose) drew out of the body "bad stuff" and threw it away, as it were, from the tips of his fingers. When he was called away during her convalescence he left behind a "psychic battery," upon which, however, she drew so extravagantly that she nearly had a relapse. The remainder of the treatment appeared to consist of massage and exercises continued for months, then gradually she was taught to use her leg muscles and at last to walk. Within two years she was well. There are many other remarkable things in the book, which is vividly written and profoundly interesting, as showing what the "will-to-believe" can do when uncontrolled by experience or the critical faculty.

The Internal Secretions: their Physiology and Application to Pathology. By E. GLEY, M.D., Professor of Physiology in the College of France. Translated and edited by MAURICE FISHBERG, M.D., Clinical Professor of Medicine at New York University. London: William Heinemann (Medical Books), Ltd. 1918. Pp. 241. Price 10*s.*

AT a time when the paramount importance of the endocrine glands, both in normal and abnormal states of the body, is beginning to be realised, while the actual practice of organotherapy remains largely empirical, the appearance in English form of Professor Gley's scientific and critical study is cordially to be greeted. Gley can be trusted to state with equal precision both what we know and what we do not know, and Dr. Fishberg has almost confined himself to rendering the original in fluent English. The chapter on the normal reciprocal relations between thyroid, pancreas, and adrenals is one of the most interesting. References are given throughout the book which render further study easily possible.

Studies from the Rockefeller Institute for Medical Research. Reprints. Vol. XXVII. New York: The Rockefeller Institute. 1917. Pp. 559.

THE titles of this most recent volume of reprints show the prevalent direction of pathological and bacteriological research. Papers by H. Noguchi and others on the staining reactions of various spirochætes are followed by a series of articles on poliomyelitis under the names of S. Flexner and his pupils. Clinical studies are included on the toxæmias of pregnancy, and on metabolism in lymphatic leukæmia. An ingenious mathematical study from Hospital No. 21, at Compiègne, deals with the rate of healing in wounds.

Transactions of the American Surgical Association. Vol. XXXV. Edited by JOHN F. BINNIE, M.D. Philadelphia: William J. Dornan. 1917. Pp. 616.

THE Transactions of this lively association continue to reach us with a regularity and a prodigality of material which can only excite jealous admiration in these times. Besides the usual clinical papers we note excellent biographies of two great surgeons, Victor Horsley and Vincenz Czerny. Of unusual interest is a topographical analysis by Dr. Edmond Souchon, of New Orleans, of America's original contributions to medical science. We learn, for instance, that Dr. E. B. Walcott, of Wisconsin, performed the first nephrotomy; that Dr. A. D. Bush, of Vermont, determined a 10 per cent. mental deficiency in tobacco users; that Dr. F. G. Novy, of Michigan, first cultivated trypanosomes. Devotees of medical history will refer to his original article.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions have been received up to Monday last, Sept. 9th:—

	£	*s.*	*d.*
Dr. C. A. Rayne	5	5	0
Dr. Robert J. Carlisle ...	2	0	0
Sir Alfred Pearce Gould (monthly)	5	5	0
Dr. Dundas Grant... ...	10	10	0
Mr. W. J. Shepperd ...	0	10	6
Mr. J. V. C. Denning ...	1	1	0
Dr. Edward Byrd	1	1	0
The Sunderland Pharmaceutical Association*	16	17	6
American Red Cross Commission for Belgium	200	0	0
Capt. A. P. Thom, R.A.M.C.	1	1	0
Mr. D. T. Jones, M.P.S.	1	1	0
Mr. E. Spencer Evans (monthly)	0	10	0
Dr. J. B. Davey	1	1	0
Dr. J. Auriol Armitage†	5	5	0

* Per Mr. Cuthbert Hodgson. † Second donation this year.

The munificent gift of £200 from the American Red Cross has been received through Mr. Ernest P. Bicknell, the Commissioner for Belgium, who writes: "This contribution is for the month of September, 1918, and is from the Commission for Belgium of the American Red Cross. A monthly contribution of the same amount will be made for the remaining months of the year." This timely and open-handed grant should inspire further British contributions in order that increased monthly payments may be made to Belgium.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

THE LATE DR. C. E. GLASCOTT.—Charles Edward Glascott, M.D., C.M., F.R.C.S. Edin., died recently at his residence, Budleigh Salterton, Devon. He was born in 1847 at Constantinople, and received his medical education at Edinburgh University. For 35 years Dr. Glascott was honorary surgeon to the Manchester Royal Eye Hospital. He was formerly president of the Manchester Medical Society, and lecturer and examiner in ophthalmology at Victoria University, Manchester. Since his retirement he had resided at Budleigh Salterton.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 14, 1918.

The State and Research.[1]

THE members of the Committee of the Privy Council for Scientific and Industrial Research have a heavy task in front of them, but in their third annual report, issued last week, it is shown that steady and valuable progress is being made along many important lines. It is not surprising to learn that the past year has seen a great extension of the work of what is now the important State Department of Scientific and Industrial Research, when the scope of its activities is considered. Out of the fund of £1,000,000 voted by Parliament in order to enable the Department "to enter into agreements with new industrial research associations for the payment of grants over a period of years" there has been guaranteed to the British Scientific Instrument Research Association an expenditure of £36,000 on approved research during the next five years. During the same period a grant of £1500 a year has been awarded the British Photographic Association; and research associations, having as their object the betterment of the cotton and woollen industries, have received similar awards provided that the firms concerned subscribe equal sums towards the same end. We mention these matters because, taken with what follows, they illustrate the wide range of the activities of the Department.

The Committee early in the year assumed responsibility for the maintenance and development of the National Physical Laboratory, and they have approved extensions of the laboratory which will enable the staff to undertake the testing of the higher grades of chemical glass and the testing of all clinical thermometers, whether for military or civilian use. Amongst the researches of direct medical interest is one on mine-rescue apparatus, the progress of which is being watched by the Medical Research Committee, and an obviously related research is that on respiration apparatus. It is of interest to mention that one result of these researches has shown that a man's respiratory behaviour when oxygen is administered during manual work is dependent on his physical condition. Following up this opening Dr. HENRY BRIGGS, of the Heriot-Watt College, Edinburgh, has been able to devise a method of measuring physical fitness and stamina which has been tested on a considerable number of men chosen chiefly from the Army and the mines. Apart from its bearing on the selection of men for mine-rescue teams, the method has a wider interest in affording a new means of ascertaining a man's value for the Army. The War Office authorities have recognised this fact, and the first physical testing station has been established in Edinburgh. A further interesting development of Dr. BRIGGS'S work has been an improved system of supplying oxygen for Army purposes, in which the question of the storage and supply of liquid and compressed oxygen and other gases has received particular attention.

Another pressing matter which has come before the Department has been the improvement and wholesale extension of cold storage systems, with a view to the preservation of the thousands of tons of food which are annually lost by decay before they can be sent to market. It was agreed, most wisely we think, that the investigations in this direction could be more suitably conducted by the State than by any industrial research association, and the Food Investigation Board of the Department has them in hand. The work has been well begun and a substantial sum awarded for pursuing this most important direction of research. Experiments on the freezing of fish are being conducted at North Shields, and an experimental and demonstration plant for the freezing of fish has been set up in Billingsgate Market. Another committee has been appointed to investigate on similar lines the processes for preserving meat, fruit, and vegetables, and the laboratories at Cambridge have been requisitioned for the purpose of conducting investigations into the physiology of fruit and vegetables at low temperatures and into those diseases which attack fruit in storage. Heat insulation and the influences determined by hygrometry form yet another interesting and important branch of cognate inquiry, the results of which would preserve for our use the kindly fruits of the earth, so that in due time we may enjoy them. The Board of the Department has also within its ken certain matters connected with the use of oils and fats, a veiled reference doubtless to the edible fats—margarine and butter substitutes. "Events," the report states, "have justified the rapid decisions which we took in the summer of last year, while experience has shown that the appointment of a responsible director to organise a group of researches of national importance, assisted by an advisory board of distinguished men of science and affairs, greatly facilitates prompt action and the proper coördination of all the work in accordance with a definite scheme. Research work, like other forms of creative activity, will not flourish under committee rule." Could a more scathing criticism be levelled at our past commercial methods than is contained in this pregnant sentence? The report deals with important technical problems, and while we have narrowed our review to those questions which claim obviously and particularly the attention of the medical profession, we urge such of our readers as have the necessary time to study the whole short document. It affords valuable reading because of the strong and serious effort which it discloses to bring about reforms which have long been urged upon us by our scientific leaders, and fully confirms the Report of Sir J. J. THOMSON'S Committee "to enquire into the position of natural science in the educational system of Great Britain," Professor STARLING'S review of which appears in the subsequent pages of this issue.

[1] Report of the Committee of the Privy Council for Scientific and Industrial Research for 1917-1918. London: H.M. Stationery Office. 4d. net.

Annotations.

"Ne quid nimis."

WAR NEPHRITIS.

THE growth of a child is notoriously discontinuous, and it often happens that knowledge of a new disease advances sometimes rapidly, sometimes with tiresome slowness, while apparently the same amount of work is being put into it by competent investigators. A striking example of this is given by war nephritis. The recent report of the Medical Research Committee is largely of a negative character, throwing little or no further light on the causation of the disease. Interesting additional information is, however, incidentally given.

The *first* part of the report is drawn up by the Committee on War Nephritis working in France. This shows that although the first rise in the incidence of nephritis occurred in the spring and early summer of 1915, after that time most cases occurred in the winter, the temperature curve varying inversely with the rate of incidence so closely that it can hardly be without significance. It is gratifying to learn, however, that the total numbers have never reached a figure that could be considered of importance to the strength of the Army. As each group of the new army went to France there was a rapid and uninterrupted rise in the incidence of cases in that group, reaching its highest point in about six months, after which a fall occurred, reaching its lowest point the following summer. After that the incidence curve of the group followed closely that of the whole Army. The suggestion is that the individuals naturally prone to nephritis were first attacked, leaving a more or less homogeneous residue. We might add that these results also suggest that though climatic conditions were not responsible for producing the outbreak, since it did not start till after the severe winter of 1914–15 was past, they have played a considerable part in modifying the incidence of the disease once it had started. Fortunately, the death-rate has remained low. The average annual mortality for all cases was 0·93 per cent. During 1916 only two officers died from nephritis, and none during 1917. The Committee could not find that diet, chlorinated water, metallic poisons, intestinal intoxication, previous renal disease, or illness immediately prior to the nephritis had any influence. They comment on the occurrence of cases in hospital orderlies who had never left their base hospitals, and note that the disease was not limited in its incidence to the older men. They also conclude that the severe exertion and fatigue undergone during training at the base played little or no part in its etiology.

The *second* part of the report is a clinical study by Captain O. L. V. de Wesselow and Captain H. MacLean, who found that in a large proportion of the cases the onset was comparatively insidious. The first indication in those doing heavy manual work was increasing shortness of breath; in those leading a sedentary life headache was the first symptom. The œdema tended to clear up rapidly, its disappearance being usually accompanied by a well-marked diuresis, and often by heavy sweats, so that there might be a loss of weight amounting to as much as 5 or 6 lb. in the 24 hours. With the subsidence of the dropsy the albuminuria usually improved considerably. Hyaline casts were the most abundant, granular next, and epithelial next in order of frequency. A moderate rise of systolic blood pressure was almost invariably present during the period of œdema, falling to a normal level or below it as the œdema subsided. The diastolic pressure was less affected. During the period of raised tension there was frequently a marked difference in the height of the morning and evening pressures, the latter being the higher. In the great majority of cases a very definite hydræmia could be demonstrated. Although cardiac symptoms were frequent, the only physical sign was a temporary enlargement of the heart to the left in 23 per cent. On discharge from hospital, however, the heart appeared to be normal, as judged by the ordinary methods of clinical examination. Chemical investigations showed no differences in kind between this and ordinary nephritis, but merely that it was of a milder type. Usually the chemical results ran parallel with the clinical course. In a few instances, however, the results of chemical investigation were much less grave than the immediate clinical manifestations appeared to indicate. Such cases did well. They found the urea in the blood was usually increased, while the chlorides were variable. In the two cases of fits—which recovered—the urea in the blood was not appreciably raised, whereas in a fatal case of uræmia it was exceedingly high. This is interesting as supporting the conclusion to which this outbreak has gradually been leading various observers, that the various clinical manifestations usually regarded as uræmic are not due to the same toxins, and that the most dramatic of the symptoms, the convulsions, are really the least serious.

The *third* part of the report is a laborious investigation by Captain MacLean into a possible relationship of previously existing albuminuria to war nephritis. The results are entirely negative, no such relationship being found.

The *fourth* part is a bacteriological investigation by Captain J. A. Wilson, also negative in its findings, since routine examination of the urine, blood, throat, and fæces, failed to demonstrate a causal organism.

It will be seen that these reports confirm in the main the earlier observations, such as those made at St. Bartholomew's Hospital in 1915. The chief point of difference is that whereas 30 per cent. of the earlier cases had a positive Wassermann reaction, all of 90 cases here investigated showed a negative result. The chief new point is the relationship of the incidence of the cases to climate, which was entirely lacking in the earlier phases of the outbreak. But the question as to why nephritis has been so frequent in this war and so rare in all previous wars, except the American Civil War, still remains unanswered.

In our last week's issue we published a paper by Captain S. C. Dyke mainly relating to the prognosis of this disease. He found that in 40 per cent. of his series the re-establishment of renal function was incomplete and some degree of permanent damage resulted to the general health. He held the early disappearance of œdema to be one of the best prognostic signs; its persistence after the second week made the outlook worse; while the presence of œdema after the end of the first month indicated that restoration to health would be incomplete. In the same way albuminuria continuing after the end of the third month rendered the prognosis as to complete recovery unfavourable. His suggestion is that the disease is either a primary acute nephritis or an exacerbation of a pre-existing disease induced by fatigue or exposure, and he thinks that an inquiry into the alterations of metabolism produced by fatigue would yield fruitful results. Such an inquiry has been thoroughly undertaken by Captain Macleod, and his conclusions do not support this suggestion. A paper in the *Quarterly Journal of Medicine* for January, 1918, by Captain W. H. Tytler and Captain J. A. Ryle gives as their impression an increasing doubt as to whether the kidney lesion is the primary event—whether, in fact, the nephritis is not a complication of some other disease, possibly pulmonary. That this is probable is indicated not only by the pulmonary lesions in fatal cases but by the enlargement of the spleen, which this last observer found to occur frequently. That the nephritis once thus established should be closely similar to ordinary nephritis would then be comprehensible, since nephritis is so usually the result of an infection or an intoxication. But the effect of such a cause might persist long after the cause had disappeared; hence the negative bacteriological findings. A pulmonary infection might also be expected to show the seasonal variation which the Medical Research Committee have noted.

LONELY DWELLERS AND THEIR NEIGHBOURS.

IT was stated in the newspapers recently that a woman, 73 years of age, living alone in a house in Gray's Inn-road, fell downstairs one Wednesday evening, and, being unable to move, was not discovered until the following Saturday. On the next day she died in the hospital to which she had been taken. Stories of this kind, or of solitary

persons who die and whose bodies are only discovered after some time, are not infrequent, and such cases occur in the country as well as in great cities. Probably, however, they are rarer in rural districts and small towns, where eccentric characters and the poor and lonely are of greater interest to their neighbours than they are in the metropolis. It is difficult, indeed, to suggest any means which would prevent such an occurrence in the crowded area round Holborn, nor can we say that any duty of neighbourliness was neglected by those in her vicinity who went their daily way while an old woman lay at the foot of a staircase in a house which they had no reason for entering. Nor does society, the State, or the local authority appear to be called upon to interfere if persons of mature age, whether poor or not, prefer to live alone rather than in surroundings which would expose them to observation. In the absence of organised intervention it is usually the baker, or the milkman, or the postman, particularly the last in country districts, who reports that he cannot get the accustomed answer at a certain door, when further inquiry shows that a lonely dweller is ill or dead. It might conceivably be made an instruction to postmen to be observant in such matters, and to report the non-delivery of a letter through failure to get a reply to a knock at the door. But lonely dwellers receive few letters. There remain the baker and the milkman, whose services might also be requisitioned in normal times, but even then there are many cases where the customer fetches his own bread or milk from a shop where his abode is not known. It is, indeed, likely that any such system as we have suggested, even if reinforced by the aid of the police, would not only lead to many false alarms, but would break down and be inoperative in a substantial proportion of genuine instances. Cases, therefore, such as that upon which we have commented will continue to fill us with pity, but will not be averted unless and until the State undertakes even greater surveillance over the details of our daily lives than it does at present. Do we want that?

THE SIMULATION OF MUMPS.

AT a recent meeting of the Société Médicale des Hôpitaux of Paris MM. Trémolières and L. Caussade reported a curious form of simulated disease which appears not to have been previously described. A Moroccan soldier was sent back from the front and passed in succession through seven "formations sanitaires" with the double diagnosis of mumps and hysterical crises. Probably in every hospital the first diagnosis was abandoned, but the real nature of the affection was not ascertained. From the moment he first came under the observation of MM. Trémolières and Caussade they were struck by the unusual character and evolution of the parotid swellings. They involved the retro-maxillary hollow, the neck and the pre-auricular, zygomatic, and temporal regions, giving the head a pyriform appearance. On some days the eyelids were affected, so that the features were unrecognisable. The parotid tumours were resistant, difficult to delimit, and little painful. There was no fever. The orifices of Stenson's ducts were projecting and red, and on pressure emitted a remarkably aerated saliva. One day it was noticed that the tumours were resonant on percussion and were accompanied by subcutaneous emphysema. The patient was then submitted to radioscopic examination and the purely aerial nature of the swellings was confirmed. Two days later he was surprised while forcibly blowing out his cheeks, pinching his nostrils, and applying his hand to his mouth. By inflating his parotid glands he had simulated mumps. He had even in his efforts ruptured an acinus, and the air had penetrated into the periglandular cellular tissue. The repetition of the manœuvre had led to a secondary inflammation of the gland, as was shown by the abundance of polynuclear cells in the saliva removed from Stenson's duct by catheterism. It was then ascertained that this method of simulating mumps was well-known among the Moroccan soldiers. They pricked the mucous membrane of the cheek and then blew hard into a bottle or simply closed the mouth with the back of the hand. Being ignorant of the existence of Stenson's duct, they did not know that the prick was useless. This simulation is therefore of the same nature as the parotid swellings which occur in glass-blowers and performers on wind instruments. In the discussion which followed M. E. de Massary pointed out that the simulation of mumps, whether in the parotid or the testicle, can be detected by lumbar puncture. He has found that lymphocytosis of the cerebro-spinal fluid is constant in mumps. The knowledge that such a test might be applied should stop the simulation.

TRAUMA AND IMPOTENCE.

OUR conception of the remoter results of traumatism is constantly being widened by the experiences of the war, but its effects on sexual activity have received little notice in this country. Bloch[1] divides trauma as a cause of impotence into psychical and physical. As to the former, his researches show mental depression by itself can lower sexual potency, which is always impaired in nervous diseases marked by depressive states. It has been observed that men rarely become fathers in the year of their bankruptcy. Anger, too, is antagonistic to sexual activity. The more sudden and acute the mental shock, as from scenes of bloodshed, so much the more obstinate is the impotence. In ancient and mediæval superstition magicians were credited with being able to cast a spell of impotence upon a man through the agency of fright. John Hunter related a case of impotence coming on very rapidly from fright, and the same has followed sudden bereavement of a startling kind. In the front line of a battle it is obvious that all these emotional factors have abundant play. With regard to the pathogeny of impotence thus caused, Bloch doubts whether it is purely psychical; if of long continuance, some unknown disturbance of the internal secretions, of the endocrinic system, is probably responsible. Thus a Dutch clinician recorded amenorrhœa and acromegaly in a woman 25 years old, with no abnormal family history, attributed to severe fright; and an increase of the secretion of the adrenals has been found in the blood after great mental excitement. Physical trauma may be divided into trauma to the genitals or other part of the body generally and trauma to the central nervous system. In war experience sexual paresis is often met with from the pain of an injury. If the genitals themselves have not been greatly injured the prognosis is good, potency usually returning with healing of the wound and cessation of the pain. The outlook is much worse when the cause is concussion of the brain or spinal cord, these cases being similar to the impotence and testicular atrophy long observed in civil practice as an occasional sequela to falls on the back of the head

[1] Iwan Bloch: Zeitschrift für Sexualwissenschaft, July, 1918.

or like injury. The "Scythian disease" of Herodotus and Hippocrates may have had a similar history. But the old view that injury to the cerebellum occasioned the genital disturbance has now been shaken by the work of Ceni, who describes "higher genital centres" in the cortex cerebri which exercise trophic influence upon the reproductive organs, especially upon spermatogenesis and ovulation. Experimentally produced commotio cerebri in animals has been followed by absence of libido and by parenchymatous testicular atrophy. These genital centres are described as much slower to recover from trauma than are the ordinary motor and sensory cerebral centres. Hence the long continuance of impotence following physical trauma to the central nervous system.

SANDFLY FEVER OR INFLUENZA.

IN the *Annali d' Igiene* of June 30th Professor G. Sampietro gives the reasons for the belief prevalent in Italy that the epidemic which began in the second half of last May and was prevalent in Spain and thence spread over Europe is identical with the so-called three-day fever or sandfly fever. The clinical picture of this epidemic may be thus summed up:—

Sudden onset of fever, which as a rule remained high for two or three days, accompanied by severe muscular pains, localised specially in the back and lower limbs, with headache, prostration, anorexia, and coated tongue. In some cases there were signs of pharyngeal and tracheal irritation, which rarely developed into a catarrhal condition; in others there was gastro-intestinal disturbance. Convalescence was attended with marked debility, which lasted from one to two weeks. There was no skin eruption or enlargement of the spleen. The prognosis was favourable. Pfeiffer's bacillus, which is one of the specific agents in influenza, was only exceptionally met with, but, on the other hand, the municipal laboratory at Madrid demonstrated in the secretions the frequent presence of a Gram-negative diplococcus of the type of *Micrococcus catarrhalis*. Clinically the symptoms coincide exactly with those of the disease endemic in Italy and well known among the military population as *pappataci* or sandfly fever, while the late epidemic does not resemble dengue fever owing to the absence of relapses and exanthema, nor trench fever owing to the absence of recurrences and enlargement of the spleen and the leucopenia; nor does it conform to true influenza on account of the want of symptomatic polymorphism, the typical duration, and scarcity of catarrhal elements affecting the respiratory system.

From the epidemiological point of view the diagnosis of sandfly fever derives confirmation from the fact that this fever usually prevails from the middle of May to the end of September, whereas influenza and trench fever are not epidemic in the summer. The epidemic of phlebotomus fever in Lemnos, described by Temporary Surgeon J. Lambert, R.N., in the *Journal of the R.N.M.S.* for April last had this seasonal incidence, the author taking the view that the absence of catarrhal symptoms would readily assure the differential diagnosis from influenza. The phlebotomus or sandfly is a small grey dipterous insect which makes its appearance about the end of May and disappears early in October, thus exhibiting a strange coincidence with the seasonal occurrence of three-day fever. Only the females bite during the night, their flight is inaudible, and they penetrate into bedrooms only when the atmosphere is completely tranquil, and at dawn return to their habitations in dark and damp cellars and deposit their eggs in underground localities where rubbish, wood, and vegetable detritus abound, or in dilapidated walls, gutters, and pipes. It can therefore easily be understood how difficult it is to prove the presence of the phlebotomi in any given epidemic. On the other hand, some account must be taken of the war conditions now prevalent. Everywhere a large quantity of wood, destined to supply material for the construction of defence works, barricades, and huts, has been transported, and doubtless with them also eggs of the phlebotomi, and with this accumulation of material there has been aggregation of human beings in heated barracks or factories to establish conditions favourable to the development of the phlebotomi at altitudes and in localities which might seem to be incompatible with their life. Moreover, the rapid decline of the epidemic after a sudden and rather brief period of climax is more in favour of an infection transmitted by means of insects and related to their natural history than of a disease propagated by contagion.

SOCIAL STUDY AND RESEARCH.

THE death of Sir Ratan Tata at the age of 47 years calls attention to the remarkable development of "social science" which his wise generosity did so much to foster. Mr. Jamsetjee N. Tata, whose industrial prescience in India brought him great wealth, died on the eve of endowing various useful schemes of research. His cloak fell on his two sons. The younger, Sir Ratan Tata, founded the department known by his name in the London School of Economics, and established a fund in 1912 in connexion with London University for promoting the study of the prevention and relief of destitution and poverty. Since this time social study courses have been instituted all over the country: in London, at Bedford College and King's College for Women; elsewhere in connexion with the Universities of Belfast, Birmingham, Bristol, Edinburgh, Glasgow, Leeds, and Liverpool; while courses are in contemplation at the Universities of Manchester, Sheffield, and Wales, and at the Armstrong College, Newcastle. A report,[1] drawn up by the Joint University Council for Social Studies constituted a year ago, describes this new faculty and its present status. Great stress is laid on giving the student a living insight into the various civic and social agencies of a modern town and their mutual action and reaction. There is a very welcome passage in the report which deprecates the teaching of the facts of social life without a preliminary grasp by the student of the facts of physical life. It is quite possible, the passage runs, those most interested in social education have belonged too exclusively to the school of thought which consider social well-being in relation to moral and economic health rather than to physical health. The just claim of hygiene for inclusion as an essential part of social science is now gaining ground, with promise of much greater results in the future. The Parsee community, with the Tata family at its head, has played an honourable rôle in making these results possible, and Sir Dorab Tata, the elder son of Mr. Jamsetjee Tata, is certain to follow in his father's footsteps.

Dr. Addison, Minister of Reconstruction, will speak at a meeting of the medical profession to be held at Steinway Hall on Oct. 1st, at 5.30, under the chairmanship of Sir Henry Morris. The object of the meeting is to secure the election of representative medical men to the House of Commons, so that expert advice may be available on vital questions concerning the national health. All members of the medical profession are invited to attend.

[1] Social Study and Training at the Universities. London: P. S. King and Son, Ltd. Price 6d.

NATURAL SCIENCE IN EDUCATION.

NOTES ON THE REPORT OF THE COMMITTEE ON THE POSITION OF NATURAL SCIENCE IN THE EDUCATIONAL SYSTEM OF GREAT BRITAIN.

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THE astounding and disastrous ignorance of the most elementary scientific facts displayed by members of the Government and administration alike in the early days of the war roused some doubts in the minds of the British public as to the efficiency of the education imparted at a high price to the members of the upper classes, including those who are chiefly responsible for the control of the destinies of this country. The Government adopted the traditional method of poulticing the sore place in public opinion by the appointment of two committees, one on the position of natural science in our educational system and the other on the teaching of modern languages. It is with the report of the first of these committees that we are here concerned. The Committee was under the presidency of Sir J. J. Thomson, P.R.S., and included representatives of secondary, university, professional, and technical education. The Committee was appointed in August, 1916, and the report before us is a testimony of the diligence with which the members executed their task. The Committee sat on 45 days and subcommittees on another 51 days; the report itself is dated February, 1918, and naturally a large amount of work was done by members of the board apart from meetings in committee.

Defects in Present System.

It should be noted that the title of the report is "The Position of Natural Science in Education,"[1] and the report contains a series of recommendations, which, if carried into effect, must result in a greater importance being ascribed to the natural sciences in the educational curriculum, especially in that of the general public; so that some of the blunders perpetrated through the ignorance of our rulers may possibly be avoided in the future. But ignorance of elementary chemical facts forms but a small factor in the gross deficiencies of our educational system. It is impossible to read this report without feeling that all its recommendations, even if realised, might do little for the growth of the nation if we cannot achieve at the same time a revolution in the whole aim and system of education. It is not sufficient merely to introduce natural science into the school curriculum. In many schools, in the majority in fact, it is already there. What are lacking are scientific aim and method, and the recognition by the public at large and by every class of the community of the meaning of knowledge and of science and of the part which science must play in every action taken, whether by the individual or the State. It is the absence of science and scientific method, not ignorance of chemistry, which has been responsible for our failures of leadership in the conduct of the war, whether at home or on the Western front.

In this connexion the volume of essays[2] just issued under the editorship of Professor Ray Lankester might well serve as an introduction to the report of the Committee on Natural Science. The best and most illuminating of these essays were written as long ago as 1867, at a time when there was a short period during which the British public stirred in its sleep, under the influence of the shaking up of its fundamental ideas effected by the publication of the theory of evolution, and the theological discussions aroused thereby. For the first time since the founding of the Royal Society, moreover, a royal personage had taken an active interest in the development of science in this country. Huxley's essays and addresses on education, like the essays in the collection before us, are applicable in every particular to the present day, and the question arises whether the public, under the influence of the severe lesson it has received during this war, will repent of its former sloth and apathy and, acting upon the recommendations here made, will endeavour to fit itself for the strenuous struggle for existence which will continue for many decades after the war.

It is apparent that the main defect in our present education is not so much the time that is spent on the study of Latin or Greek, but the fact that so many years are passed at school and nothing is learnt. After nine years nine-tenths of the boys can read neither Latin nor Greek. They may have acquired a few catchwords or allusions to classical mythology, but they can give no account of the manner in which the Greeks lived, of the part played by Greek philosophy or art in the evolution of modern ideas, or of the way in which Western government has been founded on Roman inventions. Though their studies have been almost entirely literary and grammatical, they are incapable of writing or speaking with ease or fluency any language, including their own. And not only have they learnt nothing which will serve as intellectual guidance in their future life, but they have had their enthusiasm for new knowledge damped and their curiosity destroyed.

Aim of Education.

If we are to make our education scientific the first requisite is to decide what we are aiming at, and then to elaborate the means by which our aims may be attained. Natural science will then fall of itself into its proper place. It can hardly be denied that the aim of education is to fit the boy for his future work and position as a member of the community. The rise of animals in the scale of life has been determined by the evolution of an educatable part of the brain, the cerebral cortex, so that the animal can control and alter the inherited mechanical responses of the lower parts of the central nervous system in accordance with the teachings of its own experience. Even in the lower animals this automatic education by individual experience is reinforced by the example and training of the parent animal, and in man the intervention of speech has rendered it possible to guide the reactions of the growing animal by the accumulated experience not merely of the parents but of the rest of the civilised world.

It is the office of education, therefore, to prepare the young for their future work by placing at their disposal such a summary and collection of the total human experience as are essential for making them efficient members of the community. All this would seem self-evident; but it does not represent the guiding principle in our education, nor is it often thought of in our public school system, although parents will make considerable sacrifices in order that they may send their boys to public schools. Nothing can be more foolish than to assume that all men are fools. Men send their sons to public schools because there are some advantages which more than outweigh under present conditions the disadvantages of a senseless method of education. It has often been stated that a boy goes to a public school because he receives there the education of a gentleman. It may be objected that this is mere snobbery, but, at any rate, if, as Frenchmen allege, "*le snobisme*" is the ruling principle of our organisation, it must be to the benefit of the newcomer into the organisation to conform to its principles.

For, however the fact may be camouflaged in leading articles and election addresses, feudalism is ingrained deeply in our constitution. The ruling classes have resisted destruction of the system by the tactful absorption of newcomers and possible rivals, so that town and country alike are still scattered with baronial castles, where the inmates, fortified by possession of birth or capital, take toll of the community. And those who cannot enter into this class have devised a method for the avoidance of over-much exploitation—namely, by the formation of guilds and associations for mutual protection and benefit. In this country, therefore, it is of the highest advantage for his worldly success that a man belong either to the ruling class, as member or retainer, or to a guild of some sort or other; and this is much more important and has a bigger influence on the welfare of the individual than any sort of education he may receive. If the boy is expected to make a career and to obtain posts (apart from the limited number which are offered as a result of a competitive examination in the dry bones of his school curriculum) his success will depend more on what he is or to what guild he belongs than on his intellectual equipment.

It is, indeed, regarded almost as a heresy to demand of a Minister special knowledge of the work which he

[1] London: Published under the authority of H.M. Stationery Office. Price 1s. 6d. net.

[2] "Natural Science and the Classical System in Education: Essays, New and Old," edited by Sir Ray Lankester, K.C.B., F.R.S. Heinemann.

is appointed to direct, and the idea of promotion by merit in the Army or other public services arouses a feeling of horror in the majority of those belonging to these services. And before the war the system seemed to work, at any rate to those who conformed to it, just as a bed of fossils may endure for thousands of years, till it is broken up by a convulsion of nature or ground up by man to make mortar. But a system in which the leaders of the community possess neither the intelligence nor the knowledge to lead must be disastrous in a time of change and stress such as that with which we are faced, and shall be faced for many years to come. The question before the nation is whether we can now finally destroy the remains of the fossil system which impedes and frustrates our best efforts in order to regenerate a living working organism, coördinated and adapted to playing its part in the struggle for survival.

The foundation stone in any such reconstruction is our educational system. If the war is successful in educating the public into the meaning of education, into the value of knowledge (and this we shall not know until our men return from the war), the nation will be ready to accept the suggestions for improvement made in this report and to use them as a means to social and national regeneration.

The Value of the Study of English.

I have mentioned above that once we have rationalised our educational aims natural science will fall into its proper place. But this place is not first in the educational hierarchy. It is universally accepted that the "three R's"—reading, writing, and arithmetic—must form the groundwork of elementary education. We do not recognise in this country that training in language and expression is a necessary precedent and accompaniment of all other education, and that we need a training in the use of our own language not inferior to that given in French in the schools of our Allies. Without appreciation of language clearness of thought is impossible, and literary form is one of the best guarantees of good reasoning. But no training in mere language is sufficient or profitable unless the mind is supplied with material to work upon. A proper training in language as the expression and symbol of things, the relations of things, the relations of men, and finally of the feelings of men, while promoting accuracy of thought and judgment, will minimise the hypnotic influence exercised on the inarticulate by meaningless catchwords and party cries.

The very fullness and perfection of the English language make it, perhaps, the most difficult to master, even by those who are English by birth and upbringing. Most of us have felt how the defect in our school training in English, or its absolute default, continually impedes the expression of our ideas, and prevents any rise out of the ruts of the commonplace. Even a scientific article could and should be beautiful in its fitness of expression, and it will not lose in its usefulness if it pleases the ear as well as satisfies the reason. The majority of our generation have not advanced in the writing of English beyond the stage which, under any proper system of education, ought to be attained by an intelligent boy of 14. But if by this age the boy had learnt not only to express himself with form and propriety, but had also studied the structure and origin of his language and the meaning of the roots, especially Latin and Greek, of the words which he uses, he could begin at 14 the study of Latin as something already half familiar to him, and in a couple of years could attain such a knowledge of this language as is at present reached only by a small minority after six or eight years of stupefying drudgery. Better still if, as Mr. W. Johnson advised in Sir Ray Lankester's volume of essays, he had learnt French with his English. Each language would teach appreciation of and help in the study of the other, and the boy would be ready to play some part in the inter-Allied activities which will replace, we hope, for the next hundred years the present reign of destruction, terror, and pain.

The value of the study of English is strongly emphasised in the Committee's report, which also points out the advantage from a practical standpoint of a knowledge of modern languages. But the report is chiefly and properly concerned, not with the reform of education as a whole, but with the changes necessary to give to the study of the natural sciences its proper importance in the general scheme of instruction. Some of the changes advocated we may now proceed to discuss.

Education in the Schools.

The bulk of the intellectual workers of the country, those who will represent the mass of public opinion, are educated in the secondary schools, and it is to the instruction carried out in these schools that the Committee devotes the greater part of its attention. The report considers in the first place the present conditions of science teaching in the secondary schools. These schools may be divided into (*a*) public schools with about 25,000 boys, (*b*) grant-earning schools with about 103,000 pupils, and (*c*) preparatory and private schools, whose name is legion, but in whose case it is impossible to give any estimate of the number of children educated. The community has, in fact, no evidence either of the number taught or of the quality of the education given, nor has it at present any means of ensuring a standard of teaching in these schools.

So far as concerns the grant-earning secondary schools, the Committee was convinced by the evidence laid before it that science occupies a position in no way inferior to any other subject in the school curriculum. The chief drawback to the training given in these schools is the absence of any power of enforcing a continuous and adequate school course. A large number of boys leave before 15 in order to take up wage-earning work, and such boys have, therefore, had the advantage of only a fraction of a course. Even in the case of those boys who stay till 16, the course in science is unsatisfactory in that it is influenced by the requirements of the university entrance scholarships, which will be competed for by a very small fraction of the total number of the boys undergoing instruction at the school. The course is only the initial stages of a plan which is never completed; the boys learn some facts in isolated chapters of science, but they have no opportunity of obtaining a general acquaintance with science.

On the other hand, in the so-called public schools, which include the 76 schools in England and Wales represented on the Headmasters Conference, the Committee find that "while the majority offer adequate opportunities for the study of science to those boys whose parents desire it, there is as a whole no general recognition of the principle that science should form an essential part of secondary education." And the evil is enhanced by the fact that a number of the brighter boys, who enter a school with a classical scholarship, altogether miss any instruction in science, this instruction on the classical side being confined to the lower forms. The establishment of modern sides has furnished an excuse for, and so augmented the neglect of science on the classical side. In this way it is especially those boys who are destined to take high positions in the public services who enter on their career without having at any time studied the rudiments of science.

The tendency of the abler boys at the public schools to pursue a classical course is due, not to any enthusiasm on the part of the boys for classical studies, but to the scholarship system, which determines their whole career. At the preparatory schools they are crammed for entrance scholarships at the public schools, and the more valuable of them are purely classical, science playing no part. Entering a public school with a good knowledge of classics, but of nought else, the next stage is the attainment of a classical scholarship at Oxford or Cambridge. As might be expected, the classical scholarship winners at the universities are largely drawn from those who have already won scholarships at the public schools. Thus, during the three years ending July 31st, 1914, the total number of classical scholarships gained from the seven chief public schools was 117, while the total number gained for science from the same schools was only 19, of which 6 were gained from one school. Of the 117 classical scholarships 85 per cent. were won by boys who had been awarded entrance scholarships on the foundations of these schools. The Committee concludes—

> "That so far there has been no general and sufficient recognition of science as an essential part of the curriculum for all boys in the public schools; that the effect of scholarship examinations both at the schools themselves and at the universities, and the inequality in the number and value of the scholarships awarded for different subjects, tell against such recognition; and that many of the ablest boys who enter the public schools pass on to the universities ignorant of science and with little or no idea of its importance as a factor in the progress of civilisation or of its influence on human thought."

Recommendations of the Committee.

In order to remedy these defects the Committee emphasises the necessity of altering the character of the existing entrance examinations both at the schools and at the colleges of Oxford and Cambridge, so as to get rid of the excessive specialisation by which the work in all subjects is marred, and of insisting that each candidate for scholarships at universities should take a second subject, so that, if presenting himself for a science scholarship, he should take history, a language, or mathematics, or, if a literary subject, he should give evidence of some knowledge of science. "It is also necessary," the report states, "that the aims and character of a modern education should be more clearly defined not only in schools, but also at universities." Such a definition of aims and character must be gleaned in the report from the scheme it lays down for primary and secondary education.

"The best preparation for any occupation or profession is a general education up to the stage reached by the average boy at the age of 16, followed, where possible, between the ages of 16 and 18 by a more specialised course on a limited range of subjects. This general education should provide normally the study of English, including history and geography, languages other than English, mathematics, and natural science. Each of these subjects should be regarded as an integral part in the instruction of both boys and girls, and a fair balance should be maintained between the time allowed to them."

The effect of the establishment of such a course would be the abolition of the division into sides now usual in the larger schools.

The efficiency of the education now carried out should be determined by making compulsory a periodical inspection under the direction of the State. This recommendation is one of the most important contained in the report. Even though it might be impossible for the State or education authorities to close a school where the education was inefficient or bad, the publication of the results of the inspection would infallibly lead, as has been shown by the experience of the Carnegie trustees in America, to the rapid disappearance of the inefficiency in private schools, which is one of the worst features in our present school system. It would also bring the force of public opinion to bear upon the antiquated curriculum still preserved in some of the so-called public schools, at the present time firmly entrenched behind their barriers of tradition and social prestige.

The general course in science from 12 to 16 should not only train the mind of the student to reason about things which he has observed for himself and develop his powers of weighing and interpreting evidence, but it should also make him acquainted with the broad outline of great scientific principles, with the way in which these principles are exemplified in familiar phenomena, and with their application to the service of man. The Committee is of opinion that the second of these functions of the scientific course has been hitherto unduly neglected; but there can be no doubt of its importance to the boy who is not going to take up a scientific career, but to whom it is essential that he should know what science means and its bearings upon the problems of everyday life. It is not necessary that our administrators or our business men should be scientific men in the ordinary acceptation of the term or that they should be acquainted with a number of facts in physics and chemistry. It is essential, however, that they should recognise that science, as the ordered summary of the whole of human experience, presents the means for solving any and every problem with which they may be faced, and that the method used in attacking scientific problems—the clear vision of the object in view, and the collection and evaluation of all data appertaining to these problems—is the only method which can lead to success in war, commerce, or industry. If the business man appreciates the meaning and capabilities of science he can always find or buy the necessary expert knowledge. In this way the nation as a whole may be brought to recognise the fundamental importance of the facts and principles of science to the right ordering of our national life. So long as our traders or manufacturers are ignorant of the veriest elements of science they can neither state their needs with definiteness or accuracy, nor can they interpret into practice or utilise the results of research.

While we must provide the requisite training and opportunities for those who are capable of advancing natural science or acting as scientific experts, it is no less important that we should secure for all who are of an age to receive it an education which will enable them to realise the vital need of a knowledge of science both for the individual and national well-being. For those boys who remain at school up to 18—and the Committee is adverse to prolonging the school period beyond this age—it is recommended that the greater part of the time between 16 and 18 should be devoted to the study of a group of subjects depending on the boy's tastes and on the career which he intends to follow. It is pointed out that the imaginative and original faculties at this period could be best trained by the intensive study of a few subjects. It is suggested that a boy should devote not more than two-thirds of the school week to work in his special subjects, the other third being spent in some other kind of study—e.g., a science student might occupy this time in English or literary subjects, while the student of classics or modern languages should give his attention to science work of an appropriate kind. For the latter class of boys the science course, so far as possible, should deal with scientific questions of general interest and should be philosophic in the best sense of the term—i.e., a study of the development of scientific thought as it has affected and affects human thought and activities.

Examinations.

University scholarship examinations are not the only factors which trammel the progressive teacher and prevent freedom of experiment and of educational development in the secondary schools. A large proportion of the pupils who stay at school until the age of 16 intend to go to the university or to take up some profession the entrance to which is an examination. Thus every school in arranging its course of study has to take into account the possibility of its students presenting themselves for a number of different examinations: Oxford and Cambridge school examinations; junior and senior locals; previous examinations; responsions; matriculation; Army entrance examinations, &c. The Science Committee proposes that all these shall be virtually abolished by the institution in each school of two school examinations, a junior and senior, the passage of which in the course of time shall admit to any university or profession. It would be obviously impossible to effect such a substitution forcibly, unless by Act of Parliament, since it would interfere with vested interests, the Englishman's Ark of the Covenant. The first school examination should take place at the completion of the general course of study, and should test the results of the instruction in English subjects, languages, mathematics, and science. It should be suitable for average pupils about the age of 16. The Committee lays stress on the importance in this examination of the closest possible coöperation between teachers and examiners. Not only should the examination be adapted to the curriculum of the particular school, but great weight should be attached to the teacher's estimate of the pupils and to their school record. It should thus be carried out in accordance with the view that examinations must be determined by curricula, not curricula by examinations. At the present time it would be for the universities to determine under what conditions they would accept the first school certificate in lieu of their own entrance examination. But it is apparent that, in all cases where a State grant is given to the university, it should be possible to prevent unreasonable conditions being made in order to save a source of income to the university in the shape of matriculation examination fees.

The second school examination would be held at the end of the more specialised course of study between 16 and 18, and it is suggested that the regulations for this examination should be framed so as to be consistent with the scheme for widening the college entrance examinations of which mention has been made above. If this second school examination is satisfactorily conducted it is to be hoped that it might be used in the place of the Intermediate examinations for the Pass Degree held at many of the universities. Students could then proceed to a university ready to undertake at once a three years' course of work for their final degree, and their work during the last two years of school would not be disturbed by having to prepare for an examination, such as the University Intermediate, not primarily designed to meet school needs.

Teachers.

The Committee recognises that the first and indispensable condition to any real improvement in the teaching of science is to ensure an adequate supply of properly trained teachers.

At present teachers are deficient both in number and quality, and we cannot expect to attract the fine type of man to whom should be entrusted the most important of all functions in our society—namely, the training of the coming generation, unless we make the teachers' profession equal in social position and material reward to the other learned professions. The Committee points out that simply to add 10 per cent. or 20 per cent. to present salaries is useless. It is not merely an improvement in the salaries that is needed, but a revolution in the attitude of the public towards the teacher. The times and conditions of his teaching should also be altered, so that he may have leisure to keep abreast with the progress of knowledge, to retain freshness of mind and outlook, and not sink into the condition of a drudge who teaches so-called chemistry and physics as if they were the Latin declensions.

If this improvement can be carried out it is evident that much more real knowledge and training can be obtained in the school years than has hitherto been the case, and the Committee therefore recommends that the upper limit of age for entrance scholarship be 13 in the case of the public schools and 18 in the case of the universities, thus cutting off from the average school life one year, which can be better spent in a more thorough training in the subjects of university study, and especially in the methods and spirit of research.

Medical Education.

In a review of this report published recently in *Science Progress* Dr. C. Mercier has spoken of it as diffident. The same epithet might be applied to nine-tenths of the reports issued by Government committees and commissions. To the English mind and habit anything savouring of revolution, at any rate with subjects with which it is familiar, is distasteful. Even the report before us only ventures to use the word "revolution" in connexion with the salaries of teachers, finance not being a matter which or linarily concerns members of the Committee. In all their recommendations relative to the methods of education the reforms advocated, though in the right direction, are generally of the mildest description. This criticism applies with special force to the recommendations contained in the section on medical education. In this connexion the report adheres directly to the terms of its reference, and does not apparently regard anatomy and physiology, still less the science of medicine itself, as coming under the definition of natural science. It is thus concerned only with the question of entrance to the medical profession and the preliminary scientific education of the medical student.

The report strongly criticises the failure of the General Medical Council to demand evidence of instruction in or knowledge of natural science at the entrance examination, trust being placed solely in an examination which demands four subjects—English, mathematics, Latin, and an additional language, classical or modern. It points out that not only is there no guarantee that the candidate for registration has received any instruction in natural science, the bedrock of his future vocation, but there is no evidence that he has gone through a coherent educational course in any of the subjects demanded. Attention is called to the illogical procedure of the General Medical Council in professing not to register a student unless he takes Latin as one of his subjects, while accepting for registration the matriculation examination of various universities, although Latin is not a compulsory subject in any of them. The report points out that after the door has already been opened in this way it is too late to attempt to retain Latin as an obligatory subject in an examination for entrance to the medical profession. The Committee is strongly of opinion that the first school examination, including English, language, mathematics, and natural science, should be accepted as evidence of a general education sufficient to admit a student to professional instruction. It is suggested that something more than a simple pass should be required—e.g., it should be necessary to attain marks of distinction in two or more of the subjects in which he is examined at his school. In cases where boys and girls, by accident, laziness, or ill-development, have failed to reach an adequate standard in the first examination, it is suggested that they might be admitted as medical students if they continue at school and pass the second examination as well. The report favours the present policy of the Royal Colleges by which every encouragement is given to the study of the preliminary sciences, chemistry, physics, and biology, at school. It is evident that such a policy is entirely in accord with the plan already discussed of spending the years from 16 to 18 at school in specialised studies having reference to the future career of the boy or girl. In the case of students proceeding to medicine these studies would be scientific; but the report lays stress on the disadvantage of separating future medical students from the rest of the school in classes by themselves. It is an elementary but complete course in chemistry, physics, and biology which is needed by the medical student at the outset of his career and as a preliminary to the more intensive study of biological principles as contained in the discipline of anatomy, physiology, and biochemistry.

The Committee recommends that the student be allowed to present himself for the first medical examination immediately on leaving school and before entering the medical school or university, but does not take the further step of advocating the entire replacement of the first medical examination by the second school examination, though such a development is distinctly favoured in the section dealing with education in the Scotch universities. It is evident that unless this change can be effected the school curriculum in science from 16 to 18 will be spoiled by having its direction and objects determined by the needs of the external examination. In all three subjects—physics, chemistry, and biology—the present medical school and university course might be replaced by a complete two years' course at school on the same subjects, with considerable benefit to the later work of the student. Especially is this the case in biology. A training in general biological principles, developed in any direction according to the ideas and enthusiasm of the teacher at school, would be of value to the medical student. The present course in many cases is of little more value than the training in Latin grammar which does duty so often for an introduction to the study of language.

The report touches on the future supply of medical students, and insists that, in view of the shortage in the supply of medical men and the heavy expense of the medical curriculum, it is essential that more scholarships, tenable throughout the medical course, should be provided for candidates of both sexes.

University Education.

Some of the more important of the recommendations with regard to the universities have already been touched upon. Others, apart from the recommendation that compulsory Greek should be abolished at Oxford and Cambridge, relate to research and to scholarships. The high value of research, carried out under the guidance of the teacher, as an educational weapon is set out, and it is stated as desirable that a year spent mainly on research should form part of the work of university students preparing for careers concerned with science and its applications. This period spent on research should follow the course for a first degree in science. It is laid down that scholarships should be considered as distinctions, and should therefore be in the first place of merely nominal value, to be supplemented according to need, and that, where necessary, the whole cost of a scholar's education and maintenance should be thus defrayed. In a footnote to the section dealing with University Scholarships an estimate by the consultative committee as to the annual cost of education and maintenance at the university is quoted. This at Oxford and Cambridge is put at £140, and at the newer universities at £60 together with the sum required for fees. If the present cost of living remains after the war it seems likely that these estimates will have to be doubled if the holders of the scholarships are not to suffer from starvation.

The Committee remarks that the war has not only hampered their inquiry but must sadly retard the realisation of their hopes. This is surely a somewhat pessimistic attitude. If the war has done nothing else it has shown us that in matters of urgent necessity it is unprofitable to count the cost. How many millions have been spent on our new tactical weapon, tanks? Forty millions a year is given as a subsidy to keep down the price of bread. An expenditure of money equal to that devoted at the present time to the provision of gas masks for the Army would cover all the needs of education for many years to come. If only the conviction can be brought home to the nation of the urgent need of educational reform, or even revolution, for the maintenance of our place in the world, all that are required on the part of our administrators are a clear idea of the reforms necessary and courage to carry them out.

THE MEDICINAL USE OF LARD, OLIVE OIL, AND CASTOR OIL.

MEASURES have now been taken to meet as far as possible the shortage of lard, olive oil, and castor oil, methods having been devised for their discontinuance for medicinal purposes in certain circumstances. The Committee appointed by the Home Office in August, 1914,[1] to deal with questions of economy in the use of drugs during the war are now notifying the medical profession as to the supply, for medicinal purposes, of these substances, and certain similar vegetable oils, inviting their coöperation in effecting economies while submitting the pertinent suggestions which appear below. The prior claims of food-supply and munition production have for some months compelled restriction or even discontinuance of the use of the substances above named for medicinal purposes, the present position being that (1) *lard* is no longer released for medicinal use; (2) the amount that can be set free for such use of *olive oil* and of its possible substitutes, *sesame* and *arachis* oils, is uncertain; and (3) little, if any, of the quality of *castor* oil hitherto required for conformity with the Pharmacopœial standard can be used.

To obviate the resulting difficulties the General Medical Council, after consultation with the Home Office Committee, directed the alteration and amendment of the British Pharmacopœia, 1914, certain preparations being withdrawn from the Pharmacopœia until further notice, and sanctioned the use of various substitutes (see THE LANCET, April 13th, 1918, p. 543). By these alterations of the Pharmacopœia considerable latitude was accorded in the dispensing of prescriptions that contained the official preparations affected. That definite understanding on this point should be established between prescribers and dispensers the Pharmaceutical Society, acting in coöperation with a body of representative manufacturers and in consultation with the Home Office Committee, undertook the necessary experiments, and have constructed a set of war emergency formulæ which are published by the Society. (Codex Addendum, 1918.)

The following suggestions are offered by the Home Office Committee for the assistance of practitioners in prescribing, in view of the position as above described:—

Lard.

(*a*) Lard can no longer be dispensed either as such or as an ingredient of a prescription. A base consisting of 5 per cent. wool fat, 10 per cent. hard paraffin, and 85 per cent. soft paraffin is on the market, and will, it is believed, afford a suitable substitute for most cases in which lard would previously have been ordered. For some cases the practitioner may find it advisable to modify the proportions of the ingredients named. (*b*) Ointments containing lard or lard and suet are now allowed to be prepared with wool fat or paraffin or mixtures of these in place of the lard or lard and suet, which may no longer be used. The base described above (named for convenience adeps factitius) has been found to afford a satisfactory substitute in the preparation of these ointments, and war emergency formulæ containing it have been constructed. Practitioners will assist by ordering these formulæ except in special cases in which they think it advisable to modify the composition of the base.

Olive Oil.

(*a*) For olive oil sesame oil or arachis oil may be substituted, but none of these vegetable oils should be ordered avoidably. When required *for external purposes* a specially prepared mineral oil derived from petroleum (known as paraffinum liquidum flavum) is now obtainable, and will in most cases be found to afford a satisfactory substitute. (*b*) Four liniments containing olive oil have ceased to be official. War emergency formulæ containing the specially prepared mineral oil above mentioned have been devised. Liniments so prepared are on the market, and may be substituted for the former official preparations.

Castor Oil.

(*a*) For castor oil it has been found, as the result of investigations by the Medical Research Committee, that the neutralised seconds castor oil, now recognised by the Pharmacopœia and readily obtainable, affords a satisfactory substitute for the first quality oil hitherto used. (*b*) One preparation containing castor oil has been withdrawn—viz., liq. cresol saponatus. For the preparations containing castor oil remaining official—i.e., collodium flexile, lin. sinapis, and liq. epispasticus, the neutralised seconds oil will be used by the manufacturer or chemist in place of the oil previously official.

The suggestions of the Home Office Committee will be very welcome to medical practitioners. The Codex Addendum was fully dealt with in our columns last week (THE LANCET, Sept. 7th, p. 336).

[1] The present members of the Committee are as follows: Dr. J. Smith Whitaker (chairman); Sir Thomas Barlow, formerly President of the Royal College of Physicians of London, consulting physician, University College Hospital; Dr. A. Cox, medical secretary of the British Medical Association; Dr. E. Rowland Fothergill; Dr. B. A. Richmond, secretary of the London Panel Committee; Dr. F. J. Smith, physician, London Hospital; Dr. W. Hale White, physician, Guy's Hospital; secretary, Dr. E. W. Adams, medical officer of the National Health Insurance Commission, late lecturer in pharmacology, University of Sheffield.

URBAN VITAL STATISTICS.

(Week ended August 31st, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 11·2, against 10·4 and 10·8 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 10·5, or 0·9 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 4·0 in Swindon, 4·3 in Southport, and 4·4 in Bath, to 18·8 in Gateshead, 21·8 in Barnsley, and 26·1 in West Hartlepool. The principal epidemic diseases caused 541 deaths, which corresponded to an annual rate of 1·7 per 1000, and included 435 from infantile diarrhœa, 33 from whooping-cough, 27 from measles, 26 from diphtheria, 12 from scarlet fever, and 8 from enteric fever. The deaths from diarrhœa, which had steadily increased from 34 to 305 in the seven preceding weeks, further rose to 435, and were 123 in excess of the number registered in the corresponding week of last year; 71 deaths were recorded in London, 45 in Birmingham, 29 in Liverpool, and 21 in West Ham. The 701 cases of scarlet fever and 888 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 9 below and 7 above the respective numbers remaining at the end of the previous week. Of the total deaths in the 96 towns 123 resulted from violence. The causes of 41 deaths were uncertified, of which 6 were registered in Birmingham, 5 in Leicester, and 3 each in London and Liverpool.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 9·4, against rates declining from 17·4 to 9·9 per 1000 in the six preceding weeks. The 196 deaths in Glasgow corresponded to an annual rate of 9·2 per 1000, and included 18 from infantile diarrhœa, 5 from whooping-cough, and 1 each from enteric fever, measles, and diphtheria. The 59 deaths in Edinburgh were also equal to a rate of 9·2 per 1000, and included 3 from infantile diarrhœa and a fatal case each of scarlet fever and diphtheria.

Irish Towns.—The 130 deaths in Dublin corresponded to an annual rate of 17·0, or 1·6 per 1000 below that recorded in the previous week, and included 24 from infantile diarrhœa and 2 from whooping-cough. The 96 deaths in Belfast were equal to a rate of 12·7 per 1000, and included 7 from infantile diarrhœa and a fatal case each of measles and diphtheria.

(Week ended Sept. 7th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 11·9, against 10·8 and 11·2 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 11·4, or 0·9 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 1·0 in Oxford, 4·1 in Aberdare, and 4·4 in Bournemouth, to 19·5 in Sunderland, 20·0 in Dudley, and 23·0 in South Shields. The principal epidemic diseases caused 543 deaths, which corresponded to an annual rate of 1·7 per 1000, and included 431 from infantile diarrhœa, 45 from whooping-cough, 37 from diphtheria, 16 from measles, and 7 each from enteric fever and scarlet fever. The deaths from diarrhœa, which had steadily increased from 34 to 435 in the eight preceding weeks, slightly fell to 431, but were 101 in excess of the number registered in the corresponding week of last year; 91 deaths were recorded in London, 41 in Birmingham, 40 in Liverpool, 17 in Sheffield, 14 in West Ham, and 12 in Hull. Diphtheria caused a death-rate of 2·3 in Bootle and 3·5 in St. Helens. The 748 cases of scarlet fever and 875 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 47 above and 13 below the respective numbers remaining at the end of the previous week. Of the total deaths in the 96 towns 114 resulted from violence. The causes of 32 deaths were uncertified, of which 6 were registered in Liverpool, 5 in Birmingham, and 3 each in London and South Shields.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 10·9, against 9·9 and 9·4 per 1000 in the two preceding weeks. The 249 deaths in Glasgow corresponded to an annual rate of 11·7 per 1000, and included 16 from infantile diarrhœa, 7 each from whooping-cough and diphtheria, and 4 from measles. The 63 deaths in Edinburgh were equal to a rate of 9·9 per 1000, and included 2 each from whooping-cough and diphtheria and 1 from infantile diarrhœa.

Irish Towns.—The 132 deaths in Dublin corresponded to an annual rate of 17·3, or 0·3 per 1000 above that recorded in the previous week, and included 23 from infantile diarrhœa, 3 from enteric fever, and 1 each from measles, scarlet fever, whooping-cough, and diphtheria. The 85 deaths in Belfast were equal to a rate of 11·3 per 1000, and included 10 from infantile diarrhœa and 3 from enteric fever.

DEATH OF DR. P. W. WILKINSON.—Percy William Wilkinson, M.B., C.M. Edin., died recently at his residence at Bere Alston, Devon, in his fiftieth year. The deceased was the eldest son of the late Rev. W. Wilkinson, rector of Week St. Mary, Devon. Dr. Wilkinson had been in practice at Bere Alston for many years and was highly respected.

Correspondence.

"Audi alteram partem."

NASO-PHARYNGEAL INFECTION AT THE ONSET OF CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—Major J. Dorgan, in his letter to THE LANCET of August 17th, disputing Lieutenant-Colonel M. H. Gordon's statement that "every case of cerebro-spinal fever was in reality an instance of a carrier developing the disease" makes three definite points—namely:—

1. In 41 cases of declared cerebro-spinal fever at X only 19 had meningococci in the throat. In 4 cases in London only 1 had meningococci in the throat.
2. Nine men swabbed a short time before they developed cerebro-spinal fever failed to show evidence of meningococci in the throat.
3. 520 carriers were isolated at X and none developed cerebro-spinal fever.

From these results he concludes that Colonel Gordon's statement is incorrect.

Colonel Gordon in his reply deals with point 1 by stating that negative results are of less value than positive, and "success requires special training, experience, and sometimes considerable perseverance as well." Captain Martin Flack always took two swabs. It may, however, be pointed out that these cases were examined by Professor Samut and by Captain Armstrong, of the Central C.S.F. Laboratory. The London cases were examined by Captain J. A. Glover and two were swabbed twice. That is to say, all of the cases were examined in what one might describe as Colonel Gordon's own laboratory.

Not content with this sort of criticism, he then proceeds to suggest that "a considerable proportion" of the cases in which these workers failed to find meningococci in the throat were really not cases of cerebro-spinal fever at all. Although they found Gram-negative intracellular diplococci in the cerebro-spinal fluid and isolated them in half the cases and finally agglutinated them with specific serum, he doubts the diagnosis and suggests that these cocci are "a few sterilised diplococci" introduced into the fluid from the skin of the patient's back. This is an extremely far-fetched suggestion. His position is obviously untenable when we are told that the cocci were actually grown and identified by the Professor of Bacteriology at Malta University. He could surely tell the difference between the living meningococcus and the dead staphylococcus albus.

The points 2 and 3, made by Major Dorgan, are very relevant to the discussion, but are avoided by Lieutenant-Colonel Gordon.

I may point out that Temporary Surgeon S. L. Baker and I in the Navy established precisely similar points to those indicated by Major Dorgan, with whose work we were totally unacquainted. We came to the same obvious conclusion—namely, that Colonel Gordon's statement was much too sweeping, in fact, incorrect. Our work is quite well known to Colonel Gordon. If he still wishes to maintain the accuracy of his statement, or if he wishes to convey the impression that he still maintains it, he will find his audience unsympathetic if he can bring no better argument than this.—I am, Sir, yours faithfully,

P. FILDES,
Hon. Staff-Surgeon, R.N.V.R.

R.N. Hospital, Haslar, August 17th, 1918.

A NASAL DRILL IN THE TREATMENT OF ADENOIDS.

To the Editor of THE LANCET.

SIR,—The new therapeutical departure, referred to in Dr. Isabel Ormiston's paper and in your editorial annotation of August 24th, which we owe to Mrs. E. Handcock's acumen and single-minded endeavours, is of wider significance than might appear at first sight. The beneficial action of her harmless powder and of her advocacy of a physiologically efficient use of the handkerchief for "nose-pumping" rather than nose-wiping is sufficiently demonstrated by the success of her happy thought of treating in batches the snuffling children who crowd our out-patient rooms. Naso-pharyngeal sanitation, upon which so much depends, is in the first place a mechanical proceeding, best carried out by fully utilising the viscidity of the mucus for the purpose of drawing it out from the depth in an unbroken stringy stream. Nose-blowing, as it is usually taught in the nursery, interrupts its discharge. That recommendation applies *a fortiori* to adults with more capacious mucous recesses, as those can testify who have obtained complete relief of their catarrhal troubles from her simple methods, without any need for antiseptic inhalations or irrigations as a second resort. The chief significance of this new departure is in its underlying principle: *functional treatment* for the cure of malfunction and for the timely prevention of its structural results at an early age, as well as of its reflex consequences at all ages, although by far the most formidable reflex complications belong to the spasmophilic period of early childhood. The structural results are a thickened mucous membrane, adenoid overgrowth, and tonsillar hypertrophy. The last of these, in the absence of that functional treatment, too often imposes upon us the most unphysiological of remedies, a mutilation of our perfect organism. The avoidance of tonsillectomy has been for years Mrs. Handcock's steady and confident aim. In that connexion I have availed myself of her valuable aid in one instance, and with most satisfactory results, in a little boy liable to frequent gastric upsets culminating in alarming attacks of pyrexia and tachypnœa suggestive of acute pneumonia or broncho-pneumonia. The threatened tonsillectomy has not been required, and for upwards of a year he has enjoyed perfect health, and has rapidly made up for the previous delay in his development and strength.

I am, Sir, yours faithfully,

Upper Brook-street, W., August 27th, 1918. WILLIAM EWART.

To the Editor of THE LANCET.

SIR,—I am glad to find that the non-operative treatment of adenoid growths as practised by Mrs. E. Handcock is being recognised by the medical profession. I have had many opportunities of seeing cases under her care, and the following notes may be deserving of record.

E. H., age 12. Had a severe fright when 2½ years of age, after which she complained of severe pain in both eyes and constant headaches; was treated in several hospitals for partial blindness, and was eventually told she would become quite blind. I saw her in the summer and autumn of 1913, when she first came under Mrs. Handcock's care, and she was then unable to see even large objects without the aid of glasses. There was nasal obstruction and adenoid vegetations, no discharge, breath offensive, and she complained of a nasty taste in the mouth; appetite poor, and she was anæmic. There was considerable thickening over the bridge of the nose, and also behind both ears. She was dull, stupid, and apathetic, walked badly, had night terrors, and slept very badly. The skin was harsh and dry, and she had never perspired. Feet, hands, and abdomen were always cold.

After a few weeks' treatment there was free discharge from the nose, slightly offensive, the thickening over the nose and behind the ears had almost disappeared, she could read large print without glasses, the appetite was good, she slept well, and had no night terrors. The skin was soft and smooth, and she perspired after active exercise. About six months later she looked a bright, intelligent, and normally healthy girl, and had grown considerably.

This case is a good illustration of what can be done by a skilfully applied treatment, and shows that the use of glasses in cases of defective eyesight is not always necessary. The use of the nasal powder should not, I think, come first in the matter of treatment, but should rather be considered as an adjunct to the drill and manipulations.

I am, Sir, yours faithfully,

Sept. 4th, 1918. WALTER C. BLAKER, M.R.C.S., &c.

THE TREATMENT OF WAR NEUROSES.

To the Editor of THE LANCET.

SIR,—In response to my suggestion that it would be of value if Major A. F. Hurst and Captain J. L. M. Symns could give the late, as well as the immediate, results of their treatment they state that, "from all we have been able to hear the number of relapses is exceedingly small" and "we do not know of a single man invalided from our neurological centre who has relapsed." I can only attribute this to their not having had the time or opportunity to follow up many of their discharged cases, for I have seen relapsed and uncured cases from every neurological centre in Great Britain, including Netley.

I do not suppose that your correspondents would claim that their results are better than those obtained at other centres; at any rate, my experience of several hundreds of such uncured pensioners leads me to the conclusion that all the

neurological centres get equally good early results as to the removal of symptoms, but that relapses after discharge are unfortunately very common. Anyone anxious to investigate the point will find thousands of these relapsed and uncured cases, many of them totally disabled, if he will make inquiries at the Special Medical Board, the Y.M.C.A. Special Exchange, or at the various Local War Pensions Committees.

Relapse most commonly occurs after a man has been discharged from hospital where he was under complete medical control, when he has to resume the freedom, cares, and responsibilities of ordinary life. Such a man may still figure in the hospital records as "cured," though he may, in fact, be as incapable as he was to start with, and unfortunately in a condition now confirmed and much less likely to be cured a second time by suggestion. I hold that it is as unreasonable to claim soon after the symptoms have disappeared that neurotic conditions are "cured" as it would be for a surgeon immediately to record as "cured" all the malignant growths he has partially or wholly excised.

With regard to the country host scheme, common sense suggested that neurasthenia (nervous debility or exhaustion) would be, as in years past, removed by good country food, fresh air, and reasonably guided rest and exercise. All who have to deal with these cases will, I feel sure, be glad to hear that experience confirms this view, and, that the results of the scheme are encouraging, is definitely attested by the fact that the Ministry of Pensions has just decided to extend the scheme to all areas of the United Kingdom. At the neurological centres, including Seale Hayne, excellent and indeed indispensable work is being done, but I am convinced that a "half-way house" of diminished control, such as the country host scheme provides, is a necessity if relapses are to be prevented.

I am, Sir, yours faithfully,

Sept. 7th, 1918. THOMAS LUMSDEN.

*** We understand that the scheme of the Country Host Institution, in addition to its extended use by the Ministry of Pensions, has now been accepted by the Navy for undischarged sailors. The Institution finds suitable work for the men on their return from the country.—ED. L.

WAR DEAFNESS.

To the Editor of THE LANCET.

SIR,—Dr. P. McBride asks (THE LANCET, August 24th, p. 253) for a concrete example of functional deafness—a condition which he considers to be rare—and I submit the following :—

Pte. J. R. was blown up and partially buried by a shell on Feb. 15th, 1918. He became totally deaf at once and did not lose his speech nor show other hysterical signs. There was a discharge from both ears for four weeks after the explosion. Specialists found bone conduction lost and concluded that "the site of the deafness is the labyrinth on each side." He was admitted to the Seale Hayne Military Hospital on Sept. 4th, 1918, and the following day was treated for 30 minutes by pure suggestion, with the result that he heard perfectly normally after seven months of total deafness.

Now, if on account of the discharge from the ears and the bone deafness this case had not been regarded as hysterical for fear of doing him a "very grave injustice" he would undoubtedly have been invalided from the Army totally deaf and probably would have remained so. Injustice would lie rather in not regarding all cases of concussion deafness as at least partially functional from the first.

I am, Sir, yours faithfully,

J. W. MOORE.
Captain, M.R.C., U.S.A.

Seale Hayne Military Hospital, Newton Abbot, Devon, Sept. 8th, 1918.

ANTIMONY IN BILHARZIOSIS.

To the Editor of THE LANCET.

SIR,—I can fully confirm Dr. J. B. Christopherson's results given in his paper in your issue of Sept. 7th. I began to use antimony in bilharziosis in 1912 ("Biology and Treatment of Venereal Diseases," p. 349), and have treated 23 cases with a disappearance of ova in the urine. I do not know how many cases relapsed, but one case I treated with bitartrate-potassium-ammonium-antimony oxide (antiluetin) in 1914 is well to-day. I have used three preparations: (1) tartar emetic intravenously in doses of 1–1½ gr., dissolved in 5 oz. of water, to avoid thrombosis, twice or three times a week; (2) antiluetin intramuscularly and intravenously alternately, beginning with 0·025 g. and ending up with 0·2 g.; (3) colloidal antimony, both intravenously and intramuscularly, in doses of 0·5 c.cm. to 2·0 c.cm. of a 0·2 per cent. emulsion. Alternate intramuscular and intravenous injections have given better results than using only one route. Both antiluetin and colloidal antimony appear to be more efficacious than tartar emetic. Colloidal antimony is the least toxic, but as far as can be judged not quite so potent in its action as antiluetin, but possibly much larger doses might be well stood. No preparation of arsenic in my hands has done any good, but the use of intramine (a sulphur compound) both increases the action of the metal and inhibits its toxic effect. On the precise way in which antimony works in bilharziosis (other than as an oxidising agent) I can throw no light; I only used it empirically in view of the good results obtained in other diseases caused by animal parasites, which remain uninfluenced by salvarsan. I am at present precluded from further investigating the use of antimony in bilharziosis, but hope that others will discover the best antimony compound to use.

I am, Sir, yours faithfully,

Wimpole-street, W., Sept. 9th, 1918. J. E. R. MCDONAGH.

CONGENITAL PYLORIC STENOSIS.

To the Editor of THE LANCET.

SIR,—In regard to the case report of congenital pyloric stenosis reported in your issue of June 8th, in which Dr. T. Jason Wood performed a gastro-enterostomy with a very successful result, it might be pointed out that a gastro-enterostomy is a rather severe procedure in these half-starved infants and that pylorectomy, which he presents as an alternative operation, is never indicated. Statistics show that the best results have been obtained by the "Webber operation." In this procedure the pyloric tumour is split longitudinally throughout its whole length into the muscularis mucosæ; when this layer is reached the cut edges of the tumour are drawn apart forcibly and the underlying mucosa bulges into the incision. The patency of the pylorus can then be demonstrated by expressing gas through the stomach into the duodenum. On the antero-superior surface of the tumour there is an almost avascular area and if the incision is placed in this situation little bleeding is encountered. When the constriction has been relieved in this manner nothing further is done and the abdomen is closed.

Some operators prefer to undermine the serosa on either side of the incision in the tumour and bring it over the gap in the muscular wall; this, however, does not seem to be necessary, as nature covers the base of the incision with peritoneum in a very short time. It is not uncommon to find that the distal end of the tumour almost forms an invagination into the duodenum, and in splitting the tumour the proximal part of the duodenal mucosa may be nicked by the scalpel, allowing the escape of duodenal contents. This has occurred in several of our cases, but the opening has been closed very easily by a fine chromic gut suture, perhaps reinforced by a small omental graft; no ill-effects have followed. This operation is simple, short, and meets all requirements. The post-operative shock is reduced to a minimum. The first case in the Hospital for Sick Children, Toronto, done by this method some four years ago is now apparently a normal, healthy child.

Immediately following this operation it is our routine to perform a transfusion of whole blood on the infant from either parent. This procedure gives the patient a physiological stimulus that cannot be obtained by any other means. The blood transfusion is a most valuable adjunct in treatment and, undoubtedly, has helped materially to save some desperate cases. The transfusion is done by the syringe method, giving at a maximum not more than 15 c.cm. of blood per pound of body weight of the recipient. This usually means an amount of from 75 to 100 c.cm. of blood. The difficulty of finding a suitable vein in an infant is largely obviated by using the saphenous vein over the internal malleolus, which can be felt if it cannot be seen.

In a report from the Hospital for Sick Children, Toronto,[1] by Dr. W. E. Gallie and myself, 18 cases were cited with 5 deaths. Further cases to the number of 15 have been done by this method, with 4 deaths.

I am, Sir, yours faithfully,

L. BRUCE ROBERTSON,
Major, C.A.M.C.

Toronto, Canada, August 8th, 1918.

[1] Journal of Canadian Medical Association, June, 1917.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. W. M. Lansdale, R.A.M.C., attached Royal Berks Regiment, was a student at Guy's Hospital, London, and qualified in 1914, just after the outbreak of war. He joined up shortly afterwards.
Lieut.-Col. H. H. Moshier, Canadian A.M.C., qualified at the University of Toronto in 1909, and was professor of physiology at the University of Alberta at the time he came over with the Canadian Expeditionary Force.
Capt. W. Rogerson, R.A.M.C., attd. Royal Berks Regiment.
Capt. A. Morton, R.A.M.C., attd. Highland Light Infantry.

Died.

Capt. E. W. Waters, East African Medical Service.

Died of Wounds.

Capt. R. B. Taylor, M.C., R.A.M.C.

Wounded.

Lieut. W. M. Heald, R.A.M.C., attached Lancs Fusiliers.
Capt. G. Kirkhope, R.A.M.C., attached Dragoon Guards.
Capt. A. H. Wallace, Canadian A.M.C.
Capt. D. J. Evans, R.A.M.C., attached Tank Corps.
Capt. W. D. Newland, R.A.M.C.
Major M. A. Power, M.C., R.A.M.C.
Capt. J. R. John, R.A.M.C., attached Sherwood Foresters.
Capt. D. F. Riddell, R.A.M.C., attached Cheshire Regiment.
Capt. A. K. Forbes, R.A.M.C., attached Coldstream Guards.
Lieut. W. P. Nelson, R.A.M.C., attached London Regiment.
Capt. L. H. H. Boys, R.A.M.C., attd. Royal Warwick Regt.
Lieut. T. Davies, R.A.M.C., attached Dorset Regiment.
Major W. Murdoch, M.C., R.A.M.C.
Major J. McL. Pinkerton, M.C., R.A.M.C.
Capt. E. C. A. Smith, R.A.M.C., attached Lancs Fusiliers.
Major G. H. R. Gibson, D.S.O., Canadian A.M.C.
Capt. H. G. Young, D.S.O., Canadian A.M.C.

Previously reported Missing, now reported Prisoners in German Hands.

Capt. C. C. Jones, R.A.M.C.
Capt. F. H. McCaughey, R.A.M.C., attd. North'd Fusiliers.
Capt. W. A. Rees, R.A.M.C.

THE HONOURS LIST.

The following awards to medical officers are announced :—

K.C.V.O.—Maj.-Gen. W. G. A. Bedford, C.B., C.M.G., A.M.S.
C.M.G.—Lt.-Col. P. W. O'Gorman, I.M.S.; Lt.-Col. R. T. Brown, D.S.O., R.A.M.C.
To be Brevet Major.—Capt. (temp. Maj.) W. E. Marshall, M.C., R.A.M.C.
D.S.O.—Maj. W. McConaghy, R.A.M.C.; Maj. R. S. Kennedy, M.C., I.M.S.; Temp. Lt.-Col. A. G. P. Gipps, R.A.M.C.; Maj. R. B. Purves, R.A.M.C.
Military Cross.—Temp. Capt. P. L. T. Bennett, R.A.M.C.; Temp. Capt. H. W. Hodgson, R.A.M.C.

BROUGHT TO NOTICE.

The names of the following medical officers have been brought to the notice of the Secretary of State for War for valuable services rendered in connexion with the sinking or damage by enemy action of hospital ships, transports, and store ships. All are members of the R.A.M.C. :—

Lt.-Col. H. S. Anderson, C.M.G.; Temp. Capt. P. L. T. Bennett; Temp. Capt. T. L. Butler; Maj. W. S. Crosthwait; Temp. Capt. E. G. Fenton; Temp. Lt.-Col. A. G. P. Gipps; Temp. Capt. J. H. Glover; Temp. Capt. P. Gully; Temp. Capt. H. W. Hodgson; Temp. Maj. W. E. Home; Temp. Capt. H. E. Moore; Temp. Capt. (acting Lt.-Col.) W. Penberthy; Maj. J. H. E. Priestley, C.M.G.; Maj. R. B. Purves, attached Yeomanry; Temp. Capt. J. L. Rentoul; Temp Capt. J. Robertson; Temp. Maj. G. S. Samuelson; Temp. Capt. R. A. Shekleton; Temp. Capt. H. Slater; Temp. Lt. R. H. Thomson; Temp. Capt. T. Tierney; Capt. C. E. W. Wilmot.

MENTIONED IN DESPATCHES.

In a despatch received from the Commander-in-Chief of the Mesopotamia Expeditionary Force, dated April 15th, 1918, the following reference to the medical service occurs :—

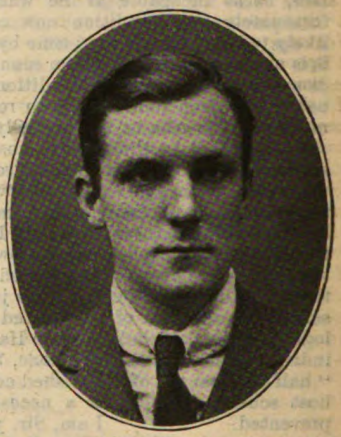
The high standard of efficiency displayed by all ranks of the Medical Service has been most gratifying to me, and reflects great credit on Surgeon-General A. P. Blenkinsop, C.B., C.M.G., my Director of Medical Services. The health of the troops has shown marked improvement as compared with the corresponding months of 1916-17. The sanitary organisation and administration has steadily progressed, and the standard of comfort and efficiency of the hospitals is most satisfactory.

OBITUARY OF THE WAR.

DOUGLAS TAYLOR, M.B., CH.B. GLASG.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant D. Taylor, who died on active service on July 26th, at the age of 23 years, was only son of the late John Taylor, M.D., of Whiteinch, Glasgow. He was educated at Glasgow High School, entering Glasgow University in 1912 and graduating M.B., Ch.B. five years later after a successful academic career. During his final year of study he acted as clinical assistant at Govan District Asylum, Hawkhead. On graduating the state of his health at first prevented him from joining the R.A.M.C., and he accepted an appointment for several months as medical officer in the district of Torridon, Ross-shire. On receiving his commission later he was sent to the Near East last June, and while engaged in work at a base hospital he contracted dysentery and malaria, from which he died in hospital at Salonika. Described as a student by nature and of a kind and sympathetic disposition, Lieutenant Taylor had given promise of filling an honourable place in the medical profession.



GEORGE HELY-HUTCHINSON ALMOND, M.A., M.B. OXON.

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain G. H.-H. Almond, who was killed in action on August 9th, at the age of 41 years, was only surviving son of the late Hely-Hutchinson Almond, sometime headmaster of Loretto. He was educated at Edinburgh Academy, Loretto, and Oxford, where he took honours in science in 1902, going on to St. Bartholomew's Hospital, London, for his clinical studies and qualifying M.B., B.Ch. Oxon., in 1908. He held a number of resident hospital appointments in London before settling in practice at Bath, where he became honorary pathologist to the Royal Mineral Water Hospital and assistant pathologist to the Royal United Hospital. He had as a student served in the Yeomanry during the South African War, and in 1915 he received a commission in the R.A.M.C., going out as a pathologist. Captain Almond's careful work as a pathologist was well known to his fellow-workers. One of his colleagues at Bath writes of his "infinite capacity for taking pains," and his published work in the *Bristol Medico-Chirurgical Journal* and our own columns testifies to this faculty. A study which he made of the joint fluids in arthritis awaits publication. The equipment of the Bath laboratories owes much to his enthusiasm. His chief at a London Hospital writes to us at length of his personal qualities. "He loved his work; he was skilful and careful; he was unfailingly gentle and courteous to his patients; he worked well and

happily with everybody." Both correspondents speak of Captain Almond's forgetfulness of self and self-interest, which made his life tell on other men's lives. Captain Almond was married to a niece of the late Sir William MacCormac, and leaves a widow and three sons.

LIONEL ARTHUR MARTIN, M.R.C.S. ENG.,
SURGEON, ROYAL NAVY.

Surgeon L. A. Martin, who was accidentally killed at sea at the age of 31 years, was youngest son of Edward F. Martin, M.D., of Weston-super-Mare. He was educated at St. Peter's School, Weston-super-Mare, and at Epsom College, where he was a keen member of the O.T.C. Commencing his medical studies at University College, London, in 1905, he took the qualification of the Conjoint Board in 1912, and was about to take the Final M.B. Lond. when war broke out. He at once resigned his appointment as house physician at University College Hospital to join the Navy, and was appointed surgeon to H.M.S. *Vindictive* in August, 1914, serving with her to July, 1916, when he was appointed to H.M.S. *China*. His death occurred suddenly in the pursuance of his duties through an accident to one of the ship's boats.

Surgeon Martin's senior M.O. writes of his value as an organiser in working the sick bay staff and looking after the general administration of the hospital. His untiring energy and perserverance were always at the disposal of his seniors, and his loss will be hard to fill.

DAMER HARRISSON, F.R.C.S. EDIN., M.CH. (HON. CAUSÂ) LIVERP.,
COLONEL, A.M.S.

Colonel Harrisson, whose death we recorded last week, joined the surgical staff of the David Lewis Northern Hospital of Liverpool in 1882 and retired in 1913, returning to active work again when war broke out. He had risen to the position of surgeon lieutenant-colonel in the Lancashire Hussars, and was recently administrative medical officer of the West Lancashire Territorial Division. As a recognition of his services in this capacity he was made honorary surgeon to the King. He had held a number of teaching and other appointments; he was university lecturer on clinical surgery and medical officer to the special schools for defective children. His published work was on the surgery of the brain and nervous system.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Major A. R. Carter, R.G.A., attached R.A.F., died of wounds, third and youngest son of Dr. G. Carter, of Sheffield.

Second Lieut. J. Y. P. Jones, Welsh Regiment, killed in action, only son of Dr. J. Jones, of Clydach, Swansea Valley.

Capt. J. A. Summerhayes, Labour Corps, attached Inniskilling Fusiliers, killed in action, eldest son of Lieut.-Col. J. O. Summerhayes, D.S.O., R.A.M.C. (T.F.), of Thame, Oxon.

Capt. W. M. Lansdale, R.A.M.C., killed in action, son of Dr. W. Lansdale, of Grove Park, Lee, London.

Second Lieut. E. J. Mortis, Royal Guernsey Light Infantry, reported missing, now reported killed in action, younger son of Dr. H. E. Mortis, of Kinnerley, Oswestry.

Lieut. T. F. H. Torney, killed in action, only son of Captain H. Torney, R.A.M.C., of Cowbridge, South Wales.

Capt. B. C. Hall, Manchester Regiment, killed in action, only surviving child of Dr. H. Strange Hall, of Leigh, Lancs, medical officer of the Leigh Auxiliary Medical Hospital.

Obituary.

ROBERT SAUNDBY, M.D. EDIN., F.R.C.P., LL.D. (HON CAUSÂ) MCGILL AND ST. AND., M.SC. BIRM.,
EMERITUS PROFESSOR OF MEDICINE, BIRMINGHAM UNIVERSITY; LIEUTENANT-COLONEL, R.A.M.C.(T.)

THE death of Dr. Robert Saundby on August 28th of heart trouble, from which he had long suffered, removes a man of dominant personality, who had for long been a leader of the medical profession in the Midland counties.

Robert Saundby was born in London on Dec. 9th, 1849, and began his career as a tea-planter in the East until obliged by ill-health to return to England. On his voyage home the suasion of a medical fellow-passenger turned his thoughts in the direction of medicine, with the result that he entered Edinburgh University, taking the degrees of M.B., C.M. in 1874, and of M.D. three years later. After qualifying, he was for a time resident physician to the Royal Infirmary at Edinburgh, and house physician to the City Chest Hospital in London before his appointment in 1876 as pathologist to Birmingham General Hospital, which began his association with the city where he spent the 40 years of his active professional life. In the following year he was appointed assistant physician, becoming full physician in 1884, and only relinquishing office in 1912 to become consulting physician. His first teaching appointment was that of lecturer on comparative anatomy at the Queen's College, Birmingham, which he relinquished to become professor of medicine at the Mason University College, merged later in the University of Birmingham. He was in succession Bradshaw, Middlemore, and Ingleby Lecturer, and last year delivered the Harveian Oration at the Royal College of Physicians of London. He was president of the Birmingham Medical Institute, and a vice-president of the British Medical Association, and for 12 years the representative of Birmingham University on the General Medical Council.

It was to his public work that Saundby gave the greater part of his time, and the broader interests of hospital and university prevented him from acquiring a consulting practice commensurate with his ability. He was extraordinarily scrupulous in the performance of his hospital duties, spending many hours each week in the wards, where his wide knowledge of medical literature and his close familiarity with current French work made his teaching of special interest. He never neglected the less interesting cases; but in any discussion on the history of a disease or method of practice he would often reveal an astonishing acquaintance with out-of-the-way facts. He had a sound knowledge of pathology, and was a constant attendant at post-mortem examinations, while his judicial mind, unswerving in the pursuit of truth, fitted him well for original research when he had time to undertake it. His writings, without being highly original, are in the nature of well-digested presentation of fact, amplified by personal experience.

In his relation to students Saundby set a very high standard as examiner, making the M.B., Ch.B. Birmingham a degree hard to obtain, and therefore the more valued. To the less painstaking or less conscientious student his searching questions in ward or examination hall were something of an ordeal. Saundby tolerated no slipshod answer, no looseness of thought, no slovenly case-taking. But as intimacy grew the student's fear changed to affection, and Saundby commanded in a very high degree the respect of his colleagues. He was not an easy man to oppose, and was naturally impatient of stupidity or ignorance, with a hot temper which did not suffer fools gladly. In consequence his actions sometimes made him unpopular, but no one ever accused him of seeking his own, and time often proved him right and his actions to have been in the best interest of his profession. His code of medical ethics, embodied in a series of lectures which were re-published, was a noteworthy contribution to medical practice.

His earliest published work dealt with diabetes and Bright's disease, in which he always maintained his interest. He was one of the founders of the *Midland Medical Journal* and its editor in early days. He translated Ewald's "Diseases of the Stomach" for the Sydenham Society and was himself one of the first to give immediate feeding to cases of gastric ulcer. With his colleague, Gilbert Barling, he paid much attention to the surgical treatment of gastric diseases, and was specially helpful to patients in laying down

sound dietetic lines and general advice upon their mode of life. His clinical perspicacity pointed out the identity of ulcerative colitis with sporadic dysentery, while unusual cases of disease rarely escaped him, a description of the first recognised case of acromegaly in England being from his pen. His last work, on "Old Age," reveals ripe judgment and experience. As he became older his mind remained fresh and receptive, enabling him to deal fairly with the work of younger men and to find its appropriate niche for each new fact.

The passing of Saundby leaves behind the memory of a strong and unselfish man whose life was spent for the good of his profession and the enhancement of its influence on the life of the nation. A staunch friend, a foe to injustice and deceit, a man retiring by nature but whose sense of duty obliged him to overcome his shrinking from publicity—these are the traits by which he will be held in honoured remembrance.

Dr. J. W. Russell writes:—

"Dr. Saundby was a man of strong personality. His clinical work was essentially scientific. His reading was wide, and he had an extensive knowledge of contemporary research; this he applied in the wards of the hospital and in his private practice. He was keen to test for himself any new method of investigation or treatment, judged it carefully and critically, and rejected or retained it according to the result. To work under him was to learn thoroughness of investigation and the application of strict methods of thought. Above all, he set a fine example of loyalty and devotion to his hospital work. During many years of his active service he rarely missed a daily visit, and the least interesting of his cases had from him all that he was able to give.

Dr. Saundby was a keen critic. His mental grasp was clear and rapid, and he saw at once the weak points of an argument, as well as the right course to take in any difficult public matter. For this reason he was looked to in many ways as the leader of the profession in Birmingham, and as a guide in matters of medical policy, whilst his advice was frequently sought in private difficulties. During the formation of the University he played an important part in laying down the policy of the medical faculty, and he brought great dignity to the chair of Medicine. He was hardly a great teacher: he learned so easily himself that he failed to some extent to understand the difficulties of the ordinary man. But those who followed his work, and especially his house physicians, learned great lessons from him, and many of his younger colleagues have cause to remember with gratitude the encouragement and help given them in their early years.

His personal character was exceedingly fine. The quickness and certainty of his mental processes made it at times difficult to put up with opposition and dissent, and a certain irritability of temperament gave rise to occasional misunderstandings. But those who knew him best realised how little all this really meant, and of what warmth of affection and loyalty of friendship he was capable. The outstanding point in his character was a great uprightness and honesty, and the single-mindedness with which he pursued his ideals. These were high, both in public and private matters, and they were never lowered to suit his convenience. He never tolerated what he thought wrong, and took his own straight course entirely regardless of, and often in direct opposition to, his own interests. In Dr. Saundby the profession has lost a strong and sincere man and a real leader."

Dr. Saundby married in 1880 Mary Edith Spencer, of Wolverhampton, and leaves a daughter and two sons. A third son was killed last year in the Royal Flying Corps.

WILLIAM REID, M.D. ABERD.

Dr. William Reid, superintendent for more than 25 years of the Aberdeen Royal Asylum, died at Lochhead on Sept. 3rd. The son of the late Rev. William Reid, minister of Auchindoir, he had a distinguished career at Aberdeen University along with his two brothers, Robert W. Reid, now Regius professor of anatomy in the University, and the late Major-General Sir A. J. F. Reid. Graduating in 1876, he almost at once became junior assistant to Dr. Jamieson, who was then medical head of the asylum, and succeeded him on his death 15 years later. During his term of office he saw the great institution reconstructed at a cost of £50,000, with the addition of a branch asylum at Daviot. The success of this vast undertaking owed much to Dr. Reid's able administration. He was responsible for the introduction of female nursing on both sides of the asylum, a measure which, at the time, was severely criticised. Dr. Reid was also lecturer on mental diseases at the University of Aberdeen. Socially, he entered with zest into the corporate life of the University. Dr. Reid was married to a daughter of William Bruce, of Dingwall, who with two daughters survives him.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointment has been notified: Temp. Surg. N. MacLeod to *Africa*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Probnrs. C. C. Mackinnon (temp.) to *Crusader* and M. W. Kemp to *Swift*.

To be Surgeon Probationer (temp.): S. A. Gunter.

ARMY MEDICAL SERVICE.

Temp. Col. T. Sinclair, C.B., relinquishes his commission, and is granted the honorary rank of Colonel.

Temp. Major A. W. Robertson, R.A.M.C., to be a temporary Deputy Assistant Director-General.

Capt. and Bt. Major (acting Lieut.-Col.) C. H. S. Frankau, D.S.O., to be temporary Colonel whilst specially employed.

The undermentioned temporary Lieutenant-Colonels to be temporary Colonels: H. Wade, D.S.O. (Captain, R.A.M.C., T.F.), C. C. Choyce, R. Davies-Colley.

ROYAL ARMY MEDICAL CORPS.

E. H. Paddison relinquishes his commission and is granted the honorary rank of Captain.

Temp. Lieut. C. L. Forde to be temporary Captain.

J. R. H. Walker, late temporary Captain, is granted the honorary rank of Captain.

Temp. Hon. Lieut. S. H. Kagan to be temporary honorary Captain.

Temp. Lieut. G. F. Hunter relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Lieutenant.

E. Miskin, late temporary Lieutenant, is granted the honorary rank of Lieutenant.

R. P. Mitchell to be temporary Honorary Lieutenant whilst serving with the British Red Cross Society in France.

The undermentioned Majors relinquish the acting rank of Lieutenant-Colonel on re-posting: J. M. H. Conway, D.S.O., W. F. Ellis.

The undermentioned to be acting Lieutenant-Colonels:—Whilst specially employed: Temp. Major H. F. Woolfenden, Capt. M. P. Leahy. Whilst in command of a Medical Unit: Temp. Capt. (acting Major) J. G. Johnston, Major T. S. Coates, O.B.E., Major W. F. Ellis, Major (Bt. Lieut.-Col.) G. Ormrod.

The undermentioned temporary Captains relinquish the acting rank of Major on re-posting: J. M. Forsyth, H. Gooaman, V. L. Connolly, J. H. Porter.

Temp. Major H. H. Serpell relinquishes the acting rank of Lieutenant-Colonel on re-posting.

The undermentioned temporary Captains relinquish their commissions and are granted the honorary rank of Captain: C. S. Bowker (on account of ill-health), C. Townshend (on account of ill-health contracted on active service).

The undermentioned temporary Captains to be acting Majors: W. G. Johnston, M.C., H. Goodman, J. W. C. Gunn, G. W. Smith, M. N. Perrin, E. S. Sowerby, J. H. Porter, E. L. Puddicombe (whilst specially employed).

F. H. Scrimgeour to be a local Major and to be granted the pay and allowances of a Major whilst specially employed.

The undermentioned Lieutenants (temporary Captains) to be Captains: F. J. Hallinan, T. J. L. Thompson, S. Robertson, J. H. Baird, W. D. Anderton, W. L. E. Reynolds, A. G. P. Hardwick, H. A. Rowell, (acting Major) W. K. Campbell, D.S.O., (acting Major) O. B. Pratt, J. H. Boag, C. G. G. Keane, C. R. Dudgeon, (acting Major) H. E. A. Boldero, R. C. Matson, H. R. Sheppard, (acting Major) W. T. Hare.

The undermentioned to be temporary Captains: Temp. Lieut. E. G. Pringle, H. Devine (whilst specially employed).

Temp. Lieut. A. V. Moberly relinquishes his commission on account of ill-health.

Temp. Lieut. H. J. Brewer relinquishes his commission on account of ill-health, and is granted the honorary rank of Lieutenant.

The undermentioned Lieutenants to be Captains: H. N. Pritchett, W. J. Walters, G. F. Mitchell, G. K. Fulton, W. Adams, R. Aitken, T. Fleming, J. S. Martin, N. Mackillop, W. Dempster, E. P. Irving, J. H. Shearer, W. McWilliam, J. Ashforth, J. S. Craig, H. E. Charles, C. H. Smith, P. Shillito, N. Pick, G. F. Hurst, H. V. Horsfall, J. H. Parker, S. Adler, P. V. Anderson, H. J. Rice, J. M. Savage, J. B. Kirk, D. McEachran, J. C. Burns, S. L. Smith, J. O. P. Smith, L. Walker, J. McI. H. Smellie, R. Mailer, W. A. Weatherhead, C. B. B. Reid, J. S. Bow, D. W. McLean, R. Andrew, J. H. R. Smith, B. W. Jones, R. J. L. Fraser, A. B. Austin, P. F. A. Grant, A. B. McA. Lang, F. W. Sandeman, D. S. Mitchell.

The undermentioned to be Lieutenants: T. H. Almond, from Manchester University Contingent, O.T.C.; A. E. B. Paul, from University of London Contingent, O.T.C.

SPECIAL RESERVE OF OFFICERS.

Capt. W. F. McLean to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Capt. F. R. H. Mollan to be acting Major.

Capt. C. H. Thomas relinquishes his commission on account of ill-health, and is granted the honorary rank of Captain.

The undermentioned to be Lieutenants:—Second Lieut. E. J. S. Bonnett, from Unattached List, T.F., and F. R. G. Heif. From University of London Contingent, O.T.C.: T. Patterson, S. A. Withers, and W. A. Flynn. From Edinburgh University Contingent, O.T.C.: C. Simpson and D. C. Lamont.

TERRITORIAL FORCE.

Capt. E. D. Macnamara relinquishes his commission on account of ill-health, and is granted the honorary rank of Major.

The undermentioned Lieutenants to be Captains: B. M. Brander, R. C. Davie, C. M. Smith.

Capt. A. H. Falkner to be Major.

The undermentioned Captains to be acting Majors whilst specially employed: J. A. Davies, P. R. Bolus.

Capts. P. N. Cave and V. A. P. Costobadie relinquish their commission on account of ill-health and are granted the honorary rank of Captain.

Lieut. (temp. Capt.) W. Gilliatt and J. H. Ryffel to be Captains.

Lieut. C. W. Yates to be Captain.

The announcement regarding Capt. (temp. Major) J. Hamilton which appeared in THE LANCET of August 3rd is cancelled.

Major W. Broadbent is seconded for service overseas.

Capt. F. J. Wethered is retired under para. 116, T.F. Regulations, and is granted the honorary rank of Captain.

ROYAL AIR FORCE.

Medical Branch.—The undermentioned are granted temporary commissions as Captains: W. G. Helsby, A. Bradford, J. N. Macdonald (late Captain, R.A.M.C.). T. M. Davies is granted a temporary commission as Lieutenant.

Medical Branch (Administrative).—H. J. Beale is granted a temporary commission as Second Lieutenant.

Dental Branch.—A. Williams is granted a temporary commission as Lieutenant.

OVERSEA FORCES.

Canada.

Temp. Majors W. G. Turner and A. L. Johnson to be acting Lieutenant-Colonels whilst specially employed.

Temp. Capt. W. L. Mann to be acting Major whilst specially employed.

Temp. Major G. S. Mothersill, D.S.O., to be temporary Lieutenant-Colonel.

Temp. Major W. A. G. Bauld to be acting Lieutenant-Colonel.

Temp. Capts. W. J. E. Mingie and F. E. Pettman to be temporary Majors.

Temp. Capt. J. Seager to be acting Major.

The undermentioned temporary Lieutenants to be temporary Captains: F. H. Nelson and E. N. Ballantyne.

South Africa.

Temp. Capt. C. F. Beyers relinquishes his commission.

INDIAN MEDICAL SERVICE.

To be temporary Colonel while holding an appointment as A.D.M.S.: Lieut.-Col. J. C. Robertson, C.M.G., C.I.E.

Majors to be Lieutenant-Colonels: H. Kirkpatrick, F. D. S. Fayrer, P. K. Chitale, T. Hunter, W. R. Battye, D.S.O., G. Hutcheson, W. G. Liston, C.I.E., H. Boulton, (Brevet Lieut.-Col.) R. W. Anthony, E. F. G. Tucker, G. E. Stewart, F. S. C. Thompson, T. S. Novis, J. W. Watson.

To be acting Lieutenant-Colonel: Major H. A. Williams.

Captains to be Majors: K. G. Gharpurey, P. S. Mills, D. C. V. FitzGerald, R. S. Kennedy, B. Higham, P. Heffernan, F. P. Wernicke, H. S. Hutchison, R. G. G. Croly, S. T. Crump, J. MacG. Skinner.

Temporary Lieutenants to be temporary Captains: L. M. Banerjee, U. L. Desai.

Temporary rank of Lieutenant in the I.M.S. has been granted to the undermentioned: Sisir Chandra Chatterjee, Maniketh Vythi Menon, Kshetra Mohan Ray, Bhuthapuri Krishnayya, Kalidas Bagchee, Leonard Philip Samarasinha, Kilolane Lawrence Singer, Alfred Ba Thaw, Rustam Jamshedji Tata, Khan Sahib, Ravu Venkata Rau, Annasamy Muthukrishnan, Sadashiva Chintamon Lele, Jagdish Chandra Gupta.

The King has approved the grant of the temporary and honorary rank of Lieutenant in the I.M.S. to the undermentioned: Chandi Pershad Trivedi.

The services of the following officers of the I.M.S. have been dispensed with: Temp. Lieut. Bishendas Soni (in consequence of medical unfitness), Temp. Lieut. Rash Behari Datta (in consequence of ill-health).

The transfer to the Temporary Non-effective List of the following officer has been approved: Major P. Heffernan (in consequence of ill-health due to field service).

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The opening article in the July issue of this journal discusses toxic action of carbonic and other weak acids on the meningococcus, Dr. J. A. Shaw-Mackenzie, the author, incidentally suggesting that CO_2 might also be made use of in syphilis of the central nervous system and in diseases due to protozoa. In observations on 250 cases of gunshot wounds of the peripheral nerves Major C. Noon comes to the conclusions, amongst others, that the diagnosis of an injury to a peripheral nerve ought to be made at the earliest possible time; that operations on injured nerves should only be done in well-equipped general hospitals, and by those surgeons who have ample experience in such cases; and that the extreme gravity of an injury to a peripheral nerve is not sufficiently realised by the general profession. An abridged version of this article has already appeared in our columns. The first part of a joint paper by Colonel G. T. Rawnsley, C.M.G., Lieutenant-Colonel R. A. Cunningham, and Captain J. Warnock on the Prophylaxis of Malaria is also contained in this issue of the journal, and Lieutenant-Colonel Gordon Holmes's article on the Symptoms of Acute Cerebellar Injuries as observed in Warfare is continued.

It is announced that medical officers of the Fleet who are carrying on the duties of a dental surgeon in addition to their proper duties as surgeons have been granted an allowance of 3*s.* a day, to take effect from August 8th last.

Medical News.

POST-GRADUATE COLLEGE, WEST LONDON HOSPITAL.—During next week clinics will be held each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.

RABIES.—A case of rabies in a dog at Plymouth has been confirmed by the Board of Agriculture and Fisheries. Several suspicious cases have been reported and are now under investigation by the Board. In view of these circumstances, and as in more than one instance persons have been bitten by suspected dogs, the Board have made an Order prohibiting the movement of dogs out of Devon and Cornwall and requiring the control of dogs within a large area of those two counties. The public are warned that if in any case symptoms suspicious of rabies are observed the police should at once be notified.

THE BELL FUND.—Dr. S. A. Kinnier Wilson asks us to acknowledge donations to the Dr. J. H. Bell Fund from Dr. J. Dundas Grant (£2 2*s.*) and Mr. W. Gilchrist Burnie (£5 5*s.*). Subscriptions should be sent to Dr. Wilson, at 14, Harley-street, London, W. 1.

UNIVERSITY COLLEGE, LONDON.—Dr. G. D. Thane, Professor of Anatomy, has been appointed Dean of the Faculty of Medical Sciences, Dr. J. P. Hill, F.R.S., Jodrell Professor of Comparative Anatomy, remaining Vice-Dean.

DEVON INSURANCE COMMITTEE.—At the last meeting of the Devon Insurance Committee it was reported that there were 111,594 insured persons in the county, and about 98,000 of these were receiving medical benefit.

THE appointment of Mr. R. R. Cruise, C.V.O., F.R.C.S., to be Surgeon Oculist to the King has been cancelled and the following appointments are now announced: Sir George Anderson Critchett, C.V.O., F.R.C.S. Edin., to be Surgeon Oculist in Ordinary to His Majesty and Mr. R. R. Cruise to be Surgeon Oculist Extraordinary to His Majesty.

AN Order in Council directs that the Military Service (Conventions with Allied States) Act, 1917, shall have effect with respect to the United States and American citizens. American citizens in Great Britain are now liable to military service in the same manner as British subjects, and will have the same right in regard to exemption, application for which must be made before Oct. 4th. The tribunal is the same as for British subjects, except for the County of London, when application should be made to the special Local Tribunal for London, 171, Temple Chambers, Temple Avenue, E.C. 4.

Appointments.

BADGEROW, GEORGE W., C.M.G., F.R.C.S. Edin., has been appointed Aural Surgeon to the Royal Normal College and Academy of Music for the Blind.

MAYNE, B. J., L.R.C.P. Lond., M.R.C.S., Public Vaccinator for the Illogan District by the Redruth (Cornwall) Board of Guardians.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Asylum.—Med. Supt. £1000.

Ashton-under-Lyne District Infirmary, Lancashire.—H.S. £200.

Barnsley, Beckett Hospital.—Two H.S.

Birmingham City Sanatorium and Anti-Tuberculosis Centre.—Sen. Asst. M.O. £400.

Birmingham and Midland Hospital for Skin and Urinary Diseases, John Bright-street.—Medical man. 26 guineas. Also Anæsthetist. £20.

Bristol Education Committee.—School M.O. £500.

Bristol Royal Infirmary.—H.P. and H.S. £120.

Charing Cross Hospital, W.C.—Res. Cas. H.S.

Dorset County Council.—Female Asst. M.O. £350.

East Ham County Borough Education Committee.—Female Temp. Asst. School M.O. £400.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Female H.P and Obstet. Asst. £50. Also Female Clin. Assts.

Great Northern Central Hospital, Holloway, N.—Res. M.O. £300.

Kensington and Fulham General Hospital, Earl's Court, S.W.—Res. M.O. £250.

Leicester Corporation Isolation Hospital, Groby-road.—Jun. Res. M.O. £250.

Liverpool, Royal Southern Hospital.—Two H.S. and Cas. O.

Liverpool, Toxteth Park Poor-law Institution and Infirmary.—Asst. Res. M.O. £300.

Manchester Education Committee.—Female Temp. Asst. School M.O. £350.

Metropolitan Hospital, Kingsland-road, E.—H.P. £150.

Metropolitan Hospital Tuberculosis Dispensary, Kingsland-road, E.—Temp. M.O. £500.

Much Wenlock, Salop, King Edward VII. Memorial Sanatorium.—Temp. Asst. Med. Supt. £300.

National Hospital for Paralysed and Epileptic, W.C.—Registrar. £100.

Northampton General Hospital.—Jun. H.S. £150.

Plymouth, South Devon and East Cornwall Hospital.—M.O. for Venereal Diseases Department. £500.

Portsmouth Royal Hospital.—H.S. £200.

Queen's Hospital for Children, Bethnal Green, E.—H.S. £100.

Queen Mary's Hospital for the East End, Stratford.—H.S.

Rotherham Hospital.—Jun. H.S. £150.

Royal London Ophthalmic Hospital, City-road, E.C.—Dep. Bacteriologist. £120. Also Refract. Assts. £100.

St. Helens, Lancs, Pilkington Special Orthopædic Hospital.—Res. M.O. £500.

Salford Royal Hospital.—Hon. Surgeon.

Sheffield Royal Infirmary.—Res. S.O. £200.

Shoreditch Infirmary Hoxton-street, N.—Med. Supt. £600.

Southampton County Borough Isolation Hospital.—Res. M.O. £400.

Sutton, Surrey, Downs Sanatorium.—Temp. Asst. M.O. £350.

Swansea Hospital.—H.S. £250.

Truro, Royal Cornwall Infirmary.—H.S. £150.

Warrington Infirmary and Dispensary.—Sen. and Jun. H.S. £250 and £140.

Whipps Cross War Hospital, Leytonstone, E.—Res. M.O. £1 per day.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Lincoln.

Births, Marriages, and Deaths.

BIRTHS.

BROWN.—On Sept. 5th, at Sheerwater Lodge, West Byfleet, Surrey, the wife of Captain L. Graham Brown, M.C., M.R.C.S. Eng., L.R.C.P. Lond., R.A.M.C., of a daughter.

CATES.—On Sept. 8th, at Laurel Mount, St. Helens, the wife of Joseph Cates, M.D. Lond., D.P.H. Camb., of a daughter.

CLIVE-SMITH.—On Sept. 5th, at Westminster Nursing Home, Chester, the wife of Captain Clive-Smith, R.A.M.C., of a son.

FARQUHARSON.—On Sept. 2nd, at York-place, Baker-street, the wife of Captain W. Farquharson, R.A.M.C., of a daughter.

O'SHEA.—On Sept. 8th, at Campsbourne-road, Hornsey, the wife of H. V. O'Shea, M.B., of a daughter.

PETERS.—On Sept. 7th, at High-street, Petersfield, the wife of Captain Rudolph A. Peters, M.C., M.B., B.C. Camb., R.A.M.C., of a son.

WALL.—On Sept. 3rd, at Lower Baggot-street, Dublin, the wife of Captain H. E. MacMahon Wall, M.R.C.S. Eng., L.R.C.P. Lond., R.A.M.C., of a daughter.

MARRIAGES.

BUCHANAN—HAIR.—On Sept. 6th, at St. Margaret's, Lossiemouth, Morayshire, John Scouler Buchanan, Captain, R.A.M.C., to Edith Margaret, elder daughter of J. H. Hair, Skerry Cliff, Lossiemouth.

DOORLY—BURT.—On Sept. 5th, Captain Arthur R. C. Doorly, M.R.C.S. Eng., L.R.C.P. Lond., R.A.M.C., to Winifred Burt, youngest daughter of Mr. and Mrs. Burt, of Witchampton.

FICKLING—O'CONNELL.—On August 31st, at Holy Trinity Church, Bembridge, Edwin Llewellyn Fickling, Captain, R.A.M.C., M.R.C.S. Eng., L.R.C.P. Lond., to Eileen Dora, only daughter of Mr. and Mrs. H. H. O'Connell, "Wooloomooloo," St. Ronan's-road, Southsea.

MILLER—KELSON.—On Sept. 3rd, at St. Wilfred's, Hayward's Heath, Captain Robert M. Miller, D.S.O., R.A.M.C., L.R.C.P. Lond., to Annie Mortimer, daughter of the late Thomas Mortimer Kelson, Captain, 6th Royal Regiment, and Mrs. Kelson, Birling, Hayward's Heath.

DEATHS.

IRONSIDE.—On Sept. 4th, at 50, Belsize-park, N.W. 3, Robert Adrian Ironside, M.D., aged 65.

MORRIS.—On Sept. 3rd, at his residence, Eaton-place, Brighton, the Rev. Joseph Morris, M.D., aged 75.

PROCTOR.—On August 12th, of wounds, John Proctor, Major, R.A.M.C., M.B., Ch.B. Aberd., of Ballater, Aberdeenshire.

TOLD.—On Sept. 3rd, at a nursing home, London, Margaret Todd, M.D. Brux., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., daughter of the late James Cameron Todd, of Glasgow and Rangoon, aged 59.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

EDITORIAL NOTICE.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

Communications, Letters, &c., to the Editor have been received from—

A.—Mr. C. Andrew, Lond.; Major G. F. Alexander, R.A.M.C.

B.—Capitano Medico Prof G. Breccia; Mr. W. C. Blaker, Lond.; Miss E. Beszant, New Brighton; Capt. W. Langdon Brown, R.A.M.C.(T.); Dr. G. Barling, Birmingham; Mr. H. Blakeway, Lond.; Mr. G. W. Badgerow, C.M.G., Lond.; Lieut. G. Bousfield, R.A.F.; Mr. J. C. Buchanan, Lond.; Dr. G. Blacker, Lond.; Capt. W. G. Ball, R.A.M.C.(T.).

C.—Lieut.-Col. A. B. Cottell, R.A.M.C. (retd.); Dr. H. P. Cholmeley, Forest Row.; Mr. J. Cabburn, Lond.; Major D. W. Carmalt-Jones, R.A.M.C.(T.)

D.—Department of Scientific and Industrial Research, Lond., Sec. of; Dr. V. Dickinson, Lond.; Capt. F. Dillon, R.A.M.C.

E.—Dr. J. Eyre, Eastbourne; Mr. A. B. Elliott, Abergele.

F.—Mr. J. Ferguson, Stirling; Mr. S. Farrell, Lond.

G.—Dr. D. Graham, Boston; Dr. W. Gordon, Exeter; Lieut.-Col. E. Goodall, R.A.M.C.; Capt. J. A. Glover, R.A.M.C.

H.—Major H. Hemsted, R.A.M.C.; Messrs. Hingley and Roll, Eastbourne; Mr. J. K. Haworth, R.A.M.C.

I.—Incorporated Society of Trained Masseuses, Lond.

K.—Dr. P. Kidd, Lond.

L.—London Hospital Medical College, Sec. of; Dr. T. Lumsden, Lond.; Local Government Board and Scottish Office, Lond.; Messrs. Lea and Febiger, Philadelphia; Dr. R. B. Low, Lond.; London School of Medicine for Women, Asst. Sec. of.

M.—Capt. J. W. Moore, M.R.C., U.S.A.; Messrs. W. Michael and Son, Watford; Medical Research Committee, Lond.; Medical Women's Federation, Lond.; Mr. J. E. R. McDonagh, Lond.; Medico-Political Union, Lond.; Dr. J. C. McWalter; Mr. W. McLachlan, Belmont; Ministry of Munitions of War, Lond.

N.—Mr. J. O. Neuman, Lond.; Dr. J. T. C. Nash, Norwich; National Baby Week Council, Lond., Sec. of.

P.—Miss K. Pilkington, Lond.; Major J. Phillips, R.A.M.C.

R.—Dr. J. W. Russell, Birmingham; Mr. S. C. Ranner, Lond.; Mr. W. Roberts, Tring.

S.—Dr. G. E. Shuttleworth, Lond.; School Dentists' Society, Lond.; Prof. E. H. Starling, C.M.G., Lond.; Miss H. Stawell, Shaftesbury; Dr. J. A. Shaw-Mackenzie, Lond.

T.—Triplex Safety Glass Co., Lond.; Capt. J. G. Thomson R.A.M.C.

W.—Dr. L. A. Weatherly, Bournemouth; Dr. W. H. Wynn, Nevin; Dr. T. S. Wilson, Lond.; Sgt. A. E. Walker; Capt. H. L. Whale, R.A.M.C.(T.); Dr. C. H. Whiteford, Plymouth.

Offices: 423, STRAND, LONDON, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

A FORGOTTEN PHYSICIAN OF THE SECOND CENTURY.

Samuel, surnamed Schabour, and also Arioch, and mentioned in Jewish literature as Mar Samuel, was born at Nehardea (destroyed by Odenathus in A.D. 259) about A.D. 160. His father, Abba, was an important person there. Physically insignificant, being abnormally short and ill-developed, intellectually Samuel was great. He was educated at Nehardea by Rabbi Leir, a learned man who turned out several famed pupils. Samuel studied and specialised in various branches of learning, but his chief reputation and, indeed, the profession he finally made his own was that of the healing art. As a student he early made such progress in medicine that he was permitted to perform autopsies, and we have records of some of these. There is an account of a decision of his as to how large a piece of skull could safely be removed in case of fracture. He is quoted as stating after examination of an aborted fœtus that it was 41 days old, showing an intimate knowledge of the conformation of the product of conception at various stages. His opinion upon the abnormality termed spina bifida is also upon record. He must have carried out anatomical dissections, because there are extant quotations from his views on the limit of the spinal marrow. He appears to have been cognisant of the lacrymal gland and of the atrophy of which it is susceptible under certain circumstances in advanced age. His treatise upon the pathogenic symptoms following upon abrupt changes of diet is quite modern in thought. All varieties of regimen, he said, are liable to be the starting point of some malady.

For external diseases he sought natural causes for their occurrence and for their fatal termination; so for penetrating sores he accused the air of rendering them incurable. Also for wounds which finally poisoned the system, he said the cause was some virus upon the weapon that had inflicted the injury. In pathology he endeavoured to indicate for each malady the characteristic symptoms: for grave rhinitis, following probably a polypus ulcer, he said it could be detected by the offensive odour proceeding from the nasal organ. Migraine he attributed to excessive solitude and introspection. Magic as a curative he ignored. As to the propriety of attempting cures upon the Sabbath he was entirely favourable. He advocated the use of the speculum in order to ascertain if hæmorrhage proceeded from the vagina or the uterus. He was a great believer in bleeding as a remedy for many ills. Cleanliness was a main feature of his preventive teaching. The hands should be washed at least twice a day to prevent eye affections. He admitted his inability to cure three illnesses: that proceeding from eating green dates, if unripe and sour; the evil consequences of wearing a damp linen waistband as a girdle; and illness caused from going to bed after eating too hearty a meal and taking no exercise. Perhaps he also intended to convey that patients acting so foolishly were unworthy of being given remedial relief.

A SHORT WAY WITH COCKROACHES.

THE *Bulletin* of the Chicago School of Sanitary Instruction has been dealing with domestic pests, the latest issue describing a simple and effective way of ridding premises of these unpleasant arthropods. Commercial sodium fluoride mixed in equal parts with flour is dusted over the runways or applied with a dust-gun or powder-blower.

"The immediate effect will be noticed that the insects will come out of their hiding places, and after rushing about in a frantic manner for a time become paralysed and soon die. The dead or paralysed cockroaches may then be swept up and burned. As a rule premises can be ridden of roaches by this method in 24 to 48 hours."

The same mixture is said to kill caterpillars when fed on foliage that has been dusted with it. The fluorides should be used, however, with care and the inhalation of the dust should, of course, be avoided, as these salts have an injurious action on the human subject. Their use as preservatives in food is legally prohibited in the United States.

A. E. W.—As far as the necessity for sleep is concerned, there appears to be no essential difference between a brain worker and a manual worker. The function of sleep is to renovate the tired tissues, whether brain or muscle. The brain worker, so long as he is awake, uses every muscle in his body, as we know from recent calorimetric investigations, although, of course, in smaller degree than the manual worker. The manual worker's muscles are controlled by cells in the grey matter of the brain, in which it is that the first symptoms of "muscle" fatigue really appear.

A Lecture
ON
THE PREVENTION AND ARREST OF LICE-BORNE DISEASES BY NEW METHODS OF DISINFECTION.

Delivered before the Royal Society of Medicine on July 17th, 1918.

BY COLONEL WILLIAM HUNTER, C.B., A.M.S.,
PRESIDENT OF THE ADVISORY COMMITTEE FOR PREVENTION OF EPIDEMIC DISEASES IN EASTERN WAR AREAS, 1915–1917; COLONEL IN CHARGE OF BRITISH MILITARY SANITARY MISSION TO SERBIA, 1915; CONSULTING PHYSICIAN TO THE EASTERN COMMAND.

(*Concluded from p. 351.*)

I PROPOSE now to deal in more detail with the use and construction of the two new types of disinfectors, following this up with the results obtained in Serbia and in Salonika as I have already done for the Egyptian campaign.

CONSTRUCTION OF VAN DISINFECTORS.

1. The *original van disinfector* ("Van 1") was devised and formed by Lieutenant-Colonel Stammers, with the coöperation of two other officers of my mission, Lieutenants Ravenhill and Hill, and of Colonel Derocq, of the Serbian Engineers, in Kragujevatz, Serbia, towards the end of March, 1915. In forming it the choice of van lay between a wooden van and a meat van. The former was selected as apparently the easiest to improvise. The adaptation consisted in placing a narrow steam pipe round the floor of the van and close to its sides, connected up at end of the van by a T-piece with a similar pipe coming from the boiler of a small heating engine employed in Serbia for heating the railway carriages. The steam pipe had a few apertures of considerable size and several feet apart to let the steam into the van. The arrangements for the clothes were movable bars of wood stretching across the van, resting on wooden supports at the sides. Over these bars the clothes were spread out. The van was not completed in its details when I left for Nish at the end of March to arrange the formation of our sanitary train to which the disinfector was to be attached. The preliminary trial of it which I saw showed that it was most practical in its principle.

2. The *second van disinfector* ("Van 2") was formed by me in Nish from a meat van. The chief drawback to the adaptation of meat vans as disinfectors had seemed to be the presence in them of a perforated ventilating and cooling pipe near the roof, which would have to be removed. I found that this pipe could easily be connected up with the engine and used as the steam-pipe to convey the steam into the van, the steam entering at the roof of the van instead of on the floor level. Further, the van was lined with tin, which would greatly aid in the rapid heating of its walls, and it was already provided with numerous movable meat-hooks close to the roof, which could be utilised to hang clothes on. I therefore had it converted into a van disinfector. The adaptation was made in three days. On trial I found it worked admirably from the very first, the temperature rising to 97° C. in about half an hour, and lice-infected clothes, which I threw loosely on to the floor of the van, being thoroughly disinfected. The simplicity and ease of adaptation were great and obvious; the heat inside the van was most intense. As the result of my observations I had a similar van adapted as a bath van, as hereafter described, and utilised my experience in forming the van disinfector (Cairo Van 5511) in February, 1916, whose special features I shall now describe.

SPECIAL FEATURES OF THE VAN DISINFECTOR (VAN 5511).

3. This *third railway van disinfector* (Figs. 1, 2, 3) consists, as I have already related, of one or two ordinary railway vans, into which, by simple adaptation, steam can be discharged from the engine boiler of a *small locomotive engine*, which also serves the purpose of conveying it along the railway lines. Any old ordinary engine capable of developing steam and dragging two empty vans and a small guard's van for the use of the corporal in charge suffices for the purpose. Almost any sort of van can be converted; but the most generally suitable is an ordinary meat van, preferably lined with tin. The cost of adaptation of engine and van is only about £35–£50.

While essentially the same in principle as the form originally devised, the disinfector adapted in Cairo was modified by me in certain particulars, adding ten-fold to its rapidity and working capacity. Instead of a narrow steam pipe placed on the floor of the van close up to its sides, the steam pipe used is a wider one—2–3 inches in diameter, placed around the floor of the van, and about 2 feet from the sides. It is connected up by a flexible copper-wired coupling with a steam pipe of 1½–2 inches wide coming from the boiler and passing under the coal-box of the engine. The steam pipes in the van have a series of small apertures ⅛ inch in diameter—placed in two rows along the upper convexity of the pipe at intervals of 6 inches apart and alternately right and left—instead of a few larger openings originally deemed necessary. Wooden racks with open shelves, 3 feet wide and 3 feet deep, are placed around the van except at the doorways, the lowest shelf being 2 feet from the floor of the van, directly over the steam pipes, and also continued over the steam pipe at each end of the van. (See Fig. 3.)

The clothes do not require to be spread out, but are placed in their original bundles on the racks and, after the racks are filled, in the gangway provided with duck-boards, which is left free down the centre of the van. The pipes themselves are everywhere kept free from contact with these bundles by a bar of wood midway between the lower shelf and the floor.

On turning on the steam the van is filled at once with dense volumes of steam, which issues with great force in a finely divided spray in all directions, both outwards towards the sides of the van and inwards towards the gangway and immediately below the bundles of clothes on the racks, thus completely enveloping all the clothes. The walls of the van become hot in 5 minutes and burning hot in 10 minutes.

The water of condensation, which at once begins to escape from the van, at first cool, becomes warm in 5 minutes, hot in 10 minutes, and scalding in 15 minutes. After 20–30 minutes it lessens in amount, being itself converted into steam.

The temperature in the van, tested by a self-registering thermometer, rises to 102° C. in 10–15 minutes, and subsequently, even when placed enclosed in its own case in the centre of the largest bundles, e.g., 10 blankets tightly rolled up, it rises to 105° C. (or 221° F.) in about 20–30 minutes, according to the size of the bundles.

Factors in the disinfecting process.—The factors concerned in the remarkable disinfecting powers which this disinfector has proved to possess are the following: 1. The disinfecting power of current steam (steam in continuous motion) at the ordinary atmospheric pressure. 2. The great force under which the steam is driven into the van and clothes—a force derived from a pressure of 4–7 atmospheres (60–110 lbs.) developed in the boiler of the engine. 3. The great volume of steam available from the boiler of even a moderate-sized engine. These factors would be sufficient of themselves. 4. But they are powerfully aided by another very important factor—namely, the "heat of condensation" of steam which has been just set free from a pressure of 4–7 atmospheres on entering the van (i.e., from a temperature of 144° C. to 168° C.). 5. No attempt is made to develop any pressure in the van, steam being allowed to escape below and around the doorways.

Due to whatever cause the temperature in the van disinfector rapidly reaches 105° C., and this higher temperature ensures that the whole of the watery vapour in the clothes is in the form of steam at the end of the process. As they come out the clothes are not wet with warm water, but moist with steam, and if exposed at once to the air they become dry in a minute or two. This rapidity of drying greatly adds to the efficiency of the van disinfector, and suits it for massive disinfections on large bodies of troops, carried out frequently and rapidly whenever the opportunity presents.

DISINFECTION BY MEANS OF "BARREL DISINFECTORS."

While the "railway van disinfector" meets in most effective way the needs for disinfection of large bodies of troops or ordnance clothing, the needs for regimental disinfection are in my experience most simply and effectively

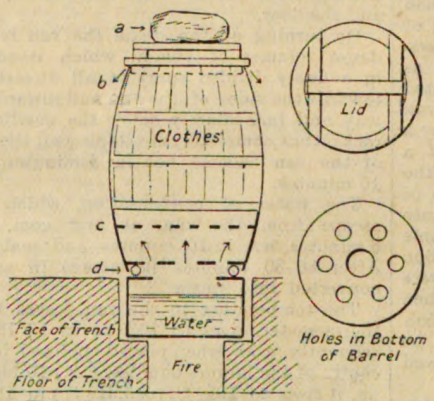
met by the *barrel disinfector*, first devised, as already described, for the work of the British Sanitary Mission in Serbia, and hence known as the "Serbian" or "Anglo-Serbian barrel." It was subsequently used as the simplest form of disinfection amongst our troops in Mudros and Gallipoli in the autumn of 1915; and in the Salonika Forces from early in 1916 (with interesting results now described), and in Egypt from October, 1915, but more especially from 1916 onwards. From the time of its first introduction and trial in Serbia on March 10th, 1915, it was at once welcomed and put into use by the Serbian armies, by whom it has since been continuously used with effective protection against typhus and relapsing fever. Its use was continuously urged by the Advisory Committee in all Eastern war areas during the two years of our work there (July, 1915–1917).

Nature of Barrel Disinfectors.

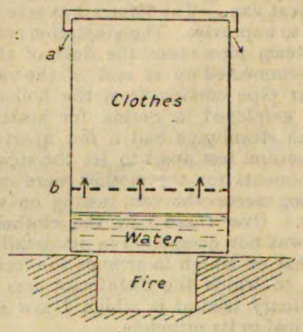
Simple and effective to a degree in the form originally introduced, its very simplicity has led to its being used in ways which have lessened its effectiveness, and for purposes for which it was never intended.

A sound wine or water barrel is taken, through the bottom of which one large central hole is made, with a circle of five or six holes around it, through which the steam can enter the barrel, which stands on a circular boiler of cast iron or galvanised iron. (Fig. 6.) To prevent any escape of the steam between the boiler and the bottom of the barrel a narrow sausage ring filled with sand is placed between the boiler and the barrel. The weight of the barrel presses this down, forming an efficient valve.

FIG. 6.



The wine barrel disinfector as introduced by Lieut.-Col. Stammers in Serbia.



Galvanised iron bin disinfector.

To keep the clothes in the barrel away from the holes in the bottom through which the steam enters a small frame made of two or three crossed thin bars of wood or wicker-work is placed inside the barrel over the holes and about 9 inches above the holes.

The barrel is provided with a wooden lid, purposely made heavy, with an edge which fits inside the barrel or overlaps it. The object of the lid is not to prevent entirely the escape of the steam, but to retard its escape—the purpose being disinfection by current steam, which escapes slowly and with some difficulty around the edges of the lid.

For transport the boiler and its sausage ring of sand are placed inside the barrel. Each barrel disinfector should have its own fire; and once the water is heated a very low fire suffices to keep it boiling. For practical efficiency each company of 250 men should have its own barrel disinfector; under the charge of its company N.C.O. responsible for seeing that the men of his company are kept free from lice. After the barrel is thoroughly heated and the steam escaping is too hot to be borne by the hand, the time required for disinfection of clothing is one hour; the temperature reaches 100° C. (212° F.).

Use of Barrel Disinfectors in the Field.

Where barrels are available there can be no simpler or more practical method of disinfection for the use of individual units. One barrel disinfector to each company (or four to a regiment) is capable of disinfecting the men of the company (or regiment) every two to three weeks. If the disinfector is in daily use whenever the company is in camp the men themselves get interested in it. To place their infected underclothing or trousers in the barrel for an hour appeals to them as a simple measure to free themselves from the discomforts of lousiness.

The object is to enable men to keep themselves free from lice by regular and systematic disinfection measures within their reach. As I commended its adoption to the Serbian Medical Society and to the authorities in Nish, "It is essentially a practical democratic measure for a highly democratic people."

It requires, in fact, no technical skill or appliances. A sound barrel, a suitable boiler, water, and a fire are all that are essential, and these are measures within the reach of every one at an initial cost of a few shillings. In Egypt and Salonika difficulties arose from the absence of suitable barrels. In wine-making countries, where no such difficulties exist, provision can be made for the supply of disinfectors in any number required.

TYPHUS AND RELAPSING FEVERS IN SERBIA, 1915.

I now turn to events in Serbia and give a few details of the urgent circumstances under which these new measures of disinfection were carried out by the British Sanitary Mission of 1915 and their work in connexion therewith. The time was the darkest hour of the epidemic—36,000 sick in hospitals, of which 15,000 were fever cases. The number of cases in hospital of typhus and relapsing fever at the time of our arrival was about 12,000; in the next three weeks it had risen to over 15,000.

These figures represented very inadequately the widespread character and ravages of the epidemics throughout all the towns and villages of the land, especially of typhus. In the first fortnight after our arrival (March 1st, 1915) the numbers of cases of typhus in hospitals rose from 3700 to 6000; in the next fortnight they had risen to 8100; its mortality was about 40 per cent. The difficulties in prevention that presented themselves owing to want of labour, wood, and appliances of any kind for sanitary work were overwhelming and seemed to hold out little prospect of any early arrest of the disease. The sequel was therefore the more interesting. Within seven days of our arrival a full *Programme of Prevention* was submitted in a series of eight communications sent to the Ministry of War and the Army headquarters, based upon our observations of the prevailing hospital conditions, the information received regarding the position of the armies and the knowledge gained as to the extent of infection of the railway system—really acting as a great river of infection throughout the land, carrying infection from the troops to the people and from the people to the troops, soldiers home on leave staying in crowded houses and causing or contracting widespread infection.

To break these conditions the programme (March 14th) included: "1. To break the lines of infection between the troops and the rest of the country by establishing a big quarantine and cleansing station just behind the three main armies. (Preliminary preparations at once put into force.) 2. Stop all railway communication for a time to interrupt even temporarily the conveyance of infection by the railway and permit a complete disinfection of all the railway stock. (This is to be put in force on March 16th.) 3. Stop all leave from the Army, and all soldiers on leave so far as is possible to be recalled before the railway communication is stopped to prevent possible reinfection of the railway after it has been disinfected. 4. The hospital problems presented the urgent need of some simple method of disinfection which can be rapidly improvised and provided for all parts of the country. Such a method has been devised adaptable to any large wine barrel (and these are all over the country). The appliance is so simple that it was made in 24 hours in the Arsenal here, tested here yesterday on clothes absolutely full of lice, and found most successful. And now orders are already given that hundreds of this simple appliance shall be made at the Arsenal (I have asked that a thousand and more shall be made) and supplied broadcast to all parts of the country to every village and town."

The barrel disinfectors were, as I have said, devised three days after our arrival in Nish on March 4th; they were constructed the following week, first tested and put into use in the Scottish Women's Hospital in Kragujevatz on March 13th, and arrangements were made for the construction and issue of 50 barrel disinfectors or more weekly from the arsenal in that town; subsequently also from the railway works in Nish.

Simultaneously, a programme of prevention had been submitted which included the formation of a disinfection and inoculation train, to include a railway van disinfector. Full authorisation was given early in April to the railway authorities by the Serbian headquarters to provide me with all facilities, and the work was carried out in a fortnight's time in Nish in accordance with the adaptations arranged.

The "English Mission Sanitary Train," as it was called, was completed on April 16th, inspected by the Prime

Minister and authorities in Nish, and arrived at our headquarters in Kragujevatz on April 18th, leaving next day in charge of Lieutenant-Colonel Stammers and a staff of 18 officers for the Army areas near the Danube. (See *Addendum*.)

The English Sanitary Train in Serbia.

The train consisted of: three third-class coaches with seats and partitions removed and adapted with tables for inoculation; disinfection and bath vans formed from meat vans; four third-class coaches adapted and fitted with stretcher-beds for sleeping accommodation of the Mission; and other wagons for the staff of Serbian orderlies and a Serbian officer—Captain Christitch—as military commandant of the train.

The *bath van* consisted of a meat van similar to that which I had adapted as a disinfector ("Van 2"). It was suggested by my experience with this disinfector van on its first trial. The heat in the disinfector van, which was lined with tin, was intense, and had the effect on me of a Russian bath. There was a large tank under the sloping roof over the wagon which could be filled with water and into which steam from the engine could be introduced, and douches could be fitted on the roof of the wagon. I asked that the adaptation should be made, and, like everything else done by the Serbian authorities in relation to this train, the work was carried out with characteristic good workmanship.

The final result was a train remarkably complete in its character, and unique in its preventive purposes for inoculation and disinfection, its chief features being its two excellent disinfection and bath vans with a heating engine capable of supplying steam to one or other or to both. On arrival at Kragujevatz, the original van disinfector ("Van 1") formed there from a wooden van was added, so that the train which went forward the following day contained two van disinfectors and one van bath.

On arrival in the Army area near the Danube it was found that during the period of four weeks before the train was formed the troops had been supplied with barrel disinfectors, and the use of these had already effected a marked reduction in the prevalence of lousiness and in the incidence of typhus and relapsing fever.

The need for the van disinfectors being thus greatest among the civil population south of the war area, the meat van disinfector ("Van 2") was detached from the train and attached with three others, subsequently formed, to the Serbian Ambulance Train under Captain Kopsha, for use as required in the various towns along the railway. I learnt from him subsequently that the work was successfully carried out up to the time of the invasion in the autumn of 1915, when among the spoils which fell to the invaders were doubtless included the English sanitary train, the English barrel disinfectors, and the English railway van disinfectors and baths. Colonel Soubatitch, of the Serbian Medical Department, informs me that articles have appeared in the Austrian medical press on van disinfectors and railway bath vans which suggest that the discovery of these in Serbia had proved of interest and value to them, although they were possibly unaware of their origin, indicated in Serbian characters alone upon the various carriages by the name "English Commission."

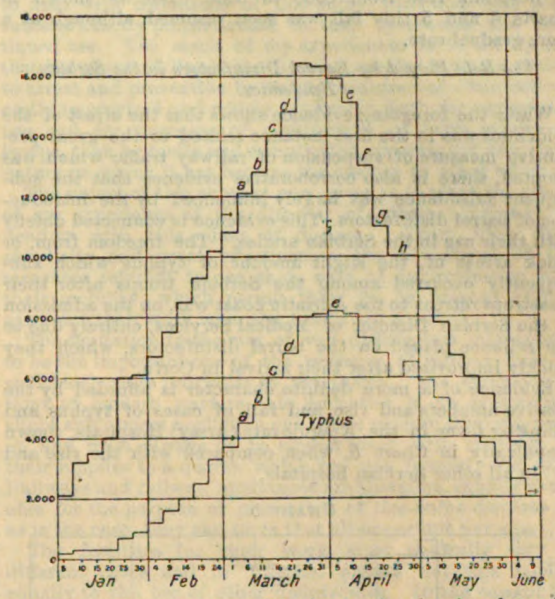
The keen practical interest taken by the Prime Minister of Serbia in the English Sanitary Train emphasised it as a measure of far-reaching practical importance, admirably fitted to meet the urgent needs of the circumstances. Of the van disinfectors and bath vans he ordered four more similar ones to be made, and of the barrel disinfectors he ordered 100 to be sent as types to the prefects of all the chief towns in Serbia, with instructions to form others in all the villages throughout the country.

If it was the fate of Serbia to include amid her other difficulties those of facing the greatest epidemic of typhus and relapsing fever recorded in the history of medicine, brought on her by the introduction of Austrian prisoners, it has also been her unique experience to see that epidemic more quickly checked and finally arrested in a shorter period of time than has ever before been witnessed, as the sequel now to be described shows.

Course of the Epidemics of Typhus and Relapsing Fever in Serbia.

The course of the epidemics of typhus and relapsing fever and their relation to the preventive and disinfecting measures adopted on March 15th ("*c*")—10 days after our arrival—are shown in Chart 4. The successive dates at which the measures were introduced are given at the foot of the chart, and the relationship between these and the course of the curve is too close to permit any reasonable doubt as to their connexion with each other as cause and effect.

CHART 4.



Combined totals of cases of typhus and relapsing fever in hospital in Serbia on dates specified (5 days intervals) (upper curve). Number of typhus cases (lower curve). Jan. 1st to June 9th, 1915.

March 4th: Arrival of Mission in Serbia; June 10th: Departure of Mission from Serbia. *a*, March 8th: Barrel disinfector devised and programme of prevention submitted. *b*, March 13th: Barrel disinfector made and tested. *c*, March 15th: Suspension of railway traffic, cleansing of railways, stoppage of all leave from the armies, increased measures of disinfection. *d*, March 22nd: "Van disinfector" devised ("Van 1"). *e*, April 5th: Van disinfector ("Van 2") formed in Nish; "van bath" devised. *f*, April 15th: Resumption of railway traffic. *g*, April 19th: English sanitary train (inoculation, disinfection, and bath vans) *h*, April 25th–30th: Sudden check in fall of epidemic 10–14 days after resumption of railway traffic.

Definite signs of a sudden check in the epidemics, as the result of the preventive measures commenced on March 15th ("*c*"), showed themselves about March 30th—i.e., exactly 10–14 days after the suspension of railway traffic. The number of cases in hospitals became stationary, indicating that the number of new cases admitted during the previous fortnight had only balanced those discharged or dead, instead of exceeding that number by a thousand a week as before. This evidence of arrest was followed by far more striking evidence—viz., a striking and rapid fall in the numbers of cases in hospital—from over 16,000 cases to 10,000 by April 25th ("*h*"). Had this fall been due to the natural course of the epidemics it should have continued uninterrupted, for among other factors favouring a fall at this period, the weather conditions which had been extremely bad when the fall set in had by this time (end of April) become summerlike. Nevertheless, the fall suddenly ceased ("*h*") about April 25th–30th (the number of cases of typhus actually rose from 6000 to 6500 cases). This check again occurred 10–14 days after the resumption of railway traffic on April 15th—i.e., after 10–14 days' incubation period of the diseases, indicating a fresh spread of infection as the result of this resumption. But this check was only temporary, for by this time all the other measures of disinfection and cleansing which had been put in force throughout the country had come into effect. The fall was resumed, and by the time the Mission left Serbia early in June, 1915, the diseases as epidemics were arrested. The total number of cases in hospitals was only about 2500, made up mostly of convalescent patients.

The suddenness in the arrest of these diseases by the measures taken was most strikingly shown in the case of typhus. As already seen, this had bounded up in a month from 3700 cases (March 1st) to 8400 cases (April 5th). From

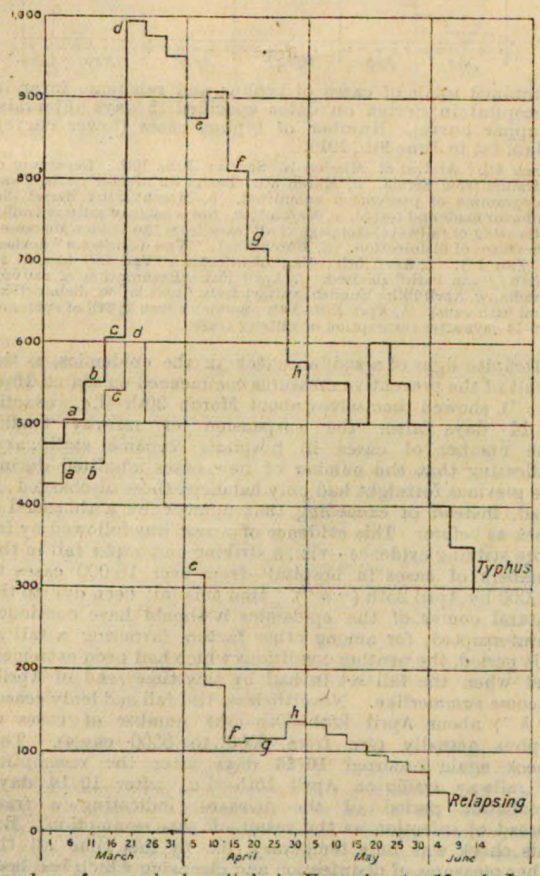
that date the numbers in hospital fell in 20 days from that figure to 6000 cases, denoting an extraordinary diminution in the number of new cases admitted during this period. The effect of resumption of railway traffic on April 15th was also most manifest in the case of typhus—viz., in 10 days' time (April 25th–30th) the fall ceased and the number of cases in hospitals rose from 6000 to 6300. But as shown in Charts 4 and 5 this fall was soon resumed, although at a more gradual rate.

The Rôle Played by Barrel Disinfectors in the Serbian Epidemics.

While the foregoing evidence shows that the arrest of the epidemics was in the first instance related to the great preventive measure of suspension of railway traffic which was adopted, there is also corroborative evidence that the subsequent subsidence was largely influenced by the introduction of barrel disinfectors. This evidence is connected chiefly with their use in the Serbian armies. The freedom from, or quick arrest of, the slight amount of typhus which subsequently occurred among the Serbian troops after their disastrous retreat to the Adriatic coast was, on the admission of the Serbian Director of Medical Services, entirely due to the reliance placed on the barrel disinfectors, which they quickly improvised after their arrival in Corfu.

Evidence of a more definite character is afforded by the relative numbers and rise and fall of cases of typhus and relapsing fever in the Kragujevatz (Army) Hospitals, shown graphically in Chart 5, when compared with the rise and fall in all other Serbian hospitals.

CHART 5.



Number of cases in hospitals in Kragujevatz, March–June.

a, March 5th: Arrival of Mission. *b*, Barrel disinfector put into use. *c*, Suspension of railway traffic (March 15th). *f*, Resumption of railway traffic (April 15th). *h*, Arrest in fall, April 25th and May 5th (10–14 days after *f*).

This group of hospitals served especially the active armies in the field and included the largest typhus hospital in Serbia (the 1st Reserve). Their importance as a whole may be judged from the circumstance that at the height of the epidemic at the end of March they contained 1000 cases of typhus (850 of them in the First Reserve Hospital), or 12 per cent. of the total cases in all the hospitals in Serbia, in addition to 500 cases of relapsing fever, or nearly 6 per cent. of the total. The data show that in the four weeks after our arrival——viz., March 1st–15th preceding, and March 16th–30th subsequent to, the suspension of railway traffic and adoption of other preventive measures (but before their effects could be manifested) the increase of typhus cases in hospitals was very marked and affected all areas about equally—viz., (*a*) Kragujevatz hospitals, from 500 to 1000 cases; (*b*) all other Serbian hospitals, from 3200 to 7150 cases. In the next four weeks the fall was: (*a*) In Kragujevatz hospitals, from 1000 cases to 572—a fall of 42 per cent.; (*b*) in all other Serbian hospitals, from 7150 cases to 5930—a fall of 17 per cent. The measures of prevention taken had thus produced a much greater proportionate effect on the army groups supplying the former than on Serbia generally. The only difference between them was in regard to the relative amount of disinfection available for the two. In the former barrel disfectors had been more and more put into use since their introduction on March 14th. By April 19th their effects in diminishing typhus in the troops had become very noticeable to officers in charge.

That effect, as now shown (Chart 5), declared itself very strikingly in the 42 per cent. reduction in the numbers of typhus fever cases (and even larger reduction in the numbers of relapsing fever cases) in the large Army hospitals in Kragujevatz during the month of April. It was also declared in the figures of admission into the chief of these hospitals during the periods in question. During March the number of new cases admitted was 1360 and the number of deaths 420; during April, when the disease was checked, the number admitted was 364 and the number of deaths 130. The rise on May 20th is explained by the circumstance that at this period all field ambulances in the army areas were evacuated prior to the advance of the Serbian armies, which by this time were in such good health and condition that an advance could once more be contemplated.

PREVENTION OF TRENCH FEVER.

In the case of trench fever the evidence I have is based on observations made during visits of the Advisory Committee to Salonika in May, 1916, and in February, 1917. During my two years' work in Egypt that form of fever was practically unknown. In Salonika, on the other hand, an outbreak of what was termed P.U.O. began early in January, 1916, and we found the hospitals full of such cases on our visit in May, 1916.—e.g., 67 out of 108 cases admitted into one Hospital in a week. On inquiry it was found that the disease had been introduced by a division of troops arriving in Salonika in December, 1915. Cases of what was regarded as influenza began to occur in January, 1916, and rapidly increased in number, the disease being eventually recognised as not influenza and provisionally designated P.U.O. Its characters resembled those of trench fever.

The probable connexion between this trench fever and lice was definitely raised at the time of our visit to Salonika in May, 1916, without, however, any definite proof of the connexion. The incidence gradually fell, the disease being overshadowed by the great outbreak of malaria which began in July, 1916.

At my visit alone to Salonika in February, 1917, the chief form of fever then prevalent was relapses from malaria, which formed one-half to two-thirds of the sick in advanced stations in hospital at that time. I heard nothing of P.U.O., and although doubtless present, its numbers nowhere approached the epidemic character attained early in 1916—e.g., out of 62 cases admitted in one day only one was classed as P.U.O.

The conditions in the valleys occupied by the troops being presumably as favourable to P.U.O. as those existing in 1916, the slight prevalence of trench fever was an interesting fact.

In the Valleys the arrangements with regard to disinfection engaged my special attention. In 1916 we had found that wide provision had been made, but too little use was being made, of barrel disinfectors, and I gave a special address and practical demonstration to the Salonika Medical Society emphasising the necessity for their continuous daily regimental use. In February, 1917, I found that better use was being made of barrel disinfectors in this area than in any war area previously visited.

If trench fever can be prevented by the adoption of regular regimental disinfection, then the conditions found were favourable to such prevention.

I am disposed to attribute the lower incidence observed largely to the interest taken in the disinfection by means of the barrel disinfectors in use, knowing from Serbian experience how strikingly and quickly the incidence of other louse-borne diseases, typhus and relapsing fever, can be checked by their use.

The whole circumstances connected with this incidence were investigated and made the subject of full report by my colleagues, Lieutenant-Colonels G. S. Buchanan, Andrew Balfour, and myself, constituting the Advisory Committee, on our visit in 1916, with special reference to the available data regarding its group incidence, its infectiousness, and especially its possible relation to lice.

In the light of subsequent conclusions on the latter point, the conclusions we expressed are interesting, viz. :—

"We think that for working purposes the theory of lice-carried infection holds the field, and all efforts to get rid of lice should be continued and developed with energy."

"We think it very important to make this form of disinfection as far as possible not merely a regimental but an individual matter; that all company officers, N.C.O's, and the men themselves by actual demonstration should be made to realise fully the object and advantages of barrel disinfectors and know the methods of working them. The forces here are well supplied with barrels."

The evidence regarding infectivity which we gathered included the following class of data. Within a Division it was usual to find that certain regiments had been conspicuously attacked, whilst those labouring near by were not affected. There was more trench fever among the divisions than in the base areas.

In the case of units there was a distinct period of prevalence lasting some six weeks to two months. Here and there were notable instances of group infection, three or four in the same tent being attacked in as many days, all presumably infected from the same source. Many combatant officers were attacked by the disease. Some smaller units suffered exceptionally severely in certain Divisions. Staffs attached to hospitals and field ambulances were frequently attacked. Thus, in one field ambulance to which most of the P.U.O. cases were admitted 13 cases occurred among its personnel, while in the two other field ambulances of the same Division there were only 5 P.U.O. cases. As regards lousiness, several of the units which suffered severely were at the time seriously infected by lice. This was particularly the case in the units of one Division, the one which had been free from trench fever on arrival in Salonika and which subsequently developed most cases.

Such was the position of matters in this area early in 1916 as regards trench fever—viz., a high degree of prevalence and infectivity; the need and importance of systematic daily disinfection strongly urged; the means for such disinfection provided in the form of barrel disinfectors. The sequel to these conclusions noted during my visit to this area in February, 1917, was the interesting one already described—viz., that P.U.O. cases were practically non-existent as compared with the prevalence in 1916.

With this there was the definite observation made and specially drawn attention to in my report—viz., that I had found better and more systematic daily use being made of barrel disinfectors in the war area than in any other area I had visited. Moreover, the two Divisions which I specially visited and in which I found these conditions were the two which had the biggest incidence of P.U.O. in 1916 and in one of which lice had been at that time most prevalent.

These two Divisions were the most advanced in the war area, and under the most favourable conditions for infection. Without disinfectors they would have been practically without any means of dealing with lice, except by the individual effort of ironing the clothes, a system which in one brigade was also being carried out in an exceedingly efficient and practical way. The arrangements in force included also demonstrations in the use of barrel disinfectors.

CONCLUSION.

The two great practical measures of disinfection introduced by the British Sanitary Mission to Serbia early in 1915 have proved by practical experience of their working, when introduced into the Eastern war areas by the chief officers of that mission, to be amongst the most serviceable measures of prevention employed in the war against lice-bore diseases.

The area where the problem is now presented is different, and the disease against which it is called for is different—viz., trench fever. The problem itself, however, is the same, and is capable of solution by the same methods.

In view of the widespread infection underlying trench fever, and its proved connexion with lousiness, the two methods here described are those most easily adapted for troops. I can confidently recommend them for wide use supplementary to or in place of any of the many other measures of disinfection or form of disinfectors now in use. They have been tried on a large scale in Serbia and elsewhere to deal with conditions of lice-borne infection, and with success exactly proportionate to their systematic and continued use. The result of my experiences is to satisfy me that the group of lice-borne diseases are far more amenable to arrest and prevention by simple measures of disinfection, easily improvised and widely applicable both for regimental use and for purposes of disinfection of large masses of troops, than by costly and complicated apparatus of autoclave nature on which it has become the custom to place reliance.

The object of this account now given is to place the result of my experience at the disposal of others concerned in dealing with this class of disease. Apart from their simplicity and great effectiveness, the advantages of the measures referred to are their ease of improvisation and their mobility, which permit them to be created and to carry out their work wherever troops are situated.

The limitation to the use of van disinfectors may appear to be the important one of the presence of railway lines in sufficiently close proximity to the troops. But under conditions of modern warfare this limitation is an exceedingly slight and almost negligible one, since modern armies depend on and must always be in closest touch with railways for their supplies to a degree which was not formerly the case. Railways and railway appliances are therefore equally available for the purpose of prevention of lice-borne diseases if, as is the case, they can serve that all-important purpose.

The facilities for their work must naturally vary in different cases and in different areas; but this applies equally to the use of other disinfectors. In the case of the van disinfector here described, any difficulties connected with their use must be weighed against their great simplicity, ease of improvisation, working capacity, and effectiveness. These are of such a kind that one double van disinfector could, if necessary, carry out the disinfection of an army corps once a month at the following rates of work: a regiment in half a day; two regiments in one day; a brigade in 2–3 days; a division in 10–12 days; an army corps in a month. In other words, its working capacity is equal to, but far exceeds in ease and simplicity of working, that of 50 portable Threshes or other similar apparatus.

As regards regimental and company disinfection, all that is required is the use of a simple steam disinfector of the nature of the barrel disinfector, which can be improvised at a cost of a few shillings, or of an even simpler form, also introduced in Serbia—viz., a galvanised sanitary bin, placed over a fire, with a foot of water at the bottom, and an open wire or wooden grid over the water to keep the clothes off the water. One such barrel or bin disinfector for each company could meet its needs of disinfection against lice to a degree which would reduce to one-tenth, even if it failed to eliminate altogether, the incidence of louse-borne diseases.

Addendum.—The number of anti-cholera inoculations carried out in the first three days was about 25,000, and 35,000 in six days, and both in and from the train as a working centre these were continued at approximately similar rates till all the armies dealt with were fully inoculated in 4–5 weeks' time.

Corrigendum.—In Chart 2, p. 350, the words "week to week of a double van disinfector" should read "*day to day of two double van disinfectors.*"

DEATH OF DR. J. LAMBERT.—James Lambert, M.D. Glasg., M.R.C.S. Eng., L.S.A., of Birkenhead, died recently at the advanced age of 90 years. Dr. Lambert was apprenticed in early life to a medical man at Northwich. In 1855 he took his degree at the University of Glasgow, and in the same year secured the diplomas of the Royal College of Surgeons of England and of the Society of Apothecaries. He was medical officer to a transport during the Crimean War, and afterwards settled in Birkenhead, where he had lived ever since. For many years he was Poor-law medical officer and surgeon to the Birkenhead Borough Hospital, and was consulting surgeon to that institution until his health began to fail. He took great interest in surgical practice, keeping well abreast of current literature.

A COMBINED EMBARKATION AND BOAT DISTRIBUTION SCHEME

FOR HOSPITAL SHIPS AND AMBULANCE TRANSPORTS.

BY HENRY HEMSTED, M.D. BRUX., M.R.C.S., L.R.C.P. LOND.,

TEMPORARY MAJOR, R.A.M.C.; O.C. TROOPS, H.M.H.S. "NEURALIA."

THE object of this scheme is to segregate patients on embarkation according to diseases, nationalities, ports of debarkation, &c., and to furnish each man immediately with a ticket for his life-boat. The Graphic System is adopted and works admirably.

A.—*Requirements.*

I. Embarkation boards. II. Tickets. III. Life-boat board. IV. Blackboard.

I. *Embarkation Boards.*

Dimensions of embarkation boards.—5 ft. by 18 in. by ½ in. The top end shaped to indicate the bow of the ship.

Number of embarkation boards.—Three boards should suffice on the largest hospital ships. Occasionally, when wards are scanty, ground-plans of two decks may be combined.

Painting of embarkation boards.—These show a rough ground-plan of the various wards on each deck, indicating size, shape, and name or letter. Surgical wards are painted blue and medical wards red. Parts of the wards unavailable for hospital purposes are shown black. (See Figs. 1, 2, and 3, in which dots represent the blue areas and oblique lines the red.)

Each ward has painted on it:—(*a*) The total number of cots contained. (*b*) The names of the medical officers, sisters, wardmasters, and orderlies on duty in each ward, indicated by typed slips pasted on the boards. (*c*) The nature of the cases it is designed to hold—e.g., fracture cases (special beds), acute surgical cases, minor medical cases, enteric cases, dysentery cases, tuberculosis cases, miscellaneous cases, &c. When different nationalities are being embarked the wards allotted to them should be indicated in chalk on the boards, as also should the wards reserved for batches of patients for debarkation at intervening ports. (*d*) The ward areas may be subdivided by a white interrupted line into two or more sections. (These sections are also marked with a white painted line on the deck of the actual wards.)

II. *Tickets.*

Number.—One ticket for each cot on the ship.

Size.—3 in. by 1 in. is convenient.

Texture.—Strong, but not thick, paper, preferably coloured. (Permanent metal "tokens" might perhaps be used with advantage.)

Affixation.—Tickets are penetrated near the top by 2 in. bifurcated brass paper clips, the ends of which are passed through the embarkation boards in their appropriate ward sections. (If the beds in any section are very numerous it may be necessary to divide them or to design special fasteners.)

Numbering.—On the front is the letter of the ward and the number of the ticket, the bottom ticket being No. 1 and the top ticket showing the number of the full accommodation of the section—e.g., "D. 32." After embarkation the top number remaining on the board shows the number of cots vacant in that section. On the back of each ticket is the number of the patient's life-boat—e.g., "Boat 6."

Collection.—Tickets may be collected on debarkation, and will then serve as a check on the numbers transferred.

III. *A Life-boat Board.*

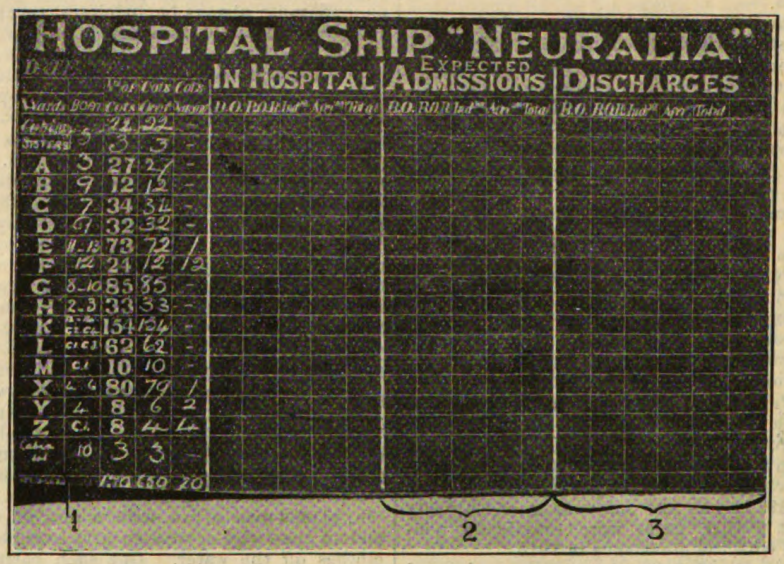
Description.—This is a rough ground-plan of the boat deck.

Complement of life-boat.—It should show a diagram of each boat, indicating its number, position, capacity, and allotment of patients, medical officers, and R.A.M.C. according to wards. The navigating officer and "skeleton" crew may also be indicated. Rafts should not be shown. (See Fig. 4.) In the illustration the boats are indicated by cards (dotted in the diagram) which are tacked on to the life-boat board. The cards are reversed when no sick are on board, and then show the detail by name of all R.A.M.C. personnel to the first eight life-boats. These would accommodate all souls when the hospital is empty.

IV. *A Blackboard.*

This is a daily record of the hospital and life-boat "state" and shows vacancies therein. It should be placed near the orderly room and designed as shown in the accompanying figure.

Blackboard showing Daily Record of Hospital and Life-boat "State."



1. A column for boat accommodation vacant could be inserted here. 2. All expected admissions are advertised here at first opportunity. 3. This column was used when the ship was a stationary hospital.

When a life-boat is short of its full complement the space becomes available for "lying" cases. The elaborations on the right-hand side of the blackboard are not essential, but the column headed "Expected Admissions" is valuable for announcing to the Matron, Chief Officer, Chief Steward, and R.A.M.C. generally, the number, composition, and approximate time of arrival of drafts of sick and wounded. On a hospital ship there appears no objection to advertising these details.

Three Desiderata.

For harmonious working of the scheme there are three desiderata:—

1. *Nominal rolls.*—The O.C. troops should be enabled to inspect all nominal rolls of sick at least ten minutes before embarkation begins. (Serial numbers running right down the left-hand column of nominal rolls, with a corresponding number on the backs of patients' tickets, greatly facilitate checking at embarkation and debarkation. "Lying" cases should be shown on nominal rolls.)

2. *Boat accommodation.*—There should be sufficient room in the ship's boats for all sick and a reasonable proportion of the ship's and hospital staff. (The balance would be compelled to use rafts in an emergency, but it would savour of indelicacy to give a sick man a *ticket* for a raft.)

3. *Transfers.*—Inter-ward transfers after embarkation must be notified to the orderly-room. When the above system is adopted these are extremely rare.

B.—*Routine.*

1. *Abstract of nominal rolls.*—The O.C. troops procures a rough abstract of patients for embarkation, noting specially:

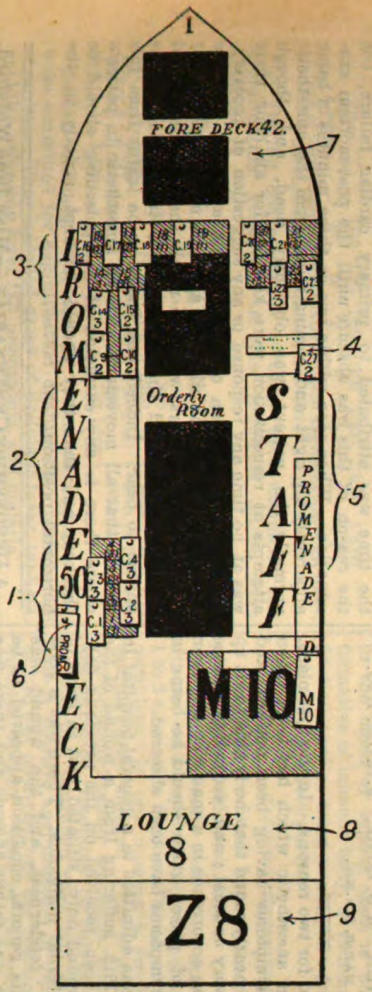


Fig. 1.

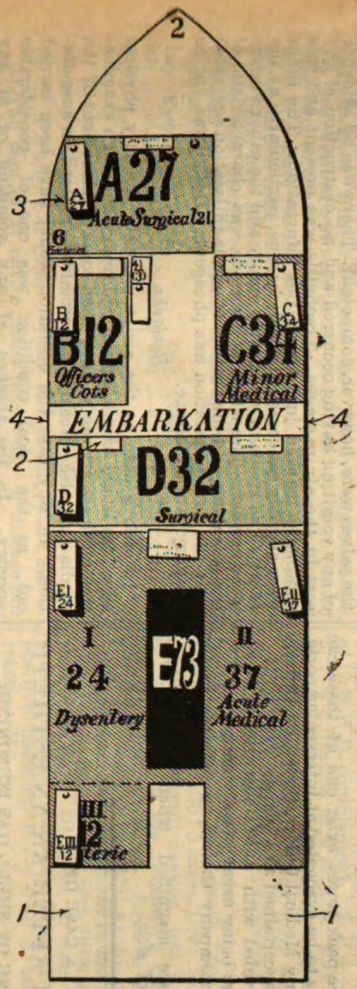


Fig. 2.

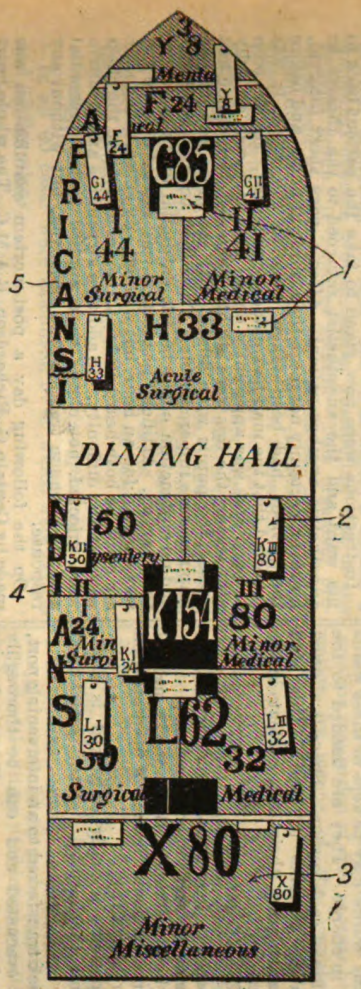


Fig. 3.

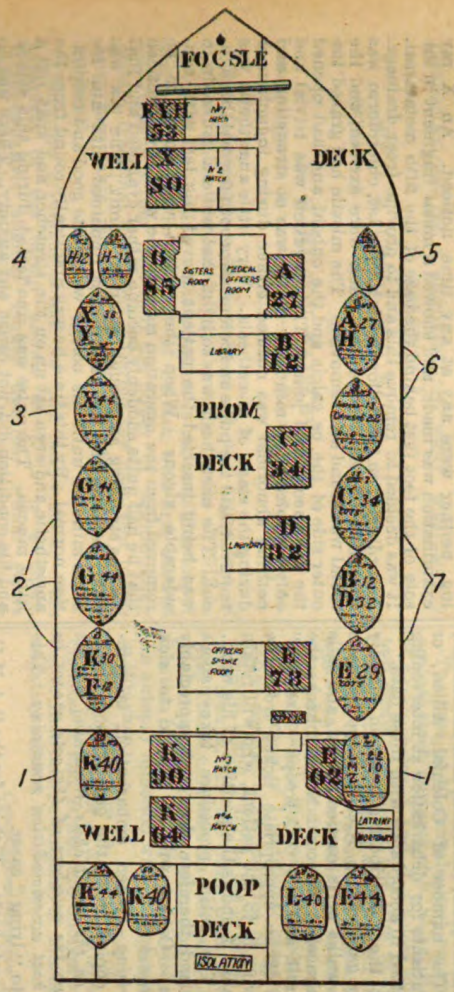


Fig. 4.

FIG. 1.—*Shade deck.*—1. Cabins for sick sisters. 2. Cabins for nursing sisters. 3. Cabins for sick officers. 4. Cabins for chaplains. 5. Cabins for medical officers. *6. Emergency accommodation on promenade deck. 7. Emergency accommodation on fore deck. *8. Emergency accommodation in "lounge" (for T.B.'s). *9. Emergency accommodation on poop deck (isolation).

* 6, 8, and 9 are on the deck level above the "shade deck."

FIG. 2.—*Saloon-level deck (chiefly used for "lying" cases.)*—1. Latrines. 2. Irrigating station. 3. Large cots for fractures. 4. Embarkation gangways which could also be used for transferring "lying" cases to boats.

FIG. 3.—*'Tween decks.*—1. Names of sisters, medical officers, and orderlies (typed). 2. A bunch of 80 tickets for K. III. 3. "X" ward is on the orlop deck. 4 and 5. This deck was formerly allotted to Indian and African natives.

FIG. 4.—1. Collapsible. 2. Life-boats. 3. A typical life-boat No. 6 (complement 56), viz.: (*a*) sick from "X" ward, 44; (*b*) chaplain, 1; (*c*) one N.C.O. and three R.A.M.C., 4; (*d*) the second officer, 1; (*e*) native crew, 6; total, 56. 4. Gig and mailboat. 5. Steam launch. 6. Life-boats. 7. Boats 7 and 11 which have space for "lying cases" and are in the best position for shipping same.

N.B.—The spaces indicated with oblique lines on diagram are chalked daily on deck and represent "rallying points" for the walking cases from the various wards. They are not required when there is boat accommodation for all on board.

(*a*) Number of "lying" cases. (*b*) Numbers of acute surgical, fractures (requiring special cots), acute medical, enterics, dysenterics, tuberculars, venereals, heat exhaustion, eye cases, &c. (*c*) The number of Colonial, Allied, or prisoners sick. (*d*) Patients for debarkation at intervening ports. Wards are allotted in accordance with these data.

2. *Distribution.*—At the "distributing" station (usually near the embarkation gangway) a N.C.O. inspects each patient's ticket as he walks or is carried aboard, and calls out the name and diagnosis. A second N.C.O. checks the name on the nominal roll, and the O.C. troops "sizes up" the patient and tears off an appropriate ticket from the embarkation board, giving it to the patient, who will retain it for the voyage, because it shows the position of his ward, cot, and life-boat. The entire procedure takes about 1½ seconds per man, and therefore does not appreciably delay an embarkation. Cabins will be allotted to sick officers in the same manner.

3. *Cabins; Summarising.*—When embarkation is completed the "state" is copied on to the orderly-room blackboard. *The numbers on the top tickets remaining on the embarkation board show the numbers of the cots vacant in each ward and also the boat accommodation remaining.* This latter may be allotted to "lying" cases.

4. *Allotment of orderlies to boats.*—Tickets for the R.A.M.C. employed in the various wards may be kept in these wards by the sister or N.C.O. in charge. They are handed to the orderlies at the beginning of each voyage. Space is allowed for them when allocating patients to boats. This plan ensures that orderlies accompany their own patients in the boats.

C.—*Advantages.*

1. Segregation of patients in groups according to their diseases, latrine requirements, and general welfare.

2. Certain cases may be placed under the care of a medical officer who specialises in a particular branch of his profession —e.g., eye cases, venereals, X ray.

3. The number of patients actually embarked is automatically registered and the hospital "state" ascertained at any moment.

4. When debarking sick transferred to an intervening port, a ward is completely evacuated and can be thoroughly cleansed and disinfected before a corresponding number of patients is embarked.

5. When two or more pack-stores exist one of these can be devoted to the wards to be evacuated at intervening ports.

6. The position of any Medical Officer, Sister, or Orderly in the hospital can be ascertained at a glance.

7. Each man is provided with a life-boat ticket *before sailing*, the first 24 hours being usually in a "danger zone."

8. R.A.M.C. staff accompany their own patients in the boats.

These advantages are magnified when dealing with numerous small drafts of sick.

A CASE OF

SUDDEN DEATH AFTER AN ANÆSTHETIC

IN A LATENT CASE OF SHELL GAS POISONING.

BY PHILIP TURNER, M.S. LOND., F.R.C.S. ENG.,
MAJOR, R.A.M.C.

THIS case is recorded for two reasons. In the first place, sudden death after an anæsthetic which has been taken without any unusual symptoms having been noticed, and where the patient is so nearly round that he is able to sit up and spit out mucus, is very unusual; and, secondly, because the possibility of such an occurrence in a man who has been exposed to the action of poison gases should be borne in mind, even though no symptoms have been observed.

Private H., aged 22, was admitted to a general hospital in France on April 30th, 1918, suffering from a wound of the right foot which had been received on the previous day. There was an entry wound only, situated just in front of and below the right external malleolus. There was a good deal of swelling and tenderness, and the wound was obviously infected. His general condition appeared to be satisfactory, though he was rather anæmic and there was slight pyrexia, due doubtless to the wound. There was no mention of gas poisoning on the field medical card, though a large number of men admitted from the same convoy, and who came from the same district, were gassed. The patient complained of none of the symptoms of gas poisoning, neither were any at any time noticed. An X ray examination was made, and showed a metal fragment in the sole of the foot just behind the base of the fifth metatarsal. It was decided to remove this and to provide freer drainage. Accordingly, on the following day, May 1st, chloroform was administered, the wound and track were excised, and the metal was found and removed. The missile had grazed the outer side of the os calcis and the cuboid and had opened the calcaneo-cuboid joint. The operation was trivial and only occupied a few minutes. There was no struggling, and nothing abnormal was noticed either during induction or during the stage of anæsthesia. Very little anæsthetic was required, and the pulse and colour were both normal throughout. The anæsthesia was so light that while a gauze drain was being inserted the patient moved his leg with considerable vigour. When the patient was about to be removed from the operation room to the ward it was noticed that he had quite suddenly become rather cyanosed and that he was straining as though about to vomit. The jaw was held forwards and the anæsthetist remained with him for some minutes until his colour was quite good and respiration normal. By this time he was practically round from the anæsthetic and even sat up on the stretcher and spat out a little mucus. The pulse was unaffected during this attack and his condition did not cause any anxiety. There was no vomiting and no excessive secretion of mucus.

Instructions were now given to take the patient back to his ward and the anæsthetist returned to the theatre to anæsthetise another patient. After a very short interval, however, certainly not more than three minutes, and before the patient had been taken back to the ward, it was reported that the man had suddenly collapsed. He was seen at once and was apparently dead. The face was an ashy grey colour, the lips were slightly cyanosed, respiration had ceased, the pupils were dilated, and the pulse and cardiac impulse were imperceptible. There had been no vomiting, and no obstruction could be felt on digital examination of the pharynx. Artificial respiration was started at once and was kept up for an hour, but without any effect, though the air could be both heard and felt to enter and leave the chest without any difficulty. In addition strychnine and pituitrin were injected, hot cloths were applied to the precordial area, and tongue traction was employed, but without any response.

On the following day a post-mortem examination was made by Captain G. Richardson, R.A.M.C. The whole heart was very dilated, especially the right auricle and ventricle; the valves were, however, competent. There was no evidence of any vomiting having occurred and no obstruction of any sort in the air passages. Tracheitis was present and was especially marked just above the bifurcation. The lungs were slightly congested and œdematous, particularly at the bases. The stomach was nearly empty and the other viscera were normal. The whole appearance was characteristic of gas poisoning, and the amount of cardiac dilatation suggested that the gas in question was phosgene. Death was due to primary cardiac failure.

Remarks.

In such a case as the above probably the only physical sign that would have been noticed from a thorough examination of the heart would have been some displacement of the cardiac impulse. Nothing abnormal was noticed on auscultation. In any case the operation would have been carried out, as the local condition was one of considerable urgency. In the absence of any vomiting or of any obstruction in the air passages the cause of death at the time was attributed to primary cardiac failure, but the reason of this was obscure until the post-mortem examination. When seen within two or three minutes of being apparently all right and coming round from the anæsthetic normally the patient was obviously dead, and though attempts at resuscitation were kept up for an hour there was at no time any response or any suggestion of recovery. He had already been observed to sit up once, and the probability is that he did this again or made some similar slight muscular effort, with the result that the dilated and weakened heart had thrown upon it a strain which it was unable to bear. Indeed, one lesson to be learnt from this case is that all movements after an anæsthetic in patients where there is any suspicion of gas poisoning should be checked, and that they should be kept strictly in the horizontal position.

A DEVONSHIRE CENTENARIAN.—Miss Jane Welsford, of Newton Abbot, celebrated the 104th anniversary of her birthday on August 21st.

TYPHUS FEVER:

OBSERVATIONS ON A SEROLOGICAL TEST (WEIL-FELIX REACTION.)

BY C. M. CRAIG, M.D. MANCH., D.P.H.,
CAPTAIN, R.A.M.C.; O.C. —— MILITARY LABORATORY;
AND
N. HAMILTON FAIRLEY, M.D.,
MAJOR, A.A.M.C.; PATHOLOGIST, —— AUSTRALIAN GENERAL HOSPITAL.

THE following is a brief account of our experience of the Weil-Felix reaction during the early months of 1918 in Egypt and Palestine. The reaction is an amplification of the work done by Dr. Wilson,[2] of Belfast, who first showed that typhus serum possessed the power of agglutinating certain intestinal organisms. During the past year it has been favourably reported on by Austrian and German workers.[3]

Characters of organism used in this investigation.—This organism of the strain known as X 19 is a short, Gram-negative, slightly motile bacillus, which grows under aerobic conditions only. On ordinary media it thrives, producing on agar and MacConkey's media a somewhat delicate growth, rather resembling that of the typhoid group; it liquefies gelatin. This organism produces acid and gas in glucose, saccharose, maltose, and mannite, but does not ferment dulcite or lactose. It produces indol freely, and acid without clot formation in milk. In our experience it has been non-lethal to guinea-pigs subcutaneously in doses of 2 c.cm. of 24 hours' broth culture.

Results of culture in typhus cases.—Cultures of blood in 12 cases yielded negative results. The urine, fæces, and sputum have been examined in 21 cases. An organism resembling the one described above has only once been isolated—i.e., in the urine of a patient on about tenth day of illness. This differed from the stock culture (X 19) in possessing much feebler agglutinating properties.

Agglutinating Phenomena in Definite Typhus Fever.

In all 90 cases were examined, 67 of which were British and 23 Egyptians.

Certain cases yielded rather anomalous results: 1. In one case agglutinins were not noted until two days after fever had subsided. 2. In the second case positive agglutination was not obtained until ninth day of disease. 3. In the third case two separate examinations of serum during second week of disease yielded negative results. In all other cases agglutination reactions were noted in the first examination.

(*a*) Forty-five British cases (in whom time incidence of illness was definitely known) were examined during the pyrexial period. The titres of the agglutinations obtained were as follows:—

Day.	Cases.	Titre.
4th	6	1/10, 1/10, 1/40, 1/50, 1/100, 1/1000.
5th	10	1/10, 1/10, 1/10, 1/40, 1/50, 1/50, 1/50, 1/50, 1/80, 1/160.
6th	6	1/50, 1/50, 1/50, 1/80, 1/100, 1/320.
7th	3	1/10, 1/20, 1/320.
8th	6	1/40, 1/80, 1/100, 1/640, 1/1000, 1/1280.
9th	2	1/20, 1/40.
10th	6	1/160, 1/200, 1/320, 1/320, 1/640, 1/1280.
11th	1	1/40.
12th	2	1/20, 1/640.
13th	3	1/80, 1/640, 1/280.

(*b*) The sera of 21 native cases (exact day of disease not definitely ascertained, probably all in second week of illness) gave positive reactions as follows:—

Titre	1/10	1/20	1/50	1/100	1/200	1/1000	1/2000
Cases	5*	3†	2	6	2	2	1

* One of these cases four days later, showed agglutination with 1/50.
† All showed an agglutination of 1/50 two days later.

(*c*) During convalescence 24 cases were examined and agglutination reactions in the following titres were obtained:—

Day.	Cases.	Titre.
2nd	1	1/20
5th	1	1/40
6th	2	1/1280, 1/2560
7th	1	1/320
8th	1	1/640
9th	2	1/160, 1/1640
12th	1	1/320
13th	1	1/50
14th	1	1/200
15th	1	1/640
21st	1	1/100
22nd	2	1/50, 1/320
26th	1	1/100
27th	2	1/100, 1/100
29th	1	1/10
31st	1	1/100
33rd	1	1/50
34th	1	1/100
37th	1	1/100
60th	1	Nil.

Control reactions.—The sera of 70 known negative cases were examined for agglutination against this proteus-like organism. They included cases of undulant fever, typhoid, syphilis, relapsing fever (30), pneumonia, and malaria.

In three cases a slight reaction was obtained in a dilution of 1/10; these occurred (1) in a healthy, much inoculated orderly; (2) in a case of acute pneumonia; (3) in an indefinite pyrexia, probably enterica (the serum gave a complete reaction in dilution of 1/10 against *B. paratyphosus B*, and in 1/100 against *B. typhosus*).

The sera of 10 convalescent typhus patients were tested against stock cultures of *B. Shiga*, *B. Flexner-Y*, *B. typhosus*, *B. paratyphosus A* and *B*, *Cholera vibrio*, *M. melitensis*, and two strains of *B. coli*, one true to type, the other atypical. The serum of one case agglutinated the typhoid bacillus in a dilution of 1/100 (inoculated against T.A.B.). One serum agglutinated *M. melitensis* in a dilution of 1/10. These were the only exceptions; the remainder failed to give any reaction even in the lowest dilutions.

In a group of 7 additional cases of typhus which were tested against stock cultures of *B. typhosus* and *B. paratyphosus A* and *B* during the pyrexial period 6 yielded negative results. In the other case, who had been inoculated with T.A.B. nine months previously, *B. paratyphosus A* and *B* yielded a positive agglutination with patient's serum in dilution of 1/40. *B. typhosus* yielded agglutination in 1/1280. An autopsy infection with *B. typhosus* was definitely excluded in this case.

Note.—Tested in a dilution of 1/10 against standard immune serum for *B. Shiga*, *B. Flexner*, *B. typhosus*, *B. paratyphosus A* and *B*, and the cholera vibrio (prepared by the Lister Institute), emulsions of this bacillus gave completely negative results.

Complement-fixation Reaction.

As the sera of typhus patients agglutinated in high titre a saline suspension of this proteus-like organism, an investigation by means of the complement-fixation method, originally devised by Bordet and Gengou,[4] was made.

The antigen used was a fresh saline (0·85 per cent. saline and 0·5 per cent. phenol) suspension prepared from a 24 hours' growth of this organism on agar slopes. The technique employed was similar to that used in the ordinary quantitative Wassermann reaction. Six and 12 minimum hæmolytic doses of complement were used in this test. A serum was regarded as yielding a positive result if in the presence of this bacterial antigen it fixed at least six M.H.D. of complement. In the first stage of the reaction quantities of antigen, (?) immune serum, and complement were mixed together for one hour at 37° C. Subsequently, sensitised sheep's corpuscles were added, and final readings were made after another hour's incubation at 37° C. The amount of complement fixed by pooled negative sera plus the amount of bacterial antigen used in the test did not exceed two M.H.D. of complement.

The results were recorded as follows:—1. P ++++ fixation of 12 M.H.D. complement. 2. P +++ fixation of 9 M.H.D. 3. P ++ fixation of 6 M.H.D. 4. P + fixation of 3 M.H.D. Only the first three readings are regarded as positive.

In all, 29 sera collected from typhus cases in different stages of the disease were examined.

Their agglutination reactions were as follows: 1 case, 1/2560; 5 cases, 1/1280; 7 cases, 1/640; 4 cases, 1/320; 3 cases, 1/160; 3 cases, 1/80; 3 cases, 1/40; 3 cases, 1/20. The results of the complement-fixation test were negative in 28 out of 29 cases. In the remaining case a positive reaction (P++++) was obtained. Even in this case the significance of the reaction was doubtful, as this serum exhibited distinct anticomplementary tendency in the serum control tubes.

Controls.—Forty-three sera from other cases (not typhus) were examined. Of these, 40 were negative and 3 yielded pseudo-positive reactions (one case of rheumatic fever, positive reaction, P ++++; 2 cases of syphilis positive reaction, P ++).

The formation of agglutinin for this proteus-like organism in the blood of typhus cases is not accompanied by the formation of immune body, as indicated by the complement-fixation reaction using as antigen a fresh saline suspension of this proteus-like organism.

Animal Experimentation.

Ten monkeys were experimented on—7 grivet (*Cercopithecus*) and 3 *Macacus rhesus*.

Of these animals four were used as controls. The six others were injected subcutaneously with one dose of 1 to 2 c.cm. of a 24 hours' broth culture of the proteus-like organism. In one monkey a second injection was given ten days after the first. Prior to inoculation all had negative complement-fixation reactions and all yielded negative agglutination reactions in dilution of 1/10 against this proteus-like organism with one exception only. In this case a positive agglutination of monkey's serum in a titre of 1/10 was obtained, but the reaction vanished in a higher dilution of 1/20. None of the monkeys showed signs of sickness or abnormal temperature after inoculation.

In all cases a positive complement-fixation reaction was obtained; in five cases within 12 days of inoculation. In the

sixth case the complement fixation, negative on the ninth day, became positive on the eighteenth day. The agglutinin response in this case was not as intense as usual. In all these cases, accompanying the appearance of agglutinin in the blood serum of the inoculated monkeys, immune bodies were produced also, which had the property of fixing complement in the presence of its specific antigen—namely, the proteus-like organism. The following gives the serological reactions in one of the experimental animals (Monkey Z):—

(A) Days after inoculation.				(B) Agglutination.		(C) Complement fixation.	
(A) ...	4	6	9	12	18	35	53
(B) ...	1/20	1/160	1/640	1/1280	1/1280	1/640	1/40
(C) ...	—	P++++	—	P++++	P++++	P++++	Neg.

Significance of Agglutination Reactions in Typhus Cases.

At the present time Austrian and German observers are agreed that this proteus-like organism must of necessity be a constant secondary invader in patients infected with typhus fever, in much the same fashion as certain authorities regard a secondary invasion with the *Streptococcus pyogenes* as occurring in scarlet fever. Such a conception, however, though explaining the appearance of agglutinin in the blood of typhus cases, is incompatible with the following facts.

1. Systematic cultural investigations of the urine and blood in cases of typhus fever over all stages of the disease do not yield, except very exceptionally, positive results for this proteus-like organism, and this despite the fact that it grows easily on all ordinary laboratory media—i.e., nutrient broth, agar, &c.

2. Serological investigations of typhus cases, while showing the presence of agglutinin for this proteus-like organism, failed to demonstrate the presence of any immune body; whereas serological investigations of monkeys inoculated subcutaneously yield both positive agglutination and complement-fixation reactions. If the "secondary invasion" theory were correct, then inevitably the immune body would be demonstrable in the sera of typhus cases.

This agglutination phenomenon, then, though yielding results of the greatest clinical value, is to be regarded as a pseudo-agglutination. Possibly it is of the nature of a group agglutination, and, if so, then the virus causing typhus may prove to be an organism allied to this proteus-like bacillus, but one which is resistant to cultivation on ordinary media.

The fact that the Wassermann reaction is not a specific test for syphilis in the strict immunological sense has not diminished its practical application as a diagnostic test for that disease. In similar fashion the appearance of an agglutinin in the sera of typhus patients for an organism which has no apparent relationship to the disease need not bias the student against its great diagnostic value in typhus fever.

Conclusions.

1. This agglutination test is an invaluable aid in the diagnosis of typhus fever.

2. Frequently the reaction appears only in the disease, and as a rule rapidly increases in titre.

3. A rapid agglutination in a dilution of 1/10 on Garrow's agglutinometer, while not absolutely reliable, is sufficiently suspicious to justify the isolation of the case. This is especially true of individuals uninoculated with T.A.B. or cholera. The serum of 50 uninoculated natives failed to give a reaction even in a dilution of 1/10. If the test be repeated at intervals of two days confirmatory evidence will, in the great majority of cases, be obtained.

4. This test is particularly valuable in the case of natives in whom it may be difficult to distinguish clinically between severe relapsing fever and typhus.

Note.—The agglutination was carried out in all cases on Garrow's agglutinometer; the results were read after five minutes' rotation and controls were used in every instance.

We have found Garrow's[5] agglutinometer of invaluable service and absolutely reliable. With this instrument, allowing five minutes for rotation, we find a dilution of 1/25 diagnostic. It is essential in order to obtain scientific and uniform results from a test of this description that a standardised and uniform technique should be adopted.

The method we have described has four great advantages: 1. The rapidity with which results can be obtained is necessarily of great value to the clinician, so as to enable speedy isolation. 2. The elimination of the feeble agglutinating power of normal serum in low dilutions upon this organism. This seems to take effect more readily if placed in tubes in mass contact with the organism than with the Garrow agglutinometer. 3. Economy in material, and the facility with which the technique can be performed in other than in an elaborately equipped laboratory. 4. The ease with which the agglutination can be read and its limits ascertained.

Our thanks are due to Captain P. H. Bahr, D.S.O., R.A.M.C., for assistance during the present investigation. To Colonel R. Fowler, A.A.M.C., commanding officer of —— Australian General Hospital, we are indebted for facilities in carrying out the experimental work on the section dealing with animal inoculation and complement-fixation.

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NOTES ON

THE INTESTINAL PROTOZOAL INFECTIONS

OF 1680 MEN EXAMINED AT THE UNIVERSITY WAR HOSPITAL, SOUTHAMPTON.

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WHILE acting as protozoologist at the University War Hospital, Southampton, from May, 1917, to March, 1918, I examined in the course of routine work the stools of 1680 patients. The results of my observations may be of interest to other workers at dysentery hospitals for three reasons: (1) the cases were examined as often as six times each; (2) while 914 of them were admitted as convalescent from dysentery (including colitis and enteritis) and severe diarrhœa, the other 766 were non-dysenterics, diagnosed typhoid, paratyphoid, trench fever, P.U.O., and so on; and (3) with less than 75 exceptions this large body of men had been invalided from France[1] or had not been out of Britain.

1. *Number of Examinations.*

The attempt was made, and, thanks to the excellent arrangements at this hospital, very successfully made, to examine each case at least six times before pronouncing him uninfected by *Entamœba histolytica*. Since the demand on accommodation for in-coming patients was always great, and since many of the men left the hospital after but a brief stay, the six examinations were made in the shortest workable period—i.e., a week—the first and sixth examinations corresponding with the two examinations required by the Army Council Instruction No. 205 of 1917.

Cases with 6 or more examinations				1549
,,	5 examinations only			33
,,	4	,,	,,	25
,,	3	,,	,,	20
,,	2	,,	,,	24
,,	1 examination	,,	,,	29
				1680

It will be seen from the above that the six-examination standard was well maintained. This is the first time, so far as I know, when a large number of cases has been systematically examined so often.[2] That the attempt to make so many examinations was justified is indicated by the following table of the findings of *E. histolytica*. The percentages of the total findings for which each examination is responsible will be seen to be closely in accord with those in the tables arrived at by calculation (Carter, Mackinnon, Matthews, and Smith 1917).

[1] The men were all questioned as to their previous travels, and we found that 447 had been at one time or other in tropical or subtropical regions.

[2] Dobell (1917) first pointed out the advisability of aiming at making six examinations per case. Carter, Mackinnon, Matthews, and Smith (1917) showed that it was well worth while to attempt this large number, since they calculated that three examinations reveal only 65 per cent. of the *E. histolytica* discoverable by six. The work done by Jepps and Meakins (1917) at the Hampstead Military Hospital is the only instance as yet on record in which the six-examination standard was consistently maintained throughout the investigation, but only 65 cases were examined.

TABLE I.

Examination.	No. of cases actually examined.	Total number found infected with *E. histolytica*.	Percentage of total cases examined.	Percentage of infected cases found by six examinations.
1st	1680	72	4·3	34 6
2nd	1651	103	6·1	49·5
3rd	1627	127	7·5	61·0
4th	1607	159	9·4	76 4
5th	1582	184	10·9	88·4
6th	1549	208	12·4	100·0

While six is probably the largest number of examinations that can be conducted in practice, it is certain that some infections go undetected. I found *E. histolytica* cysts in one case at the eighth examination, and a man sent as "clear" from Southampton to Barton-on-Sea after six negative examinations, found negative at Barton and returned to us for further observation and treatment, yielded *E. histolytica* then for the first time—i.e., at the ninth examination.[3]

2. *Total Infections Detected.*

Of the 1680 cases, 864 (= 51·4 per cent.) were found to be infected with one or more of the common intestinal protozoa, as follows:—

TABLE II.

Protozoon.	No. of cases infected.	Percentage of total cases examined.
Entamœba histolytica	209	12·4
E. coli	440	26·2
E. nana	303	18·0
Giardia (= *Lamblia*) *intestinalis*...	226	13·4
Chilomastix ("*Tetramitus*") *mesnili*	85	5·0
Trichomonas hominis	13	0·7

In addition, Wenyon's "I" cysts were found in 13 cases (= 0·7 per cent.)

These percentages of protozoal infection are not high, considering that the cases have been examined so often. Judging from previous experience with cases examined three times, I had expected to find by the sixth examination some 20 per cent. infected with *E. histolytica*. I saw, however, that whereas the material on which I had worked at Liverpool was mainly from dysenterics invalided, for the most part, from Salonica and Egypt, I was dealing at Southampton with a much larger admixture of non-dysenterics, and with men invalided, not directly from the East, but from France. These two considerations, I thought, might explain to some extent the relatively low percentage of *E. histolytica*. With this in mind, I therefore analysed the 1680 cases further.

3. *Comparison of Infections in Dysenterics and Non-dysenterics.*

TABLE III.

A. Dysenteric cases: number examined 914
B. Non-dysenteric cases: number examined 766

Protozoon.	A.	B.
	No. of cases infected.	
E. histolytica	123 (= 13·4 per cent.)	86 (= 11·2 per cent.)
E. coli	255 (= 27·9 ,,)	185 (= 24·1 ,,)
E. nana	189 (= 20·7 ,,)	114 (= 14·9 ,,)
G. intestinalis ...	146 (= 15·9 ,,)	80 (= 10·5 ,,)
C. mesnili	54 (= 5·9 ,,)	31 (= 4·0 ,,)
T. hominis	9 (= 1·0 ,,)	4 (= 0·5 ,,)

That is to say, both classes of patients harboured the same intestinal protozoa, but the percentages were slightly higher in the dysenteric group.

[3] I am indebted to my successor, Miss Jepps, for this information. Since the case was discovered to be "positive" after I had left the hospital I have not included it among the "positive" *E. histolytica* cases in this report.

This result is in agreement with the observations of other workers who have systematically examined the fæces of smaller numbers of non-dysenterics. Allowing for the difference in the number of examinations, my figures agree most closely with those of Smith and Matthews (1917, *a* and *b*) for 450 non-dysenterics from temperate as well as from tropical regions. Dobell's (1916) figures for 110 non-dysenterics are relatively higher than mine, but he was examining cases from Gallipoli and Egypt only.

We may further group our 766 non-dysenterics according to whether they have or have not a past history of dysentery or severe diarrhœa.

TABLE IV.

A. Non-dysenterics with history of dysentery or diarrhœa: number of cases examined 100
B. Non-dysenterics with *no* history of dysentery or diarrhœa: number of cases examined 666

Protozoon.	A.	B.
	No. of cases infected.	
E. histolytica	14 (= 14 per cent.)	72 (= 10·8 per cent.)
E. coli	27 (= 27 ,,)	158 (= 23·7 ,,)
E. nana	18 (= 18 ,,)	96 (= 14·4 ,,)
G. intestinalis... ...	9 (= 9 ,,)	71 (= 10 6 ,,)
C. mesnili...	4 (= 4 ,,)	27 (= 4·0 ,,)
T. hominis	2 (= 2 ,,)	2 (= 0·3 ,,)

The two groups are so unequal that it is scarcely fair to compare them closely; but, in a general way, it would seem that in non-dysenterics with a dysenteric history the protozoal infections are rather more numerous than in cases having no such history.[4]

4. *Comparison of Infections in "Eastern" and "French" Cases.*

With few exceptions, the cases were invalided to Southampton from France or had not been out of Britain. We were at great pains to discover what proportion of the French cases had been in the East[5] as well as in France, either during the war or at some previous time. We found that 447 of the 1680 (= 26·7 per cent.) had at one time or other visited the East. The bulk of the men—i.e., 1233—had never been further afield than the war zones in France and Northern Italy, and 34 of them had never been out of England. Six examinations of such a large number give some useful additional evidence of the frequency of protozoal infections, and more especially of *E. histolytica* infections, in temperate regions.

The two groups are compared in the following table:—

TABLE V.

A. Cases in the East: number examined... 447
B. Cases never in the East: number examined 1233

Protozoon.	A.	B.
	No. of cases infected.	
E. histolytica	72 (= 16·1 per cent.)	137 (= 11·1 per cent.)
E. coli	117 (= 26 2 ,,)	323 (= 26·2 ,,)
E. nana	85 (= 19·0 ,,)	218 (= 17 7 ,,)
G. intestinalis... ...	61 (= 13·6 ,,)	165 (= 13 4 ,,)
C. mesnili...	23 (= 5·1 ,,)	62 (= 5·0 ,,)
T. hominis	12 (= 2 7 ,,)	1 (= 0·08 ,,)

Though the two groups are numerically unequal, the smaller group is large enough to give a fair sample, and it would certainly seem that the percentage of *E. histolytica* infections is higher in the Eastern group—i.e., 16 per cent. as against 11 per cent. *Trichomonas* also seems to be more abundant in the Eastern group, but the total number of infected cases is too small for much meaning to attach to the percentages.

5. *Infections in Eastern Dysenterics.*

It appears, then, that the presence of a large admixture of non-dysenterics among the cases examined and the relatively

[4] Cf. Smith and Matthews, 1917, *a* and *b*.

[5] "The East" is here used to mean the tropics and those sub-tropical regions where amœbic dysentery is usually considered to be endemic. Northern Italy has not been so included.

small number of "Eastern" cases may both be factors, as indeed one would expect, in explaining the comparatively low percentages of *E. histolytica* infections found by six examinations of 1680 men.

This is further borne out by a consideration of the protozoal infections in such of the dysenterics as have at one time visited the East. Among the 914 dysenterics examined there were 280 giving such history. A comparison of these 280 men with the 634 dysenterics that had never been further afield than France or Northern Italy is shown below.

TABLE VI.

A. Dysenterics who had visted the East: number examined 280
B. Dysenterics who had never visited the East: number examined 634

Protozoon.	A. No. of cases infected.	B. No. of cases infected.
E. histolytica	56 (= 20·0 per cent.)	67 (= 10·6 per cent.)
E. coli	78 (= 27·8 ,,)	177 (= 27·9 ,,)
E. nana	53 (= 18·9 ,,)	136 (= 21·4 ,,)
G. intestinalis ...	41 (= 14 6 ,,)	105 (= 16·6 ,,)
C. mesnili...	14 (= 5·0 ,,)	40 (= 6·3 ,,)
T. hominis	7 (= 2·5 ,,)	2 (= 0·3 ,,)

The groups are of unequal size, but it is indicated that the dysenterics who had visited the East show a markedly higher percentage of *E. histolytica* infections than cases who have never been further than France—i.e., 20 per cent. as against 10·6 per cent.[6]

6. *Infections in British Cases.*

Examination of fæces of persons who had never been out of the British Isles has conclusively shown that all the common intestinal protozoa occur in this country.[7] Thirty-four of the men examined at this hospital who had been admitted with severe diarrhœa had never been out of England. They yielded the following infections:—

Protozoon.	No. of cases infected.	Protozoon.	No. of cases infected.
E. histolytica	1*	*G. intestinalis*	6
E. coli	5	*C. mesnili*	1
E. nana	3		

* An R.A.M.C. sergeant who had attended to dysentery patients on hospital trains.

7. *Size of* E. histolytica *Cysts.*

Cysts of *E. histolytica* measuring less than 10μ in diameter are now recognised by most workers who have studied the recent articles by Wenyon and O'Connor (1917) and Dobell and Jepps (1917 and 1918). In a batch of 200 cases Dobell and Jepps found 75 small-cyst infections, 127 large-cyst infections; 2 cases were passing both large and small cysts. These authors published later a paper to show that at least five distinct races of *E. histolytica* occur.

The 209 carriers with which the present paper deals showed a very large proportion of infection with small cysts:—

103 cases had cysts below 10μ only.
90 ,, ,, ,, above ,, ,,
16 ,, ,, mixed infections of the various sizes.

Dobell and Jepps (1918) "have obtained no evidence that races of *E. histolytica* producing cysts of any particular size are characteristic of infections acquired in any particular locality." While I admit that the numbers I have observed are too small to be of much statistical value, still I may note here that of the 103 small-cyst cases only 27 (= 26·2 per cent.) had been in the East, whereas 44 of the 90 large-cyst cases (= 48·8 per cent.) had been in the East. Of the 16 "mixed infection" cases, 6 (37·5 per cent.) had an Eastern history.

8. *Treatment.*

Of the 914 dysenterics examined, 43 had been diagnosed as "amœbic dysentery" in France before coming to us, and 24 of these are known to have had some emetine treatment there, most frequently with emetine bismuth iodide. Five of the treated cases were still passing cysts when they arrived at this hospital (one after emetine hydrochloride injections alone, three after emetine bismuth iodide alone, and one after both emetine hydrochloride and emetine bismuth iodide).

When accommodation at this hospital admitted of our retaining them for treatment, *E. histolytica* carriers were given a course of emetine bismuth iodide in 3 gr. doses for 12 days, and were examined daily after treatment for four weeks before being transferred to Barton-on-Sea. When the hospital was very full, it was found necessary to send on to the dysentery depôt at Addington Park, Croydon, all relapsing cases—i.e., cases passing cysts after treatment.

The following is a summary of the observed results of treatment:—

1. Of 131 men who had one treatment (130 for 12 days and 1 for 36 days), 62 were clear for 4 weeks afterwards and 69 relapsed.
2. Of 16 men who had a second treatment (15 for 18 days and 1 for 24 days), 6 were clear for 4 weeks afterwards and 10 relapsed.
3. Of 2 men who had a third treatment (for 18 days, and in one case with emetine injections during 10 days of the course), 2 were clear for 4 weeks after treatment and 0 relapsed.

Through lack of accommodation, 78 carriers were either not treated at Southampton or were transferred to Addington Park before they had completed the necessary four weeks' observation period after treatment.

Transferred without treatment	29
,, during ,, ...	11
,, immediately after treatment	15
,, in the 1st week ,, ,, ...	9
,, ,, 2nd ,, ,, ,, ...	10
,, ,, 3rd ,, ,, ,, ...	4
	78

Since 46 (= 58·2 per cent.) of the 79 relapses I observed occurred in the first week after treatment, 18 (= 22·7 per cent.) in the second week, and only 7 (= 8·8 per cent.) in the third and 8 (= 10·1 per cent.) in the fourth, the probability is that of the 14 men transferred to Addington Park in the second and third week after treatment some might safely have been cleared.

But the percentage of observed relapses after a first treatment is extraordinarily and disappointingly high—i.e., 52·6. When emetine bismuth iodide had been used for some time in the form of salol-coated pills, gelatine capsules were given a trial, but the percentage of relapses remaining still much the same, pills were resorted to again.[8] There was a great deal of vomiting recorded, and I think it almost certain that there was some evasion of a disagreeable treatment. It is at least suspicious that, while of the first 35 cases 23 were cleared and 12 (= 34·2 per cent.) relapsed, the next 25 cases gave no less than 21 relapses (= 84 per cent.). At this time the carriers were segregated in one hut; they were all cleared out together, at short notice, to make way for in-coming cases; after that, carriers were distributed through other huts, and "relapses" were less numerous again. It is exceedingly difficult, in a hospital not specially set aside for observation and experimental work, to ensure that the men all swallow their nightly dose. It might help matters somewhat if the medical officer in clinical charge of the patients worked under the direction of the officer in charge of the laboratory; the laboratory officer would then be kept better informed of the condition of the men, and by showing him what was going forward in the laboratory might interest the other more keenly in the carrier problem.

Twelve cases came from France diagnosed "*Lamblia* dysentery." Their field-cards stated of five of these that they had received methylene-blue treatment and were clear of cysts afterwards. Three of these five men passed *Lamblia* (= *Giardia*) cysts during their examinations after admission to this hospital. Dobell and Low (1916) have already shown that methylene blue fails to rid men of their *Lamblia* infections.

Summary.

1. From May, 1917, to March, 1918, 1680 cases (914 dysenterics and 766 non-dysenterics) were examined for intestinal protozoa. Only 131 had less than six examinations.

[6] Though the percentages are lower, the general result agrees with the findings of Dobell and Jepps (1918), where 1300 dysenterics from Eastern and French fronts, examined twice, yielded 12 per cent. *E. h.* infections, but, analysed into French and Eastern groups, gave 8·37 per cent. and 20 per cent. respectively.

[7] See Dobell (1917), Smith and Matthews (1917), Yorke, Carter, Mackinnon, Matthews and Smith (1917).

[8] Of 60 cases treated once with capsules, 33 (=55%) relapsed.
,, 67 ,, ,, ,, salol pills, 34 (=50·7%) ,,
,, 4 ,, ,, ,, capsules and pills, 2 (=50%) ,,

2. Thirty-four cases had never been out of England. The rest, with very few exceptions, came from France. But it was found that 447 had at some time been in tropical and subtropical countries.

3. 864, or 51·4 per cent., were infected with protozoa. *Entamœba histolytica* was found in 209 cases (= 12·4 per cent.), *E. coli* in 440 (= 26·2 per cent.), *E. nana* in 303 (= 18 per cent.), *Giardia intestinalis* in 226 (= 13 4 per cent.), *Chilomastix mesnili* in 85 (= 5 per cent.), and *Trichomonas hominis* in 13 (= 0·7 per cent.).

4. The 914 dysenterics yielded 123 (= 13·4 per cent.) carriers of *E. histolytica;* the 766 non-dysenterics yielded 86 (= 11·2 per cent.).

5. Among 447 cases (dysenteric and non-dysenteric) who had been in the East, 72 (= 16·1 per cent.) were infected with *E. histolytica;* of 1233 similar cases from England, France, and Northern Italy, 136 (= 11·1 per cent.) were infected.

6. 280 dysenterics who had been in the East had among them as many as 56 carriers (= 20 per cent.), whereas 634 French and English dysenterics yielded only 67 (= 10·6 per cent.).

7. *E. histolytica* cysts were found in one of 34 men who had never been out of England.

8. Of 208 *E. histolytica* carriers, 103 had cysts below 10μ in diameter, 90 had cysts over 10μ, and 16 passed both large and small cysts.

9. Of 131 carriers who were treated for 12 days with emetine bismuth iodide (60 with capsules, 67 with salol-coated pills, and 4 with capsules and pills), 69 relapsed after a first treatment. Of 16 who went on to further treatment at Southampton, 8 were eventually cleared.

10. Cases were examined daily for four weeks after treatment. At least 58 per cent. of the "relapses" took place in the first week.

11. Observations on 5 cases of "*Lamblia* dysentery" treated in France with methylene blue and declared free of the organism, do not suggest that this is an effective treatment.

I should like to acknowledge my great indebtedness to Lieutenant-Colonel Lauder, R.A.M.C., the officer commanding the University War Hospital, Southampton, and to my colleague, Captain William Fletcher, R.A.M.C., bacteriologist to the hospital. My thanks are also due to Miss Margaret Jepps, who kindly assisted me with some of the later examinations.

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

TRENCH FEVER IN ENGLAND:

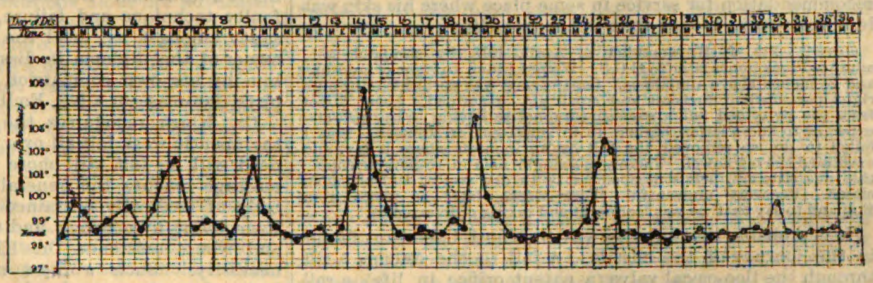
A CASE WITH NO HISTORY OF EXPOSURE TO INFECTION.

BY F. H. MOSSE, M.A. OXON., M.R.C.P.

THE following case did not occur in a civilian, but may be of sufficient value to be worth recording as an appendix to the interesting civilian case discussed by Dr. J. H. E. Brock in your issue of August 3rd and bearing on the likelihood of trench fever breaking out in the civilian population.

The patient was a lad of 18 who had just joined the Army. He was admitted to hospital on April 19th, 1918, complaining of headache and pain in the back. No other symptoms or physical signs were recorded at the time and the case was diagnosed as "influenza." He came under the writer's care a few days later, when the subsequent course of his pyrexia and the entire absence of catarrhal symptoms suggested an alteration in the diagnosis. The chart eventually showed a series of pyrexial attacks recurring at increasing intervals of from three to eight days. The patient felt acutely ill for about 12 hours during the attacks, with severe frontal headache and pain at the back of the eyes, which were kept tightly closed and caused him much pain if he attempted to move them. On one occasion slight nausea was present with the attack, but no vomiting. Between the attacks he was quite normal and said he had never felt better in his life. There were no abnormal physical signs in the heart, lungs, or abdomen; the spleen was not enlarged when I saw him, and the characteristic "shin pains" were absent. He was not conscious of having been lousy at any time, and there were no taches bleuâtres. At one time the intensity of the headache and the intermittent pyrexia suggested the possibility of cerebro-spinal meningitis, but there was no tenderness or rigidity of the neck tendons; Kernig's sign, Babinski's sign, and Brudzinski's signs were all absent; the knee-jerks were quite normal, and there were no eye symptoms or cutaneous eruptions.

Temperature Chart of a Case of Trench Fever in England.



The patient had never been abroad, but the possibility of an indigenous malaria has, perhaps, to be considered in these days. The irregular intervals between the attacks, the absence of rigors, and the comparatively rapid cure without quinine were, however, sufficient to negative this diagnosis. By a process of exclusion the case appears to be one of true trench fever.

The interesting point about the case, if this diagnosis be accepted, was that no history could be obtained of any exposure to infection. The patient had been sleeping in a hut, his bed being next the door, and his only "sleeping contact" had never been abroad or suffered from trench fever; further, no men in the camp had reported sick then, or since, with anything that could be diagnosed as trench fever; some men in the camp had been abroad, but none within a period of at least a month prior to patient's admission, and probably two months or longer.

It would seem likely, therefore, that he was infected either from a carrier, or from a mild ambulatory case, in which the disease had been so slight that the man had not reported sick.

If either of these hypotheses be accepted—and no originality is claimed for either of them—the possibility of civilians, as well as soldiers, being infected from such unrecognised cases is obvious, a possibility which it is well to bear in mind at the present time, when "influenza" is more than ever a ready-to-hand diagnosis.

NOTE ON TWO GUNSHOT WOUNDS.

BY J. J. M. SHAW, M.D. EDIN.,
MAJOR, R.A.M.C. (S.R.)

THE following notes on two cases—a hæmophilia and an errant shrapnel ball in the intestine—may be of some interest.

CASE 1.—Pte. T. C. admitted to C.C.S. in November, 1916, six hours after being wounded. Small but dirty wound of left calf; fragment of H.E. shell had cut deep fascia to extent of 1 inch and torn slightly subjacent muscle. From condition of dressings he must have bled pretty freely before admission. On operating wound presented no unusual features and was simply excised and cleaned, with ligation of two small bleeding points, before being dressed with eusol. Four hours later the dressings had "come through"; outer layers were changed.

On following morning patient looked blanched and ill; pulse-rate had increased overnight from 90 to 116. On inquiry I found that he had almost lost his life at age of 9, when his tonsils were "cut." An elder brother had died in childhood after some operation, the nature of which the patient did not know.

Patient was again anæsthetised, the wound rubbed with gauze and every oozing point ligatured, a series of very hot compresses applied, followed by a dry dressing. Six hours later I was called to him on account of acceleration of pulse to 136 and severe restlessness. The dressings were re-changed, and I gave him, for the serum effect, two 6 c.cm. ampoules of diphtheritic antitoxin. From that time oozing stopped and he quickly recovered.

The patient was later transferred to the base, with a strong recommendation for service in some place where his skin was less likely to be broken than in the front line.

CASE 2.—Pte. J. H. wounded in April, 1918, by shrapnel ball; admitted four hours later to C.C.S. Wound 1 inch to right of mid-line and 2½ inches above umbilicus. Laparotomy was performed through right para-median incision and small gut examined. About 8 feet from the pylorus I felt a smooth shrapnel ball lying in the gut, and expected to find a lesion higher up in small gut or stomach. This I failed to do, so removed the ball by an incision where it lay, and examined the big bowel. There was a single hole in transverse colon; this was stitched, pelvis mopped out with dry swabs, and abdomen closed. Recovery uneventful. Four weeks later he wrote from England to say that he was feeling fit and taking ordinary diet.

It is probable that gravity was the most important factor in the journey of the missile. A fall to the cæcum, a tilt through the ileo-cæcal valve (a patent orifice in life), a roll into the coils lying in the pelvis, the recumbent position, and an ambulance drive over French roads in the battle zone would serve to explain the vagrancy of the smooth ball, but the distance which it had travelled in the small gut suggests the aid of a so-called reverse peristalsis in the later stages of the journey.

A CASE OF JELLY-FISH STING SIMULATING AN ACUTE ABDOMEN.

BY ROBERT E. LORD, M.D., B.SC. LOND.,
AND
S. L. B. WILKS, M.D., B.S. LOND.

THE following case seems worth recording:—

A married woman, about 28 years of age, was brought to the house of one of us in a state of partial collapse, giving the following history. She had for years suffered from dysmenorrhœa, for which two operations had been performed in a special hospital. The bowels had acted normally on the morning in question. Immediately after bathing she was seized with violent pain in the abdomen and back, and also observed that she had apparently been stung on the arm by a jelly-fish, which she had not seen.

On examination about an hour after the onset of the symptoms she was restless and complained bitterly of pain in the abdomen, back, and right forearm, which was red, tender, and covered with beads of sweat. The abdomen was motionless, of board-like rigidity, and exquisitely tender to both light and deep pressure; there was no spasm of the back muscles; the liver dullness was normal in area, and intestinal movements were heard freely on auscultation. The temperature was 98° F., the pulse 96 and of fair quality, and the facies, though anxious, was not what one would expect in an abdominal catastrophe. The temperature rose to 99·4° in the evening.

One of us (R. E. L.) had, during the preceding two years, seen four cases of jelly-fish sting followed by extreme restlessness and emotional disturbance, varying amount of collapse, and tonic spasm of limb or neck muscles, the spasm coming on at intervals of a few minutes to a few hours after the sting; and it therefore seemed probable that the abdominal rigidity was due to this cause. This proved to be the case, and the patient was able to leave hospital, where she had been sent for observation, on the next day almost recovered but somewhat shaken by her experiences.

In the five cases of sting the jelly-fish was seen only twice by the patient, and in both of these was spoken of as being bright red in colour, no other feature being noticed.

Colwyn Bay.

Reviews and Notices of Books.

Massage and Medical Gymnastics. By EMIL A. G. KLEEN. Translated by MINA DOBBIE, M.D., B.Ch. R.U.I., Medical Officer, Chelsea Physical Training College. Illustrated. London: J. and A. Churchill. 1918. Pp. 618. Price 21*s.* net.

HAD we been asked to select any single foreign work on physico-therapeutics for translation into English it is probable that our choice would have fallen upon Kleen's great work. In it he gives us a faithful account of all that was best in Swedish methods of physical treatment at the time of publication of the original, now seven years ago, including lengthy chapters by Arvedson on Ling's Method of Medical Gymnastics, by Zander on Mechanical Gymnastics, and by Haglund on Medical Gymnastics and Massage in Orthopædics. For this alone Dr. Dobbie's careful translation will be very welcome in this country. But it is to the introduction that the reader will turn with the greatest interest, for the author there tells the story of the Swedish masseur who for many years has made of this country a happy hunting ground. The "gymnastic director" (D.G. for short) has come among us in his hundreds and has been accepted at his own valuation. Despite doubts and distrust engendered by faulty technique and failure, the D.G. has remained sacrosanct amongst us, until the halo around the head of the owner of the diploma is dissipated in the light thrown on him by his own compatriot, and perhaps the most eminent physician-masseur alive, Emil Kleen.

Dr. Kleen recognises the enormous need for physical therapeutic work felt all over the world, and thinks that the need will be felt still more as knowledge of the value of massage reaches the general public. To meet this need a body of medically untrained workers has arisen who earn their living by massage and to a less extent by gymnastics, and whose existence Dr. Kleen regards as an absolute necessity. Such workers must, however, know certain facts of anatomy and physiology, and in view of the uncritical enthusiasm which the splendid results of mechano-therapy are apt to arouse in medically untrained workers, they should learn from the beginning that there are many conditions which cannot be benefited by massage and gymnastics, and some which render all such treatment dangerous. The D.G. must, in short, be fully aware of the limitations of his own medical training, and that nothing less than a doctor's full training justifies completely independent work as a physical therapeutist. Unfortunately, Dr. Kleen has to add:—

"In Sweden everything possible has been done to create unsuitable conditions for mechano-therapy. ..... A school for physical treatment must live within the medical world, otherwise it is like a separate society which breaks away and artificially separates itself from and becomes hostile to the world to which it belongs. This has happened with the Central Institute. A more antagonistic spirit than that which rules there against medicine and its workers cannot be imagined, and except when there is some external advantage to be gained the institute will have as little as possible to do with the medical world."

The law of 1887, he goes on to say, crowned the work of destruction. It was entirely in the interests of the D.G.'s and against those of the general public. In enacting that no one except a doctor or a trainee of the Central Gymnastic Institute should have the right to treat by medical gymnastics, and this only according to the written prescription of a doctor, an absurd and mischievous view was given of the diploma. The D.G.'s troubled themselves very little about written prescriptions, and persuaded the public and themselves that their diploma possessed the same meaning in the domain of physical treatment as the doctor's degree in general medical practice.

The diplomats went on to persecute their rivals, and to exercise a tyranny as merciless and reckless as that of any socialistic trades union. After the D.G.'s had had it their own way for a quarter of a century, in the spring of 1911 the medical profession in Sweden expressed itself unanimously in favour of giving up the Central Institute as a school of mechano-therapy, and of the training of masseurs and medical gymnasts being taken over by medical institutions. And there the matter rests in Dr. Kleen's introduction.

In regard to the book itself, Dr. Kleen's style is marred by verbosity; his tale could be told in fewer words. While

every other form of physico-therapeutical treatment receives due mention, electricity is referred to grudgingly and quite omitted in important instances. Dr. Kleen grants it no place in preventing atrophy of muscles or in the treatment of severe affections of the joints. Insufficiency of the quadriceps is not mentioned as a cause of recurring synovitis of knee. The Bergonié treatment is ignored altogether, in contrast with the full and frequent description of the "terrain cure," whereas the former is less unattainable, cheaper, and often superior in effect in obesity and nutritional disorders and in a variety of heart cases. Experience has alsoshown it more valuable than massage and exercises in the treatment of constipation and of general debility. In the treatment of recent injuries the work of Lucas-Championnière and his disciples, such as Dagron and Castex, is not merely ignored, but Dr. Kleen frequently gives the credit due to them to other authors; and condemns without a hearing the methods advocated by Owen Thomas, Wharton Hood, and Robert Jones. Apart from such blemishes, a sense of proportion is sometimes lacking. Reference is made to restoring mobility of tendons by passive movements, but none to early prophylactic treatment. Ten pages are devoted to scoliosis without allusion to the elementary necessity of comparing the length of the two legs. The value of splintage is overlooked in many cases. Excluding the reference to Weir Mitchell treatment, less than one page is devoted to neurasthenia and its treatment. Vibrations alone are advocated for insomnia—we consider most inadvisedly.

The reader will do well, therefore, not to suspend his own judgment in studying Dr. Kleen's methods. In this spirit the book will be found a most valuable contribution to physico-therapeutical literature. It is admirably produced, and if some of the illustrations are indefinite in outline the fault is with the original, not the reproduction.

Medical Diseases of the War. By ARTHUR F. HURST, M.A., M.D., F.R.C.P., Temp. Major, R.A.M.C., Physician and Neurologist to Guy's Hospital, &c. Second edition, revised and enlarged. London: Edward Arnold. 1918. Pp. 320. Price 12*s.* 6*d.* net.

WE reviewed favourably the first edition of this work on its appearance some twelve months ago. The main alteration in the second edition is the replacement of the original chapter on war neuroses by no less than 11 chapters, covering some 130 pages, and dealing with various aspects of hysteria, neurasthenia, neuroses resulting from emotional over-action, shell shock, disorders of the special senses, &c., as exemplified in the war. These sections are of considerable value, representing, as they do, the outcome of a wide range of experience in neurological medicine. Dr. Hurst suggests that the term "shell shock" should be reserved for the condition following exposure to the forces generated by the explosion of powerful shells, in the absence of visible injury, a condition organic in origin and followed often by hysterical or psychasthenic symptoms. The definition is so clear that a little consideration will show the advisability of relinquishing it altogether. When a mass of coal falls on a miner's back he suffers from an organic concussion of the spine, and hysterical symptoms may well develop, but the condition has never been designated "coal shock." The hysteria or psychasthenia consecutive to shell shock is in no way different from the psycho-neuroses derived from other concussions or traumatic experiences; further, shell shock, considered as an organic phenomenon, is identical with concussion, commotio, contusion, or whatever degree of these the particular case may represent, and should be so described. Microphotographs, after Lieutenant-Colonel F. W. Mott, are given in the book, representing punctiform hæmorrhages and other quite unmistakable organic changes in the central nervous system, and these are stated as occurring in shell shock. Shell shock, in fact, notwithstanding its alliterative brevity, should be definitely given up as a clinical or pathological term.

There are many useful clinical descriptions of the phenomena of war hysteria and equally useful illustrations of their successful treatment. Hysterical spasm of accommodation or of convergence is moderately common among the war neuroses, but Dr. Hurst does not refer to it, apparently, in his chapter on disorders of vision. In his chapter on hysterical pain the writer declares that causalgia is "primarily organic in origin, but is later partly or entirely hysterical." A statement like this should, in our opinion, be qualified, as in its present form it is misleading. Causalgia occurs in many other peripheral nerves than the median, which is the only one specified in the book.

This book, in its second shape, should take a prominent place in the library of medical war literature.

Tumours of the Nervus Acusticus and the Syndrome of the Cerebellopontile Angle. By HARVEY CUSHING, M.D., Professor of Surgery at Harvard University, &c. Illustrated. London and Philadelphia: W. B. Saunders Co. 1918. Pp. 296. Price 21*s.* net.

Professor Cushing's monograph on tumours of the auditory nerve and the syndrome of the ponto-cerebellar angle is a model of what such special studies should be. In the first place it is based on a large personal experience, some 65 case reports being included in the book; from a consideration of this clinical and pathological material a synthetic study of symptomatology, pathology, and diagnosis is drawn; finally, Professor Cushing is a surgeon as well as a neurologist, and the chapter on surgical treatment represents the last word on the subject. No one speaks at present with more authority on this aspect of subtentorial tumours than he; his figures for operative mortality are unequalled, as far as we know, in his own or any other country; based on 43 operations, they stand at 13·9 per cent. Hitherto the mortality in operated cases has been painfully high, so that Professor Cushing may well be proud of his success.

A clear and important distinction is drawn by Professor Cushing between acoustic tumours and meningeal endotheliomata in the vicinity, which have often been confused by investigators. Considerable importance is assigned to the X ray picture, in particular to the condition of the internal auditory meatus—a point which has heretofore been rather neglected. His experience that some symptom referable to the fifth nerve occurs next in frequency to involvement of the eighth, showing a higher percentage than symptoms referable to the seventh, is in accord with the findings of other observers, but no explanation of this curious fact is suggested. In only 4 out of 30 patients was the corneal sensitiveness normal on the affected side, a sign of considerable value. With increasing pressure on the fifth nerve its ophthalmic division usually shows evidence of being next involved, although Professor Cushing does not mention this point. It is gratifying to find allusion to the difficult question of cerebellar fits, or "crises," as the author prefers to call them. He is inclined to ascribe their occurrence to varying tension of the cerebro-spinal fluid in the arachnoid cisterns; some at least of their usual symptoms are definitely of the nature of vagal attacks, with a sense of impending death, and seem more probably due to pressure on that nerve, direct or otherwise. Apparently, Professor Cushing in this series has seen instances of the so-called cerebellar attitude of the head, for more than one of his clinical photographs show the condition, which is referred to as "characteristic" without, it seems, being actually described in the text.

No neurologist can afford to be without this admirable monograph, which, apart from its intrinsic worth, is well printed and beautifully illustrated, with good bibliography and indices.

The Modern Treatment of Mental and Nervous Disorders. By BERNARD HART, M.D. Lond. A Lecture delivered at the Manchester University. London: Longmans, Green, and Co. 1918. Pp. 28. Price 1*s.*

THE lecture which is here reprinted was presumably given to a lay audience, but medical men generally, not excluding those with special experience of the subject, will find it profitable reading. Its singularly lucid style, moreover, gives pleasure in reading. Modern hypotheses as to the causation of mental disorder are not specifically mentioned, yet in a few words the essential points are brought out.

Dr. Hart holds an even balance between the school of thought which maintains that these disorders are the result of physiological processes occurring in the brain and other organs, all attempts at treatment being directed solely to these processes, and the other which holds that the disorders are the result of disturbed mental processes and that corresponding methods of treatment of a psychological order should be adopted. In the light of our present-day knowledge

Dr. Hart concludes that the only reasonable programme for dealing with mental and nervous disorders is to discover by systematic investigation all the causes at work, to attack each and every one by all the means in our power, to act on the body with every weapon of physiology, and on the mind with every weapon of psychology. In discussing the relative importance of the etiological factors Dr. Hart says :—

> We have, indeed, reached the paradoxical conclusion that, while in many 'mental' disorders mental factors play only a minor part amongst the causes which have produced them, in 'nervous' disorders these mental factors are of fundamental significance."

One criticism of the earlier part of the lecture seems called for. The phrase "chain of causes" is frequently used, and diagrams are introduced to show the various links in the chain. Thus, in one, the first link is "constitutional make-up"; the second, "condition of brain and other organs"; the third, "mental causes"; fourth, "bodily effects of mental causes"; fifth, "mental effects of bodily condition"; and lastly, the "symptoms of the disorder." To cure our patient we must break this chain somewhere, and the fundamental problem of treatment is "which link shall be attacked?" Other diagrams are given to illustrate different types of cases. Making allowance for the necessary limitation of any diagrammatic representation of such a difficult subject, we are doubtful whether the underlying idea itself is sound. The different factors of causation are not in series, but they react on one another in all kinds of ways. There is no chain to break. If a diagram could be drawn it would surely have to provide for influences impinging on the organism from many sides.

It is refreshing in these times to find a lecture on this subject without allusion to Freud or Jung, without mentioning the sub-conscious or unconscious mind, without reference to repression, substitution, psycho-analysis, or even hypnotism. But this is not to say that these subjects are ignored. Dr. Hart writes :—

> "Again everything is not on the surface of the mind, and the phenomena on the surface may effectually conceal elements of a very different kind which are lurking beneath. Thus a sparkling wit may conceal a gnawing sorrow, and boisterous and aggressive conduct may be the cloak beneath which is agonising shyness and diffidence. These buried elements often express themselves in astonishingly indirect ways," &c.

A little more light on what is meant by the "technical psychological knowledge" required in treatment would have been welcome. There is a touch of mystery here which surely is not intended. Again, some brief reference to the difficult question of sedatives in treatment would have been helpful. There is still a real danger that the early symptoms of nervous and mental disorders are suppressed and masked by the unwise use of sedative drugs. The lecture concludes with an appeal for the establishment of clinics and special departments of hospitals in which undeveloped cases of mental disorders can be treated in their early stages. The importance of organised investigation of mental and nervous disorders is urged, so that the "physiologist, chemist, and psychologist can attack the many problems that await solution and from every side."

To review a lecture so concise as this is necessarily difficult and Dr. Hart's terse sentences cannot be condensed without injury. The little book is a valuable contribution to psychological medicine, and is particularly opportune now that the strain of war has drawn so much attention to mental and nervous disorders.

Chemical Pathology. By H. GIDEON WELLS, M.D. Third edition. London and Philadelphia: W. B. Saunders Co. 1918. Pp. 707. Price 19*s.*

NOT until the whole subject of chemical pathology is put before the reader does he realise the vast amount which has been done by those working along the numerous indicated lines. Abnormal chemical processes are usually not the cause but rather the result of disease. By their detailed investigation, especially in those diseases in which metabolism is at fault, results have been obtained leading to successful treatment. We may instance psoriasis, where the body seems unable to excrete the products of nitrogenous metabolism; the patient recovers by diminishing and eliminating, as far as possible, food containing protein. Again, in diabetes, the new methods of dieting have given valuable results, though it is too early to speak of a cure. So many diseases are caused by bacteria that most of the chemical work in pathology has been devoted to the study of toxins, antitoxins, and the concomitant phenomena of agglutination, hæmolysis, and precipitins. Unfortunately, we are not yet near to solutions of the problems implied. The neutralisation of toxin by antitoxin appears to be a chemical process, but we do not know the actual process involved. There are still too many unknowns. The toxin is usually of the character of a protein, and there are some instances in which it may be glucoside. The antitoxin seems to be intimately connected with protein. Protein chemistry has advanced so much during the last 15 to 20 years that much is to be hoped from its meticulous continuation and application to pathology. Anaphylaxis is in some way or other bound up with the mechanism of antitoxin production; some advance has been made here, and once more protein chemistry seems to be at the root of the phenomenon. We must find out the chemical nature of toxin and antitoxin; we may then be able to prepare antitoxins in the chemical laboratory without recourse to animals.

Professor Gideon Wells in the third edition of his "Chemical Pathology" has well summarised the main chemical work in pathology. Curiously, the biochemical work on psoriasis is not mentioned, although it has been done by American scientists. Altogether the metabolic derangements are not treated in sufficient detail; the chapter on uric acid metabolism and gout is excepted. Here we have a very good description of the general process; the formation of uric acid is not the cause of gout. The author has relied upon the reader obtaining the information on metabolic disturbances from books on physiology and chemical physiology. A considerable portion of the book is devoted to a description of chemical physiological processes, and one asks whether it would not have been better to devote this book entirely to chemical pathology and omit the chemical physiology. The connexion of the two subjects is, however, so close that it is almost impossible to treat chemical pathology as a separate entity. There is no doubt that the description of chemical physiology serves to remind the reader and to impress upon him its relative value; often he would not understand the pathology without this reminder. The several chapters on toxins and antitoxins and allied phenomena show the present indefinite state of the subject, whilst those on retrogressive changes should clear up any confusion which still exists and the chapters on tumours, ductless glands, and inflammation invite further research.

War Surgery of the Abdomen. By CUTHBERT WALLACE, C.M.G., F.R.C.S. London: J. and A. Churchill. 1918. Pp. 152. Price 10*s.* 6*d.*

IN this volume Colonel Wallace collects the experiences in abdominal surgery over a period of 30 months, the greater part of which have already been published in our own columns and in the *British Journal of Surgery*. The collection is of great value as a record of what has already been achieved, founded as it is upon the practice of many surgeons working under different conditions and in different hospitals. The success obtained Colonel Wallace credits to the zeal of the stretcher-bearers and motor convoys, to the fixity of the fighting line, and to the abandonment of the tradition that operations cannot be peformed near a fighting area. He concludes with the query whether past results can be maintained when the armies get on the move.

Race Regeneration. By E. J. SMITH. London: P. S. King and Son. 1918. Pp. 223. Price 7*s.* 6*d.*

Mr. E. J. Smith is chairman of the health committee of the Bradford corporation and of the Bradford Insurance Committee, and may be regarded as the chief officer of a local "ministry of health." He goes the whole way in health matters, and bows neither to wealth nor tradition. He almost, in fact, ventures to look forward to a celebration of the day "when the boys come home," by welcoming them to a land which has opened the way to a nobler conception of life and its duties. His programme includes an extensive scheme of building reconstruction for working men and women, the endowment of motherhood, and the establishment of a Health Ministry. His book is well illustrated and may be read with interest by those who see the millennium in sweeping administrative reforms.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

Professor CHARLES ACHARD, PROFESSOR OF PATHOLOGY AND THERAPEUTICS IN THE UNIVERSITY OF PARIS.

AND

Dr. CHARLES FLANDIN, D.S.O., MÉDECIN-MAJOR DE 2ME CLASSE; CHEF DE CLINIQUE À LA FACULTÉ DE PARIS.

FOR four years British Arms have fought on French soil for the cause of Justice and Progress. The coöperation of the Allies, at first exclusively military, has grown in scope, and has extended to realms apparently without the range of the war. An ENTENTE has been replaced by a UNION. And this Union should exist after the war, and should coöperate in all fields of human activity. Our doctors must not remain outside the great *rapprochement*, which should make one the soul of Britain and the soul of France.

British and French soldiers now make one Army, and this is because they have learned to understand each other. That the British and French doctors should become the exponents of one scientific and moral organisation, it is necessary that they should understand each other.

The aim of this Monthly Supplement in THE LANCET is to enable British doctors to understand the theories and the researches of French doctors.

We propose to issue, in more or less monthly form, a general review of some big medical subject and an original article dealing with a particular question. We shall obtain these contributions from authors whom we know to be especially qualified by their researches and work to set out ably the results actually achieved, as well as the trend of ideas in France. In this way we aspire to assist our British confrères to a fuller understanding of French medical movements, and we shall be happy to serve them by placing them in relation with those of our workers whose researches interest them specially. If this Supplement leads to mutual interpenetration of the two medical worlds we shall be amply repaid.

CH. ACHARD.
CH. FLANDIN.

THE MICROBIC DIVERSITY OF THE ENTERIC FEVERS.

By Professor ACHARD.

THE French Dr. Louis, in 1829, gave the name of typhoid fever to a malady of which he discovered the characteristic intestinal lesion and in which he included numerous cases of febrile disorders described until then under such terms as "putrid fever," "fièvre adynamique," and others. The identity of typhoid fever, and its anatomical and pathological individuality, having been thus established, lengthy discussion ensued on the causes of the disease, so that two schools of view were formed. According to Murchison, the cause of the disease was a poison having its origin in decomposing fæcal matter (the pythogenic or autogenous theory), whether this fæcal matter proceeded or not from a patient suffering from typhoid fever. Those, therefore, who held this opinion admitted that the disease could develop without any direct transmission and was able to arise spontaneously. According to Budd, on the contrary, typhoid fever was due to a specific cause, and could not develop except by transmission from the infected subject.

The Typhoid Bacillus.

When the era of bacteriology arrived it seemed at first view that the question was decided. After the discovery of the typhoid bacillus by Eberth, in 1880, and the researches in 1884 of Gaffky, who isolated the bacillus in pure cultures, typhoid fever was considered in a practically unanimous manner as a microbic disease, produced regularly and exclusively by the bacillus of Eberth. But, nevertheless, the characteristics of this microbe remained from the beginning insufficiently precise. It was obvious that the microbe resembled the common germ to be found in abundance in the normal intestines, the coli bacillus described by Escherich under the name of *Bacterium coli commune*. It is probable that confusion occurred in this manner more than once in the analyses of fæcal matters and drinking-water, made with the object of ascertaining the nature and origin of different epidemics. Then, under a new form, the autogenous theory reappeared, according to which typhoid fever could arise without the transmission of the bacillus of Eberth. The Lyons school, notably Rodet and Gabriel Roux, claimed that the coli bacillus was able to transform itself, or to be transformed, into the bacillus of Eberth. The supporters of specificity, on the other hand, made every attempt to show the distinctive characters of the two microbes. First they pointed to the action of the microbes on lactose, the coli bacillus causing fermentation with the disengagement of gas in the culture bouillons, a phenomenon which does not occur with the bacillus of Eberth. The coli bacillus coagulates milk, and this again is not the case with the bacillus of Eberth (Chantemesse and Widal). Further, on the old cultures of Eberth's bacillus, while this bacillus is incapable of growing afresh, as if the medium was vaccinated against it (Chantemesse and Widal), the coli bacillus, on the contrary, is capable of growing (Wurtz).

Paracoli Bacilli.

Nevertheless, the coli bacillus was perceived not to be a microbe of a unique type, but to represent rather a microbic group comprising multiple types, among which certain resemble Eberth's bacillus, forming in a way intermediate links. I have described with Jules Renault in 1892[1] several of these types in urinary infections. Gilbert and Lion[2] then studied them in fæcal material, and have given them the name of paracoli bacilli (1893). Now, certain of these paracoli bacilli, as M. Renault and I have shown, do not ferment lactose; they do not coagulate milk at the temperature of the incubator, thus acting like Eberth's bacillus. Nevertheless, they acidify milk sufficiently to cause, if the culture is carried to boiling point, immediate coagulation. By this they are distinguished from Eberth's bacillus. Moreover, the paracoli bacilli grow on the old cultures of Eberth's bacillus, which sufficed to show that they are in no way identical with it.

A very important new differential sign should also be added to the preceding. The phenomenon of agglutination of microbes by specific serums allowed Grüber in 1896 to distinguish Eberth's bacillus from the coli bacillus and its various types. Then Widal, in June 1896, by causing the serum of patients attacked by typhoid fever to act on cultures of Eberth's bacillus, founded the method of sero-diagnosis, which has rendered such great service in practice. It was then seen that the serum of those patients agglutinated Eberth's bacillus, but remained without action on the coli bacillus and the paracoli bacilli.

Paratyphoid Bacilli.

Only a few months had elapsed since the first application of sero-diagnosis when I had occasion to observe with R. Bensaude[3] a patient whose symptoms were those of classical typhoid fever complicated by intestinal hæmorrhage, phlebitis, and pyelonephritis, and in whose urine we found a microbe a little different from Eberth's bacillus. This microbe was agglutinated by the patient's serum, but not by the serum of other patients suffering from typhoid. Reciprocally, the serum of this woman did not agglutinate Eberth's bacillus. This new microbe showed itself identical with another bacillus found some months previously in the pus of a sterno-clavicular abscess consecutive to an acute and ill-defined illness in a newly born baby. Thus, two samples of the new bacillus were distinguished from Eberth's bacillus by agglutination. Further, they were differentiated from it in that they developed on the old cultures of Eberth's bacillus. They resembled it, on the contrary, by their lack of fermentative action on lactose; not only, in fact, did they fail to form gas in lactose bouillon, but also they did not coagulate milk, even when this was carried to boiling point. In this they were distinguished from the coli bacillus and the paracoli bacillus.[3]

[1] Ch. Achard et Jules Renault: Sur les Bacilles de l'Infection Urinaire, C. R. de la Soc. de Biologie, 9 Avril, 1892, p. 311; Sur les Différents Types de Bacilles Urinaires appartenant au Groupe du *Bacterium coli*, ibid., 17 Dec., 1892, p. 983.

[2] Gilbert et Lion: Contrib. à l'Etude des Bactéries Intestinales, Mém. de la Soc. de Biologie, 18 Mars, 1893, p. 55.

[3] Ch. Achard et R. Bensaude: Paratyphoid Infections, Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris, Nov. 27th, 1896, p. 820.

Nearer consequently to Eberth's bacillus than to the coli bacillus, this new microbe appeared to me to warrant the name of "bacille paratyphique." The demonstration of this microbe in patients suffering from typhoid infection constituted the first proof of the microbic plurality of these infections. Room was thus made, alongside of the Eberthian typhoid fever, for the typhoid fever associated with *Bacilles paratyphiques*, or paratyphoid fevers.

Our earliest work on the paratyphoid infection (November, 1896) found at first but little favour, because the unity of typhoid fever and the specificity of Eberth's bacillus appeared solidly established after the lively discussions to which the question had given rise. The following year (1897) Widal and Nobécourt,[4] having obtained from an abscess of the neck a bacillus identical with ours, as Brion recognised later, described it as a paracoli bacillus. In America some cases of paratyphoid infections were also published by Brill (1898), Gwyn (1898),[5] and Cushing (1900)[6] without the microbes found being designated under the name that we had proposed. Gwyn employed even the term paracolon bacilli.

Following on researches made at Hamburg by Schottmüller[7] the attention of bacteriologists and clinicians was definitely turned to the infections by *Bacilles paratyphiques*. Schottmüller employed this term without mentioning, or appearing to know, that it had been employed already in France four years before, nor that the infections determined by these bacilli, and similar to the Eberthian typhoid fever, had in that country been made the object of a description. The novelty in the researches of the German author consisted in the fact that the bacilli derived from his patient formed by their characters two distinct types, which were designated later by Kayser under names of type A and type B. The type B is identical with the bacillus found by us (C. A. and R. B.) in the two first cases which we published.

Coexistence of Different Infections in Epidemics.

Since 1900 the paratyphoid fevers have been under more or less general observation, often under the form of epidemics, and associated generally with an outbreak of Eberthian typhoid fever. They have been the subject of very numerous publications, and the present war has shown their extreme frequency. The researches made with the armies have considerably enriched our knowledge of the symptoms, the lesions, and the complications of these maladies, as well as of their etiology and pathogenic conditions. In this last connexion there is a point which has given place to particularly interesting observations. Most generally the epidemics of paratyphoid fever coexist with an epidemic of Eberthian typhoid fever. But the proportional occurrence of these different infections varies in the mixed epidemics; it is often the Eberthian fever which has been found predominant, but sometimes the paratyphoid B fever, and sometimes even the paratyphoid A. It has been consequently asked if this coexistence does not result from the three infective germs ordinarily finding themselves united in the same infecting materials, such as drinking water or food contaminated with typhoid dejecta. Thus would be explained the phenomenon that from the same infecting source some acquire in a predominant fashion Eberth's bacillus, others the paratyphoid A or B bacilli. This hypothesis would account also for a series of curious observations.

Meslay and Coville[8] have seen a paratyphoid B fever in the father coincide with an Eberthian typhoid fever in the daughter. Several authors have observed in the same patient the succession of two of these infections: thus Jeanselme and Agasse-Lafont[9] have observed the Eberthian fever followed by paratyphoid fever; P. Courmont, Chattot and Pierret[10] have seen paratyphoid B fever followed by paratyphoid A; P. Hébert and M. Bloch[11] have found successively in the same patient first the *Bacillus paratyphoid B* and later Eberth's bacillus in the blood. In the same patient one can encounter in a localised point of the organism one of the three germs, while the general infection is produced by another. Thus, J. Minet[12] has seen the complication of pulmonary congestion provoked by paratyphoid B in an Eberthian subject and by the paratyphoid A in a patient suffering from paratyphoid B fever.

It is true that in certain circumscribed epidemics only one germ has been found. Recently P. Hébert and M. Bloch[13] have observed several of these little monomicrobic epidemics. For example, in one company of a regiment out of 45 patients in the period of one fortnight these observers obtained 37 positive hæmocultures, all giving paratyphoid A exclusively; in another company in three weeks out of 12 patients they obtained, in 9 positive hæmocultures, Eberth's bacillus alone.

Hypothesis of Typhoidic Infection with Multiple Germs.

But these facts are in no wise irreconcilable with the hypothesis of the habitual coexistence of three typhoidic germs in important epidemics. It is necessary, in fact, to note that, one of the germs having infected a patient in a predominant way, he disseminates this germ alone, and becomes a point of departure of a little monomicrobic outbreak in the middle of a great polymicrobic epidemic.

The hypothesis of typhoidic infection with multiple germs furnishes also the explanation of certain results, adjudged irregular or paradoxical, of the sero-diagnostic test. In some cases the hæmoculture has been seen to give, for example, Eberth's bacillus alone, while at the same time the serum possessed agglutinating properties, especially for a paratyphoid. If the hypothesis of the duality of these infecting germs is admitted, it can be conceived that at the moment at which the Eberthian septicæmia was existing, the paratyphoid agglutinin was already developed. Thus Grimberg[14] explains in this manner a case in which serum diagnosis led to the belief of an association of Eberth's bacillus and of paratyphoid B., and where the hæmoculture had given Eberth's bacillus and paratyphoid A. The explanation is that the three infections followed in the following order: paratyphoid B, Eberth's bacillus, paratyphoid A.

Thus it is essential, in order to give to the sero-diagnostic test all its value, to measure the agglutinin, to separate by the methods of saturation the multiple agglutinins in case of mixture, and to follow, in short, in the course of the illness the successive variations of the curve of these agglutinins.

Hæmoculture.

In the same way with hæmoculture, it is advisable to take special precautions to discover not one germ only, but those which may be associated with it, and which the usual procedure would not allow of distinguishing. In truth the worker is never sure of recovering from the blood several germs in case of mixed infection, because the phase of septicæmia for each of them is limited, while it seems often to be even shorter in the paratyphoid infections than in the Eberthian infections. But it is possible, when the microbic association exists in the blood, to put it in evidence by certain procedures indicated by Grimberg. For sowing the blood, tubes in V can be used containing bouillon and a little fine sand; the blood is deposited in one of the branches of a tube, and after being in the incubator the most mobile microbe of those developed will be the first to pass into the other branch of the tube, after passing through the sand. Care is taken in this procedure to add in the branch which is sown some serum possessing strongly agglutinating influence for two of the three germs, so as to immobilise them and to prevent them from traversing the sand. By operating on several tubes with different serums isolation can be obtained of the different germs of a mixed infection.

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[4] F. Widal and P. Nobécourt: Serum-reaction in Paracoli-bacillary Infection, Semaine Méd., August 4th, 1897, p. 285.

[5] N. B. Gwyn: On Infection with a Paracolon Bacillus in a Case with all the Clinical Features of Typhoid Fever, Bull. of Johns Hopkins Hosp., March, 1898, vol. ix., p. 54.

[6] H. Cushing: A Comparative Study of Some Members of a Pathogenic Group of Bacilli of the Hog-cholera or *Bac. enteritidis* (Gärtner) Type, Intermediate Between the Typhoid and Colon Groups, Bull. of the Johns Hopkins Hosp., July–August, 1900, p. 156.

[7] Schottmüller: Ueber eine das Bild des Typhus bietende Erkrankung hervorgerufen durch typhusähnliche Bacillen, Deutsche med. Wochenschr., 1900, p. 511; Weitere Mitteilungen über mehrere das Bild des Typhus bietende Krankheitsfälle hervorgerufen durch typhusähnliche Bacillen (Paratyphus), Zeitschr. Hyg. und Infektionskr., 1900, Bd. xxxix., p. 368.

[8] R. Meslay et R. Coville: Fièvres Typhoïdes et Paratyphoïdes en 1912 dans un Service de l'Hôp. St.-Joseph, Gaz. des Hôp., 6 Mai, 1913, p. 821.

[9] Jeanselme et Agasse-Lafont: Du Danger de traiter en commun Typhiques et Paratyphiques, Bull. et Mém. de la Soc. Médic. des Hôp. de Paris, 14 Mai, 1915, p. 371.

[10] Paul Courmont, Chattot et R. Pierret: Le Sérodiagnostic des Infections Paratyphiques, Bull. et Mém. de la Soc. Médic. des Hôp. de Paris, 9 Juin, 1916, p. 955.

[11] Pierre Hébert et Marcel Bloch: *Bacille paratyphique B* et *Bacille d'Eberth* trouvés successivement dans le sang d'un typhoïdique, Bull. et Mém. de la Soc. Médic. des Hôp de Paris, 27 Juillet, 1917, p. 937.

[12] Jean Minet: Congestion Pulmon. à Para. B chez un Eberthien et à Para. A chez un Paratyphique B, Bull. et Mém. de la Soc. Médic. Hôp. de Paris, 6 Juillet, 1917, p. 861.

[13] P. Hébert et M. Bloch: Epid. Typhoïd. Renimicrobiennes, Bull. et Mém. de la Soc. Médic. des Hôp. de Paris, 27 Juillet, 1917, p. 939.

[14] A. Grimberg: Les Fièvres Typhoïdes ntriquées, Thèse de Paris, 1916, No. 115.

With this question of hæmoculture in case of associated germs is connected that of the reaction furnished by mixed cultures where we are dealing, for example, with two of the germs in unequal proportions.

In provoking in a subject a double septicæmia by intravenous or intraperitoneal inoculations of a mixture of Eberth's bacillus and of paratyphoid B, in the proportion of one of the latter to four of the former, I have been able to ascertain that the hæmoculture carried out in the ordinary way and without the special precautions indicated above shows always the *Bacillus paratyphoid B* recognised by its characteristic reactions in the classic media—slow decolouration of neutral red and formation of gas in glucose bouillon.[15] In making the culture mixtures, Grimberg has found that with one drop of culture of one of the germs for 25 of another it is the reaction of the predominant microbe that is found on sowing the mixture in different media.

P. Hébert and M. Bloch[16] have demonstrated that at the end of four days in the mixture of Eberth and paratyphoid B it is necessary that the latter should not exceed the proportion of 1 : 1,000,000,000 if Eberth's bacillus is to preserve its characteristics pure. The paratyphoid B shows itself the most resistant and Eberth's bacillus the least.

Practically, it can be held from these researches that when the usual technique of hæmoculture reveals the *Bacillus paratyphoid B* the possible coexistence of an Eberthian infection cannot by that fact alone be rejected. Thus, it would not be right to neglect to associate with hæmoculture the investigations of the agglutinin in the serum of the patient.

Some Practical Results Arising from the Hypothesis.

Certain consequences of a practical nature, and relative to vaccination, result from the hypothesis of the frequent coexistence of the three germs in the infected material. It is known that for a long time antityphoid vaccination was only carried out by means of vaccines prepared with Eberth's bacillus alone. Now this bacillus does not immunise against the paratyphoid bacilli and vice versâ. Thus, during the first period of the war while the frequency in our armies of Eberthian typhoid was greatly diminished owing to preventive inoculation, the paratyphoid fevers have in no wise been diminished; on the contrary, these have multiplied in a manner as unusual as unforeseen, taking the place to some extent of Eberthian typhoid. On this subject curious statistics have been published. Marcel Labbé,[17] among others, has dealt in the same sanitary organisation, and during eight months, with the statistics of the patients attacked with typhoid and paratyphoid fevers, noting if they had or had not been vaccinated with Eberthian vaccine. He ascertained that the curve of the non-vaccinated patient was very exactly parallel to that of the cases of Eberthian typhoid fever, which can be easily understood, but also—and this is a fact paradoxical in appearance and at least unexpected—he found that the curve of the vaccinated patients remained no less exactly parallel to that of the patients with paratyphoid fevers. These two last curves rose, moreover, in measure as the Eberthian typhoid fever diminished, as though the anti-Eberthian vaccination in protecting the subjects against typhoid fever had predisposed them to the paratyphoids. One could not see the reason for such a predisposition, but the anti-Eberthian vaccination had not suppressed the causes of typho-paratyphoidic infection, while among the subjects who had become refractory to Eberth's bacillus it was the paratyphoid infections which alone developed.

This recrudescence of the paratyphoid fevers, occurring with the diminution of the Eberthian fever obtained by vaccination, was one of the first reasons to suggest the hypothesis of the ordinary coexistence of the three infecting germs.[18] It remains one of the arguments most important in its favour. There follows from it in addition this capital conclusion in practice. It is that the preventive vaccinations should be made with a mixed vaccine, a trivalent vaccine. Moreover, the application of such a vaccine has given, since it has become general, complete satisfaction in reducing to almost nothing Eberthian typhoid fever, and the paratyphoid fevers altogether.

Another practical conclusion can be added. It is that curative vaccination should be carried out with a trivalent vaccine, since the typhoid infection may be mixed, and this mixed nature of the illness is not always easy to put in evidence for the clinician.

[15] Ch. Achard: Experiments upon mixed infection with Paratyphoid B Bacillus, C.R. de la Soc. de Biologie, July 29th, 1916, p. 751.

[16] P. Hébert and M. Bloch: Mixtures of Bacilli of the Typhoid Group: their Action on Different Media, Bull. et. Mém. de la Soc. Méd. des Hôp. de Paris, July 27th, 1917, p. 946.

[17] Marcel Labbé: Vaccination and the Paratyphoids, Presse Médicale, Jan. 17th, 1916, p. 20.

[18] E. Rist: The Action of Antityphoid Vaccination on the Production of the Paratyphoid Fevers, Statistical Researches, Bull. et Mém. de la Soc. Méd. des Hôp. de Paris, Feb. 11th, 1916, p. 144.

POST-TYPHOID ATONY OF THE CÆCUM.

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Intestinal troubles count among the best-known sequels of typhoid infection. The explanation of their frequency is to be found at once in the localisation of the infective process in the intestinal mucosa as a result of the action of Eberth's bacillus or other members of the typhoid group, a localisation not only specific but deep and extensive.

These intestinal complications may be regarded for practical purposes as three—namely, diarrhœa, mucorrhœa, and constipation—being the three usual forms of intestinal reaction to chronic irritation. They are further complicated by the possible production of febrile or painful crises which are apt to be mistaken for acute infections on the one hand or for appendicitis on the other. They originate from a colitis—sometimes discrete, sometimes extensive—and most often from a selective inflammation of the cæcum. The cæcal localisation constitutes in itself a complication, and a very persistent complication, of the enteric fevers. To it alone is often due the diarrhœa, constipation, or mucorrhœa. Clinically it is accompanied by gurgling. To X rays it is revealed by dilatation.

The condition is well described by the word typhlatony, but it is not the typhlatony of Fischer which is an inflammatory infection, congenital or mechanical in origin. It is rather an atony in which lesions of both mucosa and underlying muscularis play a part, as in certain forms of gastric dilatation secondary to infective gastritis. I propose to show in the following the frequency of typhlatony as a sequel of enteric maladies, and to study the clinical and anatomical characters of this affection, giving as precisely as I can the treatment, immediate and remote.

Symptomatology.

It is in the early weeks following an attack of typhoid, sometimes immediately after the temperature has fallen, sometimes on resuming solid food, that the first symptoms of cæcal atony arise. The most important is without doubt *diarrhœa*; it would be more exact to say liquid or semi-liquid action—hardly ever frothy—and rarely of any great frequency. It generally comes on in the morning, in the majority of cases soon after a meal, under the recognised influence, to which I have called attention elsewhere,[1] of the gastro-colic reflex on the irritable intestine.

Chemical examination shows a little mucus, rarely bile, and sometimes albumin, the latter an index of intestinal inflammation. Blood is nearly always absent, neither histological nor chemical tests revealing it. Alimentary residues are inconsiderable: the total amount of undigested fat does not exceed the normal; that of albumin and carbohydrate is larger and the two run parallel. The bacterial flora, which I have recently studied, shows fairly often a predominance of proteolytic bacilli, the presence of which explains the fœtor of the stools.

The diarrhœa is often followed by constipation and the coprostatic phase succeeds the diarrhœic, as is the rule in colic affections. But this constipation gives place every four or five days to the crises presently to be described. As for the mucorrhœa, it synchronises with one or another of these periods, but may exist alone. The stool may be glairy or frankly mucoid, the mucus occurring in flakes or little pellets and not in sheets, as in the extensive colic lesions. Mucorrhœa betrays the presence of cæcal irritation, microscopical examination then showing epithelial elements surrounded by mucus, polymorphonuclear leucocytes in fair number, eosinophiles, and even eosinophiles with polymorph nucleus.

Diarrhœa, constipation, and mucorrhœa alike are nearly painless; cæcal pain may, it is true, occur in the course of digestion and precede action of the bowels, which relieves it again. Pain in the sense of cramp or expulsive pain denotes an extension to the colon of the inflammatory process, and tenesmus implies extension to the rectum.

[1] M. Loeper: Leçons de Pathologie Digestive, third series; Paris: Masson éditeur, 1914.

On palpation of these patients there is found in the right iliac fossa a soft or slightly resistant cæcum which gurgles or sometimes even splashes. This *splashing* may be so marked as greatly to resemble gastric succussion, and when the stomach is much dilated and exposed confusion may arise. Radioscopy shows a distended cæcum generally very mobile, nearly always lying oblique and curved in upon itself, palpation under the screen showing that the contents are readily reduced or pressed back.

As a rule, the other segments of the intestinal tract are contracted and sharply convoluted, giving under the screen a fern-like appearance and allowing a bismuth meal to pass with difficulty. I lay no emphasis on the general condition, although urobilinuria, indicanuria, reduced arterial tension, and sometimes anæmia are the rule in these cæcal conditions. They are evidence of a hæmolysis on which I have insisted.

One of the most interesting features of the clinical course of typhlatony is its interruption by three kinds of crises which may mislead the diagnostician. These consist either in pain or in fever, usually following upon more or less pronounced periods of constipation, although this association is not absolute, and I have seen them make their appearance after an obstinate diarrhœa or a persistent mucorrhœa. Pain comes on suddenly and is characterised by a distressing sensation of tension with localised ballooning, with nausea, and even vomiting. It is rather a matter of a painful zone than of a painful point; confusion is possible with appendicitis, and I am satisfied that I have twice seen in the course of operations that *post-typhoid appendicitis is often nothing but a typhoid crisis.* The crisis lasts three days with febrile movement; it reaches a maximum on the second or third day, yielding then to a calming regime with compresses. The region remains sensitive, the calm persists for a variable time, a new crisis occurring after two or three months or even sooner. Apart from the character of the pain and the intestinal antecedents, the repetition of these crises alone would suffice to differentiate from appendicitis.

There sometimes also occur marked *febrile* movements: the temperature rises without apparent cause to 39° C. or above, the complexion becomes yellow, the urine contains an unusual proportion of indican along with much urobilin, the breath is short, and the pulse feeble. The condition suggests an acute incident. But it is, in fact, a cæcal crisis; the cæcum is more sensitive, the colon more contracted, the stools more fœtid. After a matter of 2–4 days, with the help of Vichy water, bismuth, and gentle laxatives, everything settles down again.

Morbid Anatomy.

It would have been difficult enough to assign lesions to these symptoms and critical exacerbations, but good fortune gave me the opportunity of studying them in an operation case.

A young man, 20 years of age, who suffered from typhoid six months previously, had three crises in succession which were wrongly attributed to appendicitis. We made with M. Du a diagnosis of typhlatony and advised laparotomy. We expected to find (we must confess) a congenital malformation or adhesions, but discovered instead an exceedingly marked inflammatory typhlatony, which was dealt with not by suture but by cæcal resection with cæcolostomy.

The enormous cæcum measured 9 cm. in diameter. Some whitish patches on its external surface, the wall thinned and almost transparent. A healthy appendix, no adhesions. On opening the cæcum, mucosa red, with linear ecchymoses, surface irregularly depressed without ulceration but presenting numerous very prominent follicles.

On microscopic examination two varieties of lesion of different age were recognised, one quite recent. There were seen ecchymoses, hæmorrhagic spots and striæ; vascular dilatations and numberless ulcerations not visible to the naked eye. The ulcers were superficial cutting off the ridges and not extending into the submucosa; fairly abundant collections of polymorphonuclear leucocytes were seen beneath the ulcerated zone and penetrating into the submucosa.

The older lesions may be briefly summarised as follows:—

1. In the non-ulcerated zones, glandular crypts in some places almost flush with the mucosa; in other places branching glands evidently multiplied; epithelium generally calciform with abundant production of mucus. Some zones in which the thickened prominent submucosa raises the mucous coat into papilla-like proliferations.

2. Pronounced folliculitis characterised by exuberant follicles forming by continuity a single layer. The larger proportion of cellular elements in the nature of lymphocytes, fairly numerous eosinophiles. Some cells with polymorph nucleus give evidence of acute irritation.

3. The connective tissue layer thickened in some places, thinned in others.

4. Finally, the muscularis much reduced, islets of nerve cells surrounded by marked connective tissue proliferation.

In a word, the lesions show evidence of an old fibrous and atrophic reaction on which an acute process had been grafted.

Relation of Primary and Secondary Lesions.

It is a far cry from these residual lesions to those which can have been produced under the influence of the primary disease. The latter, well known in typhoid, where their intensity merits the term colo- or typhlo-typhoid, have been well studied by M. Rathéry[2] in paratyphoid B. They range from intense folliculitis with ulceration at the summit to extensive ulcerations with or without perforation, and even to spreading, almost vegetating, proliferations. It is possible, however, to see in these primary lesions the remote cause of the secondary lesions.

Etiology.

The frequency of cæcal atony as a sequel to the enteric fevers is in my statistics shown to be about 65 per cent. I can go further in regard to its origin and say that in nearly 60 per cent. typhoid or paratyphoid is found. I should imagine that paratyphoid more frequently gives rise to it. In fact, mucous or dysenteric colitis is the result more of para. B than of Eberth, and the post-mortem lesions of para. B are more intense, more extensive, and more strictly cæcal than those of Eberth.

In the production of cæcal atony the question may be asked: Are the inflammatory lesions alone to blame, or is a rôle to be ascribed to bacterial toxins and to their action on the muscular fibres? The latter hypothesis is probable, but it is only a hypothesis which need not therefore delay us long now.

Treatment, Medical and Surgical.

The therapeutics of cæcal atony are both medical and surgical.

Medically, it consists in a dressing for the large intestine, realised by a dose of 3 g. of bismuth half an hour before each meal and collargol 0·1 to 0·15 g. daily. Lavage with collargol or bicarbonate of soda, suppositories of ichthyol and tannin, with or without belladonna or Indian hemp, may have a topical effect, at the same time analgesic and antispasmodic. The diet should be principally milk and farinaceous, while lactic ferments, by diminishing the putrid fermentation, may retard or ward off the acute accidents. The cure at Chatelguyon and that at Plombières are specially efficacious. In the febrile or pseudo-appendicular crises I should recommend ice locally, a diet of vegetable broth or solution of lactose, and gentle purgation with divided doses of sulphate of soda.

But there are cases where medical treatment alone is insufficient. The surgeon can and should intervene when the crises recur, and when they take on a character of special gravity or of disquieting chronicity. Interference should be directed towards the mechanical as well as the inflammatory phenomena—the atony and the typhlitis.

Cæcostomy or appendicostomy, it must be admitted, allows of a more complete disinfection, but they do not reduce the cæcal cavity. Suture of the cæcum diminishes the stagnation but only combats the typhlitis indirectly, and the latter is more the cause than the consequence. These diverse operations certainly do not seem to give durable results and should yield to the ileo-, colo-, or sigmoido-stomy with resection of the cæcum and of a larger or smaller part of the ascending and transverse colon. In this way the intestine is relieved of a dead weight, the organism no longer runs the risk of toxic absorption and of an infectious movement which always threatens.

Such measures are applicable, and indeed only applicable, to severe cases. In the two patients whom I have already mentioned they have given a good and permanent result.

[2] Rathéry: Les Paratyphoïdes B, Alcan éditeur, 1917.

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THE LANCET.

LONDON: SATURDAY, SEPTEMBER 21, 1918.

The Voluntary Hospitals and the Ministry of Health.[1]

THE Council of the British Hospitals Association have circulated in the form of a pamphlet a clear and well-arranged statement with reference to the future relations of the voluntary hospitals to the Ministry of Health which will presumably soon be erected, though the difficulties attendant upon drafting the measure so that it should start safe from grave contention are being realised. The statement of the Association details the arguments for believing that the voluntary hospitals should remain on their present basis, one from which they administer directly to medical needs the charity supplied by those who can afford to give; but at the same time many large and concrete suggestions are put forward for the improvement of the manner in which the benefits of the voluntary hospitals reach the classes for whom they are intended. While, on the one hand, the statement supports with force and logic the continuance of the principles upon which the voluntary hospitals exist and are worked, on the other, if only by the directions in which reforms and modifications are suggested, it admits that at the present moment there is in the working of the voluntary hospitals lack of economy in many important directions. This lack of economy is chiefly shown by the employment of the benefits of the hospitals for the relief of diseases, disorders, and injuries which in no sense require the highly specialised and scientific treatment which the ideal voluntary hospital should afford. The views of the statement are put forward in the name of Mr. J. COURTNEY BUCHANAN, secretary and house governor of the Metropolitan Hospital and honorary secretary of the British Hospitals Association. They have not as yet been formally considered by the Council, but it is thought that the pamphlet may usefully be taken as the basis for a discussion on the subject by the Association. A conference will therefore be held on Friday, Oct. 18th, at 3 P.M., at St. Thomas's Hospital, London, and the committees of the institutions which constitute the Association have been invited to send to the honorary secretaries, at 14, Victoria-street, Westminster, S.W., any suggestions which they think might well occupy the attention of the meeting. An invitation has also been extended to hospitals which are not represented on the Association that they should indicate to the honorary secretaries of the Association the names of those by whom they would like to be represented.

It is understood that the Bill setting up the Ministry of Health as at present drafted does not affect, at any rate directly, the voluntary system of hospital support and administration. Indeed, the Council of the British Hospitals Association have received from Dr. ADDISON an implied assurance to this effect. But no one can conceive any Bill erecting a Ministry of Health whose provisions will not in many directions have an influence on the working of the voluntary hospitals. Mr. BUCHANAN asks pertinent questions as to what classes or sections of the population it is proposed "to bring into the net of the Public Health Service," and throughout the whole of his pamphlet he is clearly of opinion that a connecting link will be required between the voluntary hospitals and the various State-subsidised, or rate-supported, or public-assistance institutions, all of which will of course play their part in the scheme of the new bureau. Again, it is evident that the Bill must further affect the revenues of the voluntary hospitals, which are already in many cases precarious. There is sure to be a decline in the subscriptions and donations of the heavily taxed classes, who have hitherto been the chief support of the voluntary hospitals; and if larger and more regular subsidies are to be obtained in small subscriptions from the working classes arrangements will have to be made for giving these subscribers or their nominees a direct share in the management of the hospitals. This in some of the institutions concerned has already been done, but in many others a move in this direction will be tantamount to a fundamental alteration in the management of the charities. The prospect of more direct representation of popular views on hospital boards is one which we not only view without any apprehension, but which we welcome as certain to lead to an intelligent appreciation on the part of the public of the vast part played for national good by the institutions, alike as centres of medical treatment, nurseries of medical education, and foci of medical progress. The majority of the attacks upon voluntary hospitals are inspired by ignorance, and those who make them will lose their audience when the public learn directly what are the scope and administrative arrangements of the charities. It is to facilitate consideration of these and similar important questions that Mr. BUCHANAN has set out a series of definite propositions in terms which can be discussed. Under these propositions, and others that may yet be put down for debate, the authorities of the voluntary hospitals will be able to define the position which they wish to fill, and which they think they can adequately fill, in relation to the Ministry of Health.

The propositions commence with the thesis that the voluntary hospital system should be retained in this country, and a definition follows of the functions which the voluntary hospitals should discharge if they are to make out a good case for permanency. Voluntary hospitals, it is suggested, should be such medical, surgical, and nursing schools as can supply treatment "made in every respect as perfect as possible in hospitals equipped and maintained in all their special and general departments in the highest state of efficiency and adapted to the requirements

[1] Statement on the Voluntary Hospitals and the Proposed Ministry of Health Bill, by J. Courtney Buchanan. British Hospitals Association, 14, Victoria-street, S.W., and the Scientific Press, Ltd. 6*d*.

of the latest medical, surgical, and nursing science and education." This high standard of hospital treatment, it is indicated, can be arrived at in two ways, working simultaneously, the first within the hospital and the second without its walls. Within the hospital every step must be taken to keep the institution in the van of bacteriological, pathological, and scientific research, while raising wherever possible the common pattern of nursing and medical education. Without the hospital, popular appreciation of what the institution stands for will elevate the clinical practice. Trivial cases should in this way be eliminated from hospital care, and only those patients be sent to the hospital whose plight is suitable on the ground of its serious nature, its unusual manifestations, or the necessity for treatment which is only at the disposal of a large and well-equipped institution. For the public will see that the hospital should be their consultant authority not their domestic doctor.

Remedial Gymnastics.

REMEDIAL gymnastics, including massage and electrical therapeutics, have obtained a definite place in the practice of medicine, and one that is growing daily in importance by reason of the injuries and mutilations of war. At the various great centres for relief of disablements investigation into the principles of these methods is forming a sound basis for their application. But much depends on the instruments through which the treatment is applied, and the traditional instrument in this country, the Swedish masseur, is not of constant quality. To those who have the necessary experience and knowledge it must have become evident that the Swedish masseur, as we meet him in practice, can be placed in one of two groups. Those in the first are serious and unostentatious in mien, anxious for medical help and advice, delicate in their treatment—in short, a good type of physico-therapeutical expert. The second group comprises persons, self-possessed and self-sufficient, who seek out medical men, not to solicit help or advice, but as a means of securing employment, and of using well-known names in specious advertisement. Their work is often characterised by a lack of finish, sometimes by a roughness amounting almost to brutality, which bespeak bad training and lack of experience, and their business outlook is not one which is likely to be shared by medical men.

Dr. EMIL KLEEN, the translation of whose monograph on Medical Gymnastics we review this week, has greatly enlightened us as to the reason for the existence of these two classes of Swedish masseurs. Unless things have greatly changed since Dr. KLEEN'S book was published in Swedish in 1911, many of these experts may rarely, if ever, have treated a patient at all in their own country before being let loose upon us. The ignorance of our own medical men as a whole of physico-therapeutical work has enabled self-advertisement to be its own reward, with the result that good and bad masseurs alike have flourished; in fact, there is reason to fear that the inferior grade has obtained the better positions. In the face of this dangerous competition the Incorporated Society of Trained Masseuses has struggled for a quarter of a century, and has been successful in raising to a high level the standard of massage in this country. But the maintenance of this standard has been rendered additionally difficult by the presence of many foreigners, and among them of certain persons from Sweden, who, according to their own distinguished countryman, are not masseurs but quacks. It is hoped that amalgamation between the Incorporated Society of Trained Masseuses and the Institute of Massage and Remedial Gymnastics in Manchester will help to solve the difficulties ahead. A charter, for which application has been made to the Board of Trade, should protect the title of masseur from fraudulent usurpation, and while the council of the new amalgamation should be empowered to coöpt as members all those who can produce satisfactory evidence of training in recognised schools abroad, they must take steps to examine those whose training appears deficient. Only thus can the public be protected from the danger of the uninstructed dabbler in remedial gymnastics, while the elimination of the quack will be in the interest of all genuine Swedish masseurs. Assuming that what Dr. KLEEN tells us is still true, it is essentially unfair for us to accept the pretender on an equal footing with the well-trained, experienced, and capable gymnastic director.

The French Supplement to "The Lancet."

WE publish this week the first of a series of Supplements which will reach us under the editorial direction of Professor CHARLES ACHARD, Professor of Pathology and Therapeutics in the University of Paris, and Major CHARLES FLANDIN, D.S.O., Chef de Clinique à la Faculté de Paris. In the brief statement prefixed to the Supplement by our editorial colleagues the aim which we have before us is succinctly stated. The Supplements are intended "to enable British doctors to understand the theories and researches of French doctors," and Professor ACHARD and Major FLANDIN propose to make good the promise in a very practical manner. For the Supplements will be shaped to include a general review of some big medical subject and an original article dealing with a particular question: in the general review the theoretical side of medicine will be more apparent as the various lines of medical thought and medical practice are collated, while the original article will be invited from actual workers, the medical author describing for us his personal researches.

We have decided to make this departure during the war and at a time when the shortage of labour and paper compel us to limit the scope of the endeavour. The hope of our French colleagues and of ourselves is that what we supply now, while proving useful at the time, will be accepted by our readers as a promise of larger things in the brighter future we are now approaching. The close understanding between our Allies and ourselves, which has developed during the war in every province of statesmanship, every naval and military proceeding, and in many details of political economy, is showing itself in the growing coöperation in medical theory and practice. The union will, as our colleagues say, exist after the war in all fields of human activity, and in none is it more important for the human race that mutual comprehension should be perfected than in the grand field of medicine.

Annotations.

"Ne quid nimis."

THE FUTURE OF THE DISABLED MAN.

THE future is always an unknown quantity, and for most of us the war has made this fact more obvious, whether we treat it in the spirit of adventure or of anxious foreboding. But there is one class of the community to whom our sense of justice, if nothing else, wishes to guarantee a future, whatever else may stand or fall, and that is the man who has been permanently disabled in mind or body by service for his country. Much sentiment has been poured out, largely in the form of light literature and cigarettes, and a special Government department created, but the reinstatement of the disabled ex-Service man is an enormous undertaking which is doomed to failure unless it commands the active support and interest of every industry in the country and of all the organisations dealing with employment. The successful solution also assumes the proper orientation when the average citizen considers the problem as a whole, as well as his own personal relation to it. The launching this month of the King's Fund for the Disabled has served to focus public attention on the subject, and two magazines of which the first numbers are before us should serve to instruct. *Réveille* is the successor of *Recalled to Life*, of which three informing numbers appeared under the editorship of Lord Charnwood. Mr. John Galsworthy now becomes editor, and the publication is undertaken quarterly by H.M. Stationery Office at 2*s*. 6*d*. Articles appear on the treatment and training of disabled soldiers by Mr. Hodge, Sir John Collie, Sir Robert Jones, King Manoel, Major Robert Mitchell, and others, and contributions by well-known authors and artists attract the general reader. The *Ex-Service Man* is published fortnightly, the half-yearly subscription being 8*s*., and is described as an independent journal for those who have served. The editor, Captain H. H. C. Baird, D.S.O., makes it clear that he represents no sectional interest whatever, and that his columns will be open to free expression of every shade of opinion. The first impression of *Réveille* was almost immediately sold out; we wish a similar success to the *Ex-Service Man*.

THE OCCURRENCE OF RABIES IN ENGLAND.

THE recent reported occurrence of canine rabies in Devonshire emphasises the necessity for maintaining a rigid observance of the regulations with respect to the quarantining of all dogs arriving from abroad before they are admitted into this country. The outbreak in the Plymouth district is probably connected with the present prevalence in France of canine rabies, which has existed there during the past two years, particularly in the department of the Seine. During 1917 some 47 cases of rabies were verified in Paris and its suburbs. In one instance an infected dog is stated to have bitten no fewer than 11 persons in a restaurant to which it had gained admittance. It is believed that this recrudescence of rabies in France is due to some extent to the persistent neglect of the police regulations concerning dogs and especially to the omission to muzzle these animals. The danger has been increased in the department of the Seine by the presence of numerous vagabond dogs under no control. Dogs are sometimes taken from the urban districts by their owners in the holidays into the country districts where they are allowed to run free and unmuzzled, and where they are liable to come in contact with strange dogs, afterwards on their return home developing rabies. French soldiers on leave from the front occasionally bring their pet dogs along with them, and some of these animals get lost in Paris, and some, indeed, are intentionally abandoned there by their owners. Similar occurrences are said to be not unknown in England, while our soldiers on leave have occasionally attempted to smuggle their dogs ashore at the Channel ports in defiance of the regulations. It is reported that more than one airman has brought his dog with him from France to England on an aeroplane. Whether these allegations are well founded or not, it is, in our opinion, not improbable that the Plymouth outbreak of canine rabies may have been due to the surreptitious and unlawful introduction into this country of a dog that had contracted the disease in France, and which after its arrival developed the malady. The authorities in Devonshire and Cornwall, as indicated in our last issue, are taking all necessary precautions, and the passage of dogs from Devonshire and Cornwall to any other part of England has been forbidden. A case, now reported from the Isle of Man, will surely lead to similar precautions.

"FOOD AND HOW TO SAVE IT."

WE have received from the Ministry of Food a copy of the revised (third) edition of "Food and How to Save it" by Dr. Edmund I. Spriggs. While modestly described as "this little book" by its author the subject with which it deals is of extraordinary importance. The publication in 1917 of these plain physiological facts in relation to food economy and food sufficiency materially helped the nation to face a critical situation. We believe that the system of food control now in being has worked smoothly, and while it has entailed many hardships here and there none of them have been tragic or intolerable. The spirit in which the public received food control has been altogether admirable, and little sacrifices have successfully and permanently kept off a threatened disaster. The supplies, indeed, have improved since the first restrictions were imposed upon us, with the result that few think it necessary when from home to take coupons with them. This reflects the highest possible credit upon the scientific authorities, producers, shippers, and others who were responsible for advising our administrators upon this great question. In the third edition of this book the extension of compulsory rationing to include meat, fats, and some other foods as well as sugar has made it necessary to recast the diets and make other alterations. A chapter has also been added on meatless dinners. Dr. Spriggs has had the advantage of the assistance of the Scientific Adviser to the Ministry of Food, Professor Starling, in its preparation. The chapters are clearly arranged in logical sequence and written in simple terms, which, while scientifically sound, should easily be "understanded of the people." We are informed that a limited number of copies are available (gratis) for public speakers and others interested if they apply to the Ministry of Food (Room 605), Palace Chambers, Westminster, S.W. 1.

With reference to food problems generally, the June number of *American Medicine* deals extensively with dietetic questions, and among the many

expert contributors it is gratifying to our sense of national self-respect that so many English writers have been asked to join in the symposium. From the moment that Germany realised that the war would be long, she called upon her most distinguished men of science to work at the problem of food supply and to ascertain the minimum supply compatible with health. Incidentally it may be stated that these inquiries have thrown much light on various dietetic obscurities. In this country we have greatly neglected the whole question of the physiological requirements, although we have solved, perhaps better than any other nation, the problem of the supply. It will require a sharp educational effort and much patient propaganda work to shake John Bull in his faith in the British breakfast-table and his extravagant ideas with regard to the virtues of roast meat. No nation in the world is so uneconomical in dietetic habits as the British. Valuable information is to be derived from reading the "Food Number" of *American Medicine*, and among many good articles we call particular attention, from the point of view of the importance of the subject-matter, to the following: The Fetish of White Flour, by Dr. H. W. Wiley; Place of Milk and Vegetables in the Diet, by Dr. H. C. Sherman; Milk-butter, Fats, Nut-butter, and Oleomargarine for the Child, by Dr. George Dow Scott; the Vitamines or Accessory Factors in Relation to Dietary Problems arising from the War, by Dr. A. Bruce McCallum; and Method of Changing and Reforming the Intestinal Flora, by Dr. J. H. Kellogg. Running throughout the majority of these articles, as well as through the large number of smaller editorial and unsigned paragraphs, are two fundamental and paramount ideas: one the need for reform in respect to our ideas of the value of animal food, and, secondly, the important part which the vitamines and other accessory food elements play in the maintenance of nutrition. One author after another emphasises the point that in order that a diet may be adequate for the maintenance of health in either a grown or growing individual both a fat soluble accessory body (A) and a water soluble accessory body (B) must be present in sufficient amount, or the symptoms of malnutrition are likely to supervene. Very interesting illustrations of insufficiency diseases resulting from war conditions in Glasgow, Kut, Mesopotamia, and other localities are given by Professor McCallum in his article on the vitamines. The most interesting feature of these results of vitamine starvation is furnished by the outbreaks of xerophthalmia among children in the enemy countries, for these have been referred to lack of the fat soluble accessory body (A) shortage of animal fats having led to the substitution of vegetable oils. The increasing use of these oils in this country, and the high price of butter and other animal fats, may possibly give rise to similar unfortunate experiences among our own population unless attention leads to prevention. Special attention is directed to Dr. Kellogg's paper on the changing of the intestinal flora. In this the author insists very strongly on the importance of supplying to the colon the carbohydrate necessary for promoting the development of acid-forming bacteria. Lactose is the most slowly absorbed of the sugars, and is therefore indicated in cases of alkaline stools and symptoms of intestinal toxæmias. Uncooked starch is also recommended for the same purpose—a suggestion which provide the clue to the old wife's practice of giving arrowroot and water as a cure for diarrhœa in infants, a method of treatment which has of recent years fallen into disuse, but which, after all, may have a rational basis. *American Medicine* has certainly performed a service to the medical profession, and consequently to the public, in collecting under one cover so many valuable and up-to-date contributions to the subject of scientific feeding.

THE ASYLUM STRIKES.

THE staffs of an English and of an Irish asylum recently fell victims to the insidious attacks of the strike epidemic. We are not in a position to judge accurately of the grievances in either case, whether relating to hours or wages. Differences of opinion between employer and employed upon these fundamental conditions led to the crisis, and the differences are being, or by this time have been, adjusted. But an expression of sympathy cannot be withheld from the medical officers of the institutions who found themselves in so critical a position owing to the desertion of their subordinates. At the English hospital we learn that 120 attendants and 150 nurses in immediate charge of some 2500 insane patients—some extremely violent and others painfully helpless—struck work without warning. The spirit of unionism amongst the rank and file of asylum service, whatever good lies behind it, seems here to show an over-development. The Asylum Workers' Union deals not with material products, the non-production of which may cause more or less inconvenience to the community, but with human lives, and those of the most pitiful kind, dependent upon unintermittent aid and care; and although the Union claims to have made some concessions to secure the "care of the worst cases," it is obvious that the abstraction on strike of some 258 members of an already attenuated staff cannot be regarded lightly. This union, established in 1910, should not be confused with the Asylum Workers' Association, founded in 1895 for the purpose of improving asylum nursing and elevating generally the aims and status of asylum workers.

AN ITALIAN VIEW OF ANGLO-SAXON MEDICAL JOURNALISM.

Dr. L. Verney contributes to *Il Policlinico* (Practical Section, June 23rd and July 14th) an interesting article on the medical periodicals of this country and the United States. For many years the medical profession in Italy almost ignored such publications, but it has come to recognise that in medicine the Anglo-Saxon races have reached a high position, and that views of that position derived from German sources are quite untrustworthy. He takes as types of weekly papers the *British Medical Journal*, *Journal of the American Medical Association*, the *New York Medical Record*, and THE LANCET. With regard to the addresses and scientific papers published in the columns of these journals he compares them favourably with their Italian counterparts. In conformity with the English character, the lecturers, he finds, tackle problems of practical interest, enriching them with their ripe experience and clinical acumen, selecting with unerring judgment the good and the new. While in the English journals a considerable space is devoted to clinical cases, "praiseworthy, but somewhat dull," the American doctors rather favour subjects of a more general type. For the editorials and

leading articles he has nothing but praise. Extremely interesting and showing full and accurate knowledge and rare critical balance, they may be considered the most useful portion of these journals, says Dr. Verney, who is particularly interested in the social aspect of medicine and crusades against quackery. He confesses that in Italy they have not yet felt the want of defending themselves against improper patent products, prejudicial alike to the public health and the medical interest. He draws attention to the fact that THE LANCET has for many years equipped a scientific laboratory for the analysis of medicines, foods, wines, &c., thus protecting the public against adulterations and frauds of every kind. He deplores the fact that abstracts are neglected in the two great English journals, and that foreign works are reviewed only to a trifling extent. In this respect he compares our journals unfavourably with those of America. It seems to him somewhat anomalous that in this country archives of clinical general medicine only exist in the form of the *Quarterly Journal of Medicine* and the *British Journal of Surgery*, and he finds the cause in the fact that the medical and surgical staffs of the hospitals give their services gratuitously, and do not feel called upon to undertake an exhaustive study of the clinical cases occurring in their hospital work. Moreover, the clinical professors do not succeed in forming satisfactory schools, as their assistants are appointed for too short a term, and hence are not sufficiently established in an academic career and with difficulty devote themselves to study. Dr. Verney is particularly impressed with the prominence given in English periodicals to tropical medicine, the outcome of work in British colonies. The general conclusion that Dr. Verney arrives at is that the most prominent characteristic of the Anglo-Saxon medical press is its practical tendency, and he prophesies an immense development in the near future, adding that the success of Anglo-Saxon medical journalism will be followed in Italy with growing sympathy.

THE SUPPLY AND ADJUSTMENT OF ARTIFICIAL LIMBS.

THE problem of the supply of artificial limbs has already aroused much attention and will remain as an outstanding feature of medical organisation for the care of pensioners. The number of men who have been fitted with limbs and who await fitting already runs into many thousands, and it is greatly to the credit of those who have organised Queen Mary's Hospital at Roehampton and the other limb-fitting hospitals that the supply has kept pace with the demand in such a way that the number of men who await their limbs is by no means excessive. When it is realised that the total number of artificial limbs made in England in one year before the war was probably less than the number of limbs now supplied in one month, we must acknowledge that we are greatly indebted to these organisations and to the American limb-fitting firms who have come to their assistance. But the fitting of the artificial limb is only the beginning. In almost every case an artificial leg requires readjustment within a few months from the time of its manufacture, a readjustment necessitated by alterations in the stump. And even this is not the end; second and subsequent readjustments are required, then repairs, and eventually replacement of the whole limb. This work of adjustment and repair is cumulative; it increases by leaps and bounds. At the present time the number of men returning to hospital for this purpose amounts to 50 per cent. of the total number of men who have been supplied with limbs up to date. As the men who have lost their limbs are for the most part young, this condition of affairs may be expected to continue for many years. The readjustments and repairs require a large and elaborate organisation. Haphazard orders that men whose limbs are unsatisfactory are to report to their local War Pensions Committee, be seen by the medical referee, and have the repairs done by the local limb-maker will not do. Very few medical men have sufficient experience of limb-fitting, and it is to be feared that many instrument-makers who describe themselves as limb-fitters have no real experience of the work. The results are already to be seen in the complaints that appear in the press of the unsatisfactory nature of the limbs supplied. It may be confidently stated that on the whole the artificial legs that have been supplied to soldiers and sailors in this country are as good as any that can be obtained, and that in the first place the fitting of the limbs has been satisfactory. In almost every case if the limb becomes unsatisfactory it is because it no longer fits. Unfortunately, when such an ill-fitting limb comes before a medical man, he, being inexperienced in the work, may be led to believe that the limb has been wrongly designed and constructed, and he is sometimes supported in this belief by a local limb-maker, who cannot be acquitted of the desire for a condemnation of the original limb and an order for an entirely new one of his own make. It is to be feared that this trade interest has up to now entered to some extent into the reports upon limbs given by the small local makers. It is now generally acknowledged that the so-called American type of artificial leg introduced at Roehampton possesses a mechanical superiority over the older English type or tendon leg, and that only the problem of material for use in its construction remains. This being so, perhaps the time has come when a single pattern of artificial leg might be adopted and all makers obliged to conform to this. The question of discarding an ill-fitting limb and constructing a new one would disappear, for makers would have no excuse for prescribing a new one of the same pattern as the old one. The use of one standard type, allowing always for variations in the level of amputation, would simplify the problem of re-adjustment and repairs, but not solve it. Much would remain to be done, chiefly, however, in the direction of education. Certain members of the medical profession must educate themselves in the fitting of limbs, and local makers must be similarly instructed in the repairing of the standard type and in refitting the buckets. The men themselves must be educated to know that when the limb becomes unsatisfactory or uncomfortable it is because it no longer fits, and the public, and employers in particular, must be made to understand that re-adjustment of artificial limbs from time to time is essential. All this can best be carried out at the large limb-fitting hospitals, which should become centres of education in all that appertains to artificial limbs.

The problem of artificial arms is a different one. Many types of artificial arms have been designed with numerous hands and alternative appliances.

So far the results can only be described as mediocre. This must be ascribed to a failure on the part of the authorities to realise that the artificial arm is a tool, the use of which must be taught. To give a man an artificial arm and send him home a few days later is useless. Recently this has been recognised: a month's instruction in the use of the arm is now considered essential. Only when the men who have thus been educated leave hospital shall we have any real test of the utility of the present types of artificial arms.

THE LATE PROFESSOR FORLANINI.

IN these days, when death is so busy and civilisation so disturbed, the passing of many important figures in civil life is apt to go unnoticed for some time. Such has apparently been the case with an eminent foreign colleague, Professor Carlo Forlanini, director of the medical clinic of the Royal University at Pavia, where he is reported to have died in his seventy-first year. His fame, at first confined to Italy, but of late years international, is, of course, due to work on the treatment of consumption by artificial pneumothorax, of which method he was a pioneer. In 1907 he began to issue a review of publications upon this subject, which in 1914 developed into an international journal, most of which appeared in the four Congress languages. Unfortunately, after a few numbers the disturbing influence of the war made itself felt, although from the first the secretaryship had been in Italian Switzerland. The technique which Forlanini had been elaborating since the "eighties" is now, with the addition due to Brauer, almost universally followed, while the treatment with which his name is associated, if of limited scope, has been acknowledged as valuable by tuberculosis specialists all over the world.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Treatment of Gassed Patients.

THE number of victims of enemy gas has become great, and the Under Secretary of the Service de Santé has reorganised completely the arrangements for their treatment in the sense of making it both more effective and more rapid. The therapy of gas cases is becoming better understood. As regards hyperite, which is the agent most frequently employed by the enemy, it is now known that if the victims can be douched within the first three hours, with lavage of the stomach and complete cleansing of the clothing, they are almost certain to recover. But the consecutive treatment of pulmonary and ocular complications is protracted. The need was felt of a mobile organisation to give at the close of a bombardment prompt aid at points where cases have occurred in great number, and of a special hospital service at the base to deal with all the cases evacuated after undergoing preliminary treatment up to complete recovery. The first object is attained by means of motor ambulances, a new model of which has recently been planned. Each consists of a lorry and a trailer. The lorry contains tent, portable flooring, douching apparatus, and other accessories. The trailer contains a stove to disinfect clothing. The whole installation can be set up in about a quarter of an hour. The routine is simple. Cases are received and undress in a part of the tent screened off from the douche. Their clothes are passed through the disinfector while the patients douche, and on returning they resume their clothes, which have been freed from all trace of hyperite. Each installation serves for the treatment of 100 men an hour. Forty men can be douched at a time, while the disinfector has a capacity of 40 complete equipments. Every combatant division is to be provided with one of these motor ambulances, and all the gassed cases thus treated are then to be evacuated to base hospitals in the rear, none remaining in the army zone. Numerous beds have been reserved in the Paris military hospitals in two sections, one to receive patients suffering chiefly from pulmonary symptoms, the other for burns of the skin, eyes, and mucous surfaces.

Cyanamide and Alcoholic Drinks.

The manufacture of cyanamide by passing nitrogen over glowing calcium carbide has developed greatly during the war. Workmen employed in this industry are liable to certain symptoms; some—entirely external—caused by the spraying of particles of quicklime, others due to intoxication by the cyanamide itself with symptoms of acute vasodilation. The workmen have noticed that these symptoms were particularly marked among those who, after work, partook of alcoholic beverages, even in small quantities. M. Langlois has now shown by experiments on dogs, placed for several hours a day in an atmosphere charged with cyanamide dust, that the introduction of alcohol either by the stomach or intravenous injection immediately produced lowering of the arterial pressure, in certain cases resulting in death. M. Langlois concludes that the use of alcoholic drinks should be formally prohibited among workmen in cyanamide factories, a suggestion which hardly needs medical authority in the proved circumstances.

Recurrent Hæmoptysis due to Gunshot Wounds of the Chest.

M. Courtois-Suffit, in a study of hæmoptysis among soldiers who have been shot through the chest, states that a large number of cases relapse. Since this relapse may occur after a long interval he warns medical men against the tendency to consider such symptoms as necessarily pointing to tuberculosis, whether or no of traumatic origin. Radioscopy and examination of sputum are essential in each such case to control the information elicited on auscultation, or misleading statements will appear in the patient's discharge sheet.

Sept. 14th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Municipal Hospitals in Western Canada.

THE "Municipal Hospitals" movement in Western Canada has attracted widespread attention, and has been much discussed in the various provincial legislatures in that part of the Dominion of Canada. Most important is the question of responsible control of the administration of the funds and the acquisition of institutions for which the taxpayer will have to pay. These are not necessarily free hospitals which some have supposed them to be. The Province of Alberta has committed itself to legislation providing for these public hospitals, built and administered by municipalities or groups of municipalities; and a unanimous sentiment exists in Alberta and Saskatchewan for these hospitals, but the question of fees remains unsettled. The municipal hospital will likely pave the way for free hospitals later on, and once the latter are established they will, no doubt, be permanent.

Child Mortality in Montreal.

Owing to the heavy infant mortality in Montreal during the present summer Dr. W. A. L. Styles, secretary of the Baby Welfare Committee, asked that investigation be made into the causes thereof. Dr. S. Boucher, the M.O.H., has furnished the following figures showing that the child mortality in that city has been gradually decreasing. These figures cover the periods in each year between Jan. 1st and July 15th: 1914, 2352 deaths under 5 years of age; 1915, 2425; 1916, 1883; 1917, 2231; 1918, 1820. In 1906 the 0–5 death-rate was 271 in 1000 births, while in 1917 it was 178 per 1000 births.

Control of Venereal Diseases.

Reporting under the Act.—Under the terms of the new Venereal Diseases Act in the Province of Ontario there were reported during the last two weeks in July to the provincial board of health the following: syphilis, 66 cases—no deaths; gonorrhœa, 103 cases—no deaths; chancroid, 3 cases—no deaths. Thirteen medical officers of health throughout the province reported no cases at all.

Treatment of syphilis at Toronto General Hospital.—In the July issue of the *Canadian Medical Association Journal* Dr. W. T. Williams reports as follows on 500 cases of syphilis treated by the intravenous method: "Of the 500 cases so far treated only about 29 per cent. have been early, while 71 per cent. have been in the later stages of the disease. We have managed to secure negative Wassermanns on only 70 of the cases—23 early and 47 in the later stages. Practically all of the late cases were given in addition mixed treatment of mercury and potassium iodide. Twenty-four cases had a return to positive Wassermann, 35 remained negative, while 11 of them passed from our control."

Ophthalmia neonatorum.—Regulations seeking to protect babies from sore eyes have been drawn up by the Ontario Board of Health and approved by the Governor in Council. By them it is provided that every physician in attendance at births shall immediately instil into the eyes of new-born infants a 1 per cent. solution of nitrate of silver or 40 per cent. argyrol. If the eyes become swollen, red, and inflamed within two weeks the case must be reported to the Board of Health. The solutions are provided free by the Board of Health.

Sphagnum Moss for Surgical Dressings.

In 1916 the McGill University Women's Union established a sphagnum department in a laboratory placed at their disposal by the medical department of the University. Professor C. A. Porter was the first to initiate the work on this side of the Atlantic. He explored the bogs of Eastern Nova Scotia and secured specimens said to be perfect. The first of these dressings sent overseas were made up by the Junior Red Cross, Guysboro, N.S. The late Mr. Harry James Smith, of New York City, spent much time with Professor Porter and organised a plant at his own expense at Arichat, Cape Breton. The Canadian Red Cross is preparing an immense output for use in their own and French hospitals. Vancouver Island moss was also brought East by Mr. Smith at his own expense, which proved so satisfactory that he went last March to Seattle, U.S.A., to organise the industry in the North-western States and to look into the situation in British Columbia. Mr. Smith met his death in a railway accident while journeying West for moss for the Canadian Red Cross. The American Red Cross were greatly encouraged by his success and formed a department which was placed under Dr. J. A. Hartwell, of New York, as technical controller.

New Dean of Laval University, Montreal.

Owing to the death of Dr. E. P. Lachapelle, who was for many years a prominent physician in the Province of Quebec, the medical faculty of Laval University, Montreal, has elected a new dean in the person of Dr. L. de L. Harwood.

Toronto, August 15th.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Temporary Surgeons: A. D. Wall to *Maidstone*; H. P. Margetts to *Europa*, additional; A. S. Green to *Highflyer*; G. H. Fitzgerald to *Agamemnon*; and A. C. C. Craig to *Minotaur*.

J. M. Mackenzie, F. M. Allen, S. A. McC. Thompson, J. N. Morris, R. Johnston, C. V. Patrick, E. H. Weatherall, A. Gibb, T. S. Storey, and F. M. Hilliard to be temporary Surgeon Probationers.

ARMY MEDICAL SERVICE.

Col. G. G. Adams retires on retired pay.

Temp. Lieut.-Col. Sir H. J. Stiles (Bt. Lieut.-Col., R.A.M.C., T.F.) to be temporary Colonel.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. (Bt. Col.) F. Smith and Lieut.-Col. W. C. Croly relinquish the temporary rank of Colonel on re-posting.

To be acting Colonels whilst employed as Assistant Directors of Medical Services of Divisions: Major (Bt. Lieut.-Col.) (temp. Lieut.-Col.) C. W. Holden, Lieut.-Cols. T. E. Fielding and P. H. Henderson, Capt. (acting Lieut.-Col.) W. G. Wright.

Capt. A. I. Fortescue relinquishes the acting rank of Lieutenant-Colonel on re-posting.

Major A. M. H. Gray, R.A.M.C. (T.F.), to be temporary Lieutenant-Colonel whilst specially employed.

To be acting Lieutenant-Colonels:—Whilst in command of a Medical Unit: Capt. (acting Major) J. A. Andrews, Temp. Major E. H. Marshall. Capt. (acting Major) G. S. Parkinson whilst employed as Assistant Director of Medical Services of an Army).

J. N. Sergeant to be temporary Major whilst employed at the Great Ballard Hospital.

To be acting Majors: Capts. J. B. A. Wigmore, T. F. P. Breen. Temp. Capts. C. Kingston, P. L. Blaber, G. MacK. Miller, E. F. G. Ward, G. D. Laing. Whilst specially employed: Temp. Capts. D. Murphy, K. B. Dickson, W. H. Clements.

The rank of the undermentioned is as follows: Temp. Capt. E. H. Roberts, Temp. Capt. J. A. Davidson.

Temporary Lieutenants to be temporary Captains: J. M. Smith, A. L. Vaughan, H. E. White.

R. H. Bridge, late temporary Captain, is granted the honorary rank of Captain.

Officers relinquishing their commissions:—Temporary Captains: F. E. Higgins and A. D. Crofts (on account of ill-health, and are granted the honorary rank of Lieutenant), A. A. E. Newth, R. H. Hutchinson, H. J. Simson, and J. W. Johnstone (on account of ill-health contracted on active service, and are granted the honorary rank of Captain), W. T. Williamson, R. J. Gordon, F. J. McCarthy, J. K. Stewart, W. Scott, A. J. M. Crichton, W. F. Evans, W. R. Tutt, C. R. Porter, F. McE. Sinclair, T. F. Saunders, S. W. Swindells, M. B. Arnold, H. A. Treadgold, J. N. MacDonald, H. S. Gaskell. Temp. Lieut. A. Watson.

GENERAL RESERVE OF OFFICERS.

Capt. (acting Major) F. E. Bissell to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

SPECIAL RESERVE OF OFFICERS.

Lieutenants to be Captains: L. J. Vincent, G. R. Hubbard, J. A. Keen, H. Chadwick, L. Gill, J. G. Allan, H. B. Dodwell, J. F. Campbell, J. H. Brown, N. P. R. Galloway, W. W. Brown, A. Y. Milne, H. D. Apergis, D. J. Mackinnon, E. D. Spackman, F. E. Bendix, H. Taylor, J. Joels, C. Reid, C. Wood, H. B. Renton, G. L. Malcolm-Smith, F. Jones, J. L. Rowlands, H. G. Morris-Jones, R. R. Evans.

To be Lieutenants: B. G. Derry; Second Lieut. D. Fergusson (from Unattached List, T.F.): J. A. Dawson, A. C. Hill, A. McKenzie, J. A. Ross, W. Buchan, G. S. Escoffery (from Aberdeen University Contingent, O.T.C.); J. W. W. Newsome, B. L. Slater, V. D. Wyborn (from the University of London Contingent, O.T.C.); D. W. Sinclair (from Edinburgh University Contingent, O.T.C.); D. C. Bowie, A. J. Macartney (from Glasgow University Contingent, O.T.C.).

In THE LANCET of Sept. 14th, 1918, p. 374, the last two paragraphs under Royal Army Medical Corps should have come under the heading Special Reserve of Officers which immediately follows.

TERRITORIAL FORCE.

Officers restored to the establishment: Lieut.-Cols. F. Kelly, C. H. Howkins, C. T. Green, E. V. Gostling, W. R. Matthews, H. Collinson, A. M. McIntosh, E. C. Montgomery-Smith; Majors D. F. Todd, F. E. A. Webb, A. Bird, C. H. Lindsay, A. E. Kidd, D. Rorie, H. Richardson, R. B. Carslow, H. A. Howes, J. Hobbs; Capts. W. A. Valentine, S. F. St. J. Steadman, J. L. Joyce, M. Coplans, A. C. McMaster, A. Leggat, S. S. Greaves, G. Finch, J. Everidge, G. W. Shore, H. A. Lucas, E. Smeed, L. Courtauld, F. Roberts, A. W. Stott, C. W. Wirgman, A. J. Campbell, H. F. Humphreys, W. B. Keith, H. M. Calder, C. E. H. Milner, G. McConnell, C. E. W. McDonald, A. B. Pettigrew, A. G. S. Logie, W. A. Hooton, J. D. Lickley, A. G. Hebblethwaite, C. D. Rogers, W. Tresawna, A. R. Moodie, W. Longley, A. B. Jamieson, T. S. P. Parkinson, A. C. Alport, G. F. Stones, F. W. C. Brown, P. G. Doyne, C. G. Skinner, J. Fenton, J. A. Willett, L. N. Reece, R. Armstrong, W. K. Legassick, A. E. Campbell, B. L. Davis, C. A. Raison, W. Alexander, A. A. McKenzie, A. G. Reid, D. Cameron, J. Chalmers, A. C. Smith, E. McM. Dunlop, A. C. Hepburn, D. Campbell, J. Steele, J. W. Anderson.

Lieut.-Col. (Bt. Col.) J. P. Bush to be an Assistant Director of Medical Services and remain seconded.

Major R. A. Farrar is seconded for duty under the Colonial Office.

Major A. C. Farquharson, from Sanitary Service, to be Major.

Lieut.-Col. H. H. Tooth and Major G. E. Gask are seconded whilst temporary Colonels, Army Medical Service.

Capt. (temp. Lieut.-Col.) R. A. Veale reverts to the temporary rank of Major, and is restored to the establishment.

Capt. (acting Major) J. M. Whyte relinquishes his acting rank on ceasing to be specially employed.

Capts. R. Armstrong, C. A. Raison, and G. M. Benton to be acting Majors whilst specially employed.

Capt. J. Gutch is seconded for duty overseas.

Major G. R. Murray and Capts. J. M. Whyte and H. J. Slade are restored to the establishment.

Capt. (acting Major) C. P. Lapage relinquishes his acting rank, and is seconded for duty with a General Hospital.

Capt. G. L. Travis, from T.F. Reserve, and Lieut. J. W. Munro to be Captains.

Capt. (temp. Lieut.-Col.) W. Lister relinquishes his temporary rank on ceasing to command a Field Ambulance.

Capt. D. J. Scott to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

TERRITORIAL FORCE RESERVE.

Capt. A. C. Young, from R.A.M.C., to be Captain.

ROYAL AIR FORCE.

Dental Branch.—D. Campbell is granted a temporary commission as Second Lieutenant.

INDIAN MEDICAL SERVICE.

The King has approved the grant of temporary or acting rank to the following officers:—To be temporary Colonels: Lieut.-Col. E. F. Hugo while holding an appointment as Consulting Surgeon of a Force; Lieut.-Col. H. G. Melville while holding an appointment as Consulting Physician of a Force; Major and Bt. Lieut.-Col. F. A. F. Barnardo while holding an appointment as A.D.M.S. To be temporary Lieutenant-Colonels while holding appointments as Assistant Directors-General, Indian Medical Service: Major R. A. Needham and Major H. Ross. To be Acting Major whilst employed as Major with a Casualty Clearing Station: Capt. J. G. B. Shand.

The King has approved of Dental Surgeons, Royal Naval Volunteer Reserve, wearing Orange distinction cloth in conjunction with the rows of Gold Lace on the sleeve and shoulder strap.

POST-GRADUATE COLLEGE, WEST LONDON HOSPITAL.—During next week clinics will be held each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.

Correspondence.

"Audi alteram partem."

NASO-PHARYNGEAL INFECTION AT THE ONSET OF CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—The question of the constancy of the meningococcus in the naso-pharyngeal secretion of the patient at the onset of cerebro-spinal fever is obviously a matter that will be decided in course of time by further bacteriological investigations. Nevertheless, before dealing with the letter of Staff-Surgeon P. Fildes in THE LANCET of Sept. 14th, I will summarise the evidence in favour of this view.

It has been pointed out previously[1] that whereas v. Lingelsheim in his early investigations during the Silesian outbreak only got 23 per cent. of positive results, later by improved technique he got 94 per cent. of positives. In their excellent monograph[2] Netter and Debré express themselves as follows upon this matter (p. 42):—

"Lastly, the multiple conditions necessary for the culture of the meningococcus are sometimes difficult to realise. It results from all these circumstances that in such research, as in every biological test that is a little delicate, the errors committed are frequent enough. But these errors are errors 'en moins,' and the positive cases have a value very great, whereas a doubt can persist for each negative result."

After taking the causes of error into account, however, they say (p. 32):—

"Il paraît légitime de dire *que le méningocoque doit se trouver d'une façon constante dans le rhinopharynx de méningitiques pendant les premiers jours de leur maladie.*" The italics are those of Netter and Debré.

The tendency of the coccus to vanish from the naso-pharynx as the disease progresses has been referred to previously.

At the beginning of the present outbreak, after the various serological types of the meningococcus had been defined, one of the first steps taken was to investigate this question of the presence of the meningococcus in the naso-pharynx of the patient at the onset of the disease for the special purpose of seeing if it was of the same type as was to be found in the cerebro-spinal fluid. The full result of observations carried out at St. Bartholomew's Hospital by Professor F. W. Andrewes and Dr. R. G. Canti on 25 consecutive cases of bacteriologically proved cerebro-spinal fever has been published by the latter.[3] In all of them the same type of meningococcus was present in the naso-pharyngeal secretion as was found in the cerebro-spinal fluid. Quite independently of this research, Captain Martin Flack, R.A.M.C. (now Lieutenant-Colonel, R.A.F.), paid special attention to the same problem when he was in charge of the London District Cerebro-spinal Fever Laboratory, with the result that in all of 32 cases he found meningococci in the naso-pharyngeal secretion, and in 30 of them these were of the same type as was obtained from the cerebro-spinal fluid. Both Captain Flack and Dr. Canti found it necessary in some cases to make several attempts before they succeeded.

Now, Sir, in view of this very positive evidence afforded by the literature, and the confirmation of it obtained by independent observers during the present outbreak, I stated it as my opinion, in the report to the Medical Research Committee in 1917, that this constant presence of the meningococcus in the naso-pharynx of the patient at the onset indicated that every case was really an instance of a carrier developing the disease. It never occurred to me that this view would be misinterpreted to mean that I referred to chronic carriers, and I can accept no responsibility for such mistakes. I purposely avoided any reference to the duration of such carrying by the patient before he developed the disease, because scant information was then available on this matter. The fact that, as a rule, only a comparatively small number of persons whose naso-pharynx becomes infected with the meningococcus themselves develop the disease has, of course, been known for years and is no new discovery. Individual susceptibility obviously is a most important factor in determining an attack of cerebro spinal fever.

Coming now to the outbreak of cerebro-spinal fever at X, I must protest most strongly against the inaccurate and unjust interpretation put by Staff-Surgeon Fildes upon the remarks in my reply to Major J. Dorgan in your issue of August 17th. I should have thought it unnecessary to point out that the bacteriological diagnosis of cerebro-spinal fever is complete when the meningococcus has been cultivated from the cerebro-spinal fluid and identified, but incomplete when the coccus is not isolated from the cerebro-spinal fluid and examined. Had Staff-Surgeon Fildes grasped the particulars of this outbreak given by Major Dorgan he would have noticed that in Major Dorgan's letter it is admitted that the meningococcus was not cultivated from the cerebro-spinal fluid of the patient in a considerable proportion of the cases. It was, of course, to these cases only that I referred when I pointed out that the bacteriological diagnosis in such cases was incomplete, and especially to those where the fluid was clear or almost clear, diplococci scarce in films of the centrifugalised deposit, and the patient recovered after a transient illness. The naso-pharyngeal evidence—such as it was—was also negative. Nevertheless, it is cases of this "mild and usually unrecognised" type that Major Dorgan regards as of prime importance in the spread of the disease. I am surprised that a bacteriologist of Staff-Surgeon Fildes' experience has not realised the possible source of error from skin diplococci in films of the deposit of cerebro-spinal fluid in such cases where cocci are scarce and are only found after prolonged search. Having been misled by such skin diplococci myself on making prolonged microscopic investigation of films of clear cerebro-spinal fluid from a case of meningismus, I know the fallacy to be very possible.

The other point mentioned by Major Dorgan and Staff-Surgeon Fildes—namely, the failure of Captains R. R. Armstrong and J. A. Glover to grow the meningococcus from the naso-pharynx in a proportion of cases of cerebro-spinal fever at X and in the London District respectively—does not prove anything. It is true that Captains Armstrong and Glover have worked in the Central Laboratory, but neither they nor I lay the stress upon these negative results that Major Dorgan or Staff-Surgeon Fildes does. Officers so busy at the practical prevention of cerebro-spinal fever, as they were at the time, are far too much occupied in performing their military duties and have too little time to spare to carry out researches on the naso-pharyngeal secretion of cases once the bacteriological diagnosis has been established in the usual manner by isolation of the meningococcus from the cerebro-spinal fluid.

I am, Sir, yours faithfully,

M. H. GORDON,
Lieutenant-Colonel, R.A.M.C.

Central C.-S.F. Laboratory, Sept. 15th, 1918.

[1] THE LANCET, August 17th, 1918, p. 218.
[2] La Méningite Cérébrospinale, Paris, 1911.
[3] Journal of Hygiene, January, 1918.

HYPNOSIS IN HYSTERIA.

To the Editor of THE LANCET.

SIR,—I join with Dr. Thomas Lumsden (THE LANCET, August 17th, p. 219) in congratulating Major A. F. Hurst and Captain J. L. M. Symns on arriving at a rapid method of cure in war neuroses. The same feelings may be extended to Major William Brown in respect of the treatment of cases of shell shock in an advanced neurological centre, but I trust that this distinguished psychologist will pardon me if I comment on some of his remarks. He says that he agrees with Pierre Janet that only hysterical patients can be hypnotised—in fact, that, as Charcot said many years ago, hypnosis is an artificial hysteria. Surely, this claim of Charcot has long been completely withdrawn. It is a remarkable fact that although Charcot was perhaps the only man of eminence whose professional reputation was raised by his dealings with hypnotism, most of his work thereon is now seen to have been mistaken—a following of a blind alley from which his disciples have gradually returned. Charcot's leading phenomena were of a type which has seldom since been obtained. The once celebrated three stages of the *grand hypnotisme* are hardly anywhere now to be seen. Not that other hypnotists could not obtain the phenomena, but experience convinced them that the sequences and symptoms on which Charcot laid stress as a proof of the relationship of hypnosis to hysteria were merely elaborate products of the long-continued and, so to say, endemic suggestions of the Salpêtrière. One of the supporters of the practice of the hospital allowed that only a dozen cases of true hypnosis had occurred there in ten years, and that a large proportion of the experiments had been made upon one subject who had long been an inmate of that hospital.

Pierre Janet's theory that only hysterical patients can be hypnotised rests on the assumption that the presence of the secondary self is always a symptom of hysteria. Now this generalisation is far too wide. Some cases of secondary consciousness correspond with Janet's description, others, however, present conditions which are its exact opposite. Thus, while hysteria is a prominent symptom in cases of spontaneous secondary consciousness, it is, on the other hand, not necessarily connected in any way with its hypnotic forms. Thousands of healthy men absolutely devoid of any trace of hysteria have been hypnotised, while hysteria itself instead of favouring the induction of hypnosis renders it more difficult. In April, 1892, Schrenck-Notzing published the result of his first International Statistics of Susceptibility to Hypnosis. Fifteen observers in different countries published returns which showed without reference to sex, age, or health, that they had tried to hypnotise 8705 persons, with 519 failures—i.e., only 6 per cent. were uninfluenced. Vogt tried 119 subjects; none were refractory. Van Eeden and Van Reuterghem, from May 5th, 1887, to June 30th, 1893, attempted to hypnotise 1089 persons and only failed with 58, or 5·33 per cent. Liébault, from 1887 to 1890, tried to hypnotise 1756; his failures amounted only to a fraction over 3 per cent. Bernheim, from 1882 to 1889, attempted to hypnotise 10,000 persons and he succeeded in over 80 per cent. Wellerstrand's failures were 3·7 per cent. out of 3209 he tried to influence. Later on he tried to influence 6500. The percentage of failures had decreased. Forel succeeded with over 95 per cent. Milne Bramwell's experience varied from 100 per cent. in one group to 78 per cent. in another. Later experience of susceptibility is still more evident. Henry S. Munro, of Omaha, Nebraska, demonstrated his methods to approximately 5000 American physicians on approximately 5000 subjects, these subjects being taken at random from the street—absolute strangers. The result was that practically every individual who gave his consent to coöperation was hypnotised or placed in a condition of suggestibility, without a failure in 1 per cent. of the cases. I have tried Dr. Munro's method in a fair number of cases and have practically had the same result. This seems to prove that about 80 per cent. of all mankind can be hypnotised, and as Major Brown says that only the hysterical can be hypnotised, he admittedly must believe that three-quarters of the globe is hysterical or conclude that nearly everyone is not quite right in the head.

I am, Sir, yours faithfully,

J. R. O'BRIEN.

Captain, R.A.M.C.

A NASAL DRILL IN THE TREATMENT OF ADENOIDS.

To the Editor of THE LANCET.

SIR,—An adenoid resembles a pig; for there are more and better ways of killing it than by cutting off its head. It must be at least 20 years since Arbuthnot Lane taught that suitable breathing exercise, religiously performed, would in many cases obviate the necessity for operation. About this time a Swedish lady—I think her name was Mrs. Conn—claimed that her gymnastic system, which included deep nasal breathing, would cause the disappearance of adenoids. In an article which appeared in your columns on May 1st, 1909, I pointed out that treatment by thyroid extract directed to the relief of nocturnal enuresis not infrequently caused the disappearance of adenoids, and called attention to the fact that running of the nose was one of the earliest symptoms of thyroid feeding which was excessive either in dosage or time.

Now comes Dr. Isabel Ormiston's interesting article in your issue of August 24th explaining Mrs. E. Handcock's sneezing cure; and, in your issue of Sept. 14th Mr. Walter C. Blaker's supporting letter, in which he records an illustrative case: a patient in whom—

"There was nasal obstruction and adenoid vegetations, no discharge, breath offensive, and she complained of a nasty taste in the mouth; appetite poor, and she was anæmic. There was considerable thickening over the bridge of the nose, and also behind both ears. She was dull, stupid, and apathetic, walked badly, had night terrors, and slept very badly. The skin was harsh and dry, and she had never perspired. Feet, hands, and abdomen were always cold."

I should be very much surprised to know that this child did not, in addition, suffer from nocturnal enuresis; for a more typical example of thyroid insufficiency has never been described. And yet all the symptoms disappeared under a discipline of artificially evoked sneezing! The interesting question then arises as to the mechanism by which stimulation of the nasal mucosa, as in Arbuthnot Lane's exercises and Mrs. Handcock's sneezing, produces a reflex stimulation of the thyroid gland. It looks very much as if, not only the antiseptic pituita, but the hormonic pituitary were in cause.

I am, Sir, yours faithfully,

Harley-street, W., Sept. 14th, 1918. LEONARD WILLIAMS.

TUBERCULOSIS IN DUBLIN.

To the Editor of THE LANCET.

SIR,—Your readers may remember the salient facts in a series of letters on the above subject which appeared in the numbers of THE LANCET for April 27th and the following weeks. It will gratify you and those of your many readers who have an interest in the welfare of the Irish capital to learn that on and from August 1st last the differences between the Tuberculosis Committee of the Corporation of Dublin and the Insurance Committee of the county borough of Dublin under the National Insurance Act, 1911, have been adjusted. In future the cases of insured tubercular patients will be dealt with by the medical officers of the Corporation, just as non-insured cases are dealt with at present. Thus the confusion and expense of the second and unnecessary machinery called into existence after March, 1917, are ended to the advantage of the sick and to the saving of public funds.

It was not until to-day that I learned from the secretary of the Insurance Committee that matters at issue between the Corporation and the Committee had been happily settled. I asked him why no notice of this important action had been communicated to the medical profession. He replied that the Approved Societies had been notified of the change, as required by the National Insurance Act. At my suggestion he will ask his Committee to inform the Dublin hospitals of the wise step which has been taken to once more unify the machinery for dealing with tuberculosis in this city.

I am, Sir, yours faithfully,

JOHN W. MOORE, M.D., D.P.H., F.R.C.P.I.

Dublin, Sept. 11th, 1918.

THE MANAGEMENT OF LUNACY PATIENTS.

To the Editor of THE LANCET.

SIR,—I am exceedingly gratified that you have kindly given so much space to the review of my book, "A Plea for the Insane." There are, however, some matters that I trust you will allow me to explain, as I fear from some parts of the review a wrong impression will be conveyed to your readers of my meaning.

(1) *With reference to approved homes for early cases by simple notification*, I fear I did not fully explain what I meant should be done with regard to such homes. I did mention the fact that I desired that an altered voluntary boarder's clause should be applied to private care, and not simply confined to licensed houses and registered hospitals. I forgot to mention that, personally, I never admit a case unless I receive definite proof that the patient wishes to come under my care for treatment. The large majority pay their own accounts and realise that they can leave whenever they like. While many suggestions with regard to notification have been made, none have carried with these the demand which I make for some official supervision and visitation of these notified cases.

(2) *With regard to* the severe censure upon me for stating the fact that very *little medicinal treatment* is carried out in our rate-supported asylums, surely this fault has been brought prominently before the public by many doctors, especially by Sir James Crichton Browne, whom I quoted. It is an acknowledged fact that illness is more rife among the insane than among the general population, and my accusation seems proved when I state the fact, taken from the Board of Control's Blue-book, that in the public asylums only 4*s.* 4*d.* per patient per annum is spent upon medicines and appliances, &c.

(3) *With regard to well-supervised mechanical restraint* as opposed to medicinal or manual restraint in some cases of acute suicidal tendency, I still maintain that it is the most humane form of restraint, and I am glad to have my opinion backed up by Sir George Savage, whose remarks can be seen in the *Medical Annual*, and also by that most kindly medical

superintendent, Dr. P. M. Deas, who for many years so well and so ably presided over Wonford House, Exeter. Nothing, to my mind, is worse than to see a suicidal patient struggling with two or three nurses or attendants, and I have often been told by such patients how much they appreciated the kindly supervised mechanical restraint that I had ordered.

I forgot to mention one case bearing on this subject. A lady under my care many years ago could not be kept in bed at night. She would get up and stand for hours. At last, fearing gangrene of her feet, as she was old and with a very feeble circulation, I adopted the simple restraint of a long sheet, carefully adjusted, which effectually prevented her getting out of bed and all went well. One day a commissioner when visiting my institution and noting the entry in the book ordered this restraint to be discontinued. I and her relatives protested, but to no purpose, and so the order was obeyed. In three months the unfortunate patient died of gangrene of both feet. I maintain that although wholesale restraint is wrong there are many cases in which its use is the most humane form of treatment.

In conclusion, let me say, I welcome criticism, and should a new edition be brought out, all that has been criticised by my reviewers will be carefully considered. All I have said with regard to public asylums has been boldly asserted by many well-known and experienced alienists, while my remarks regarding registered hospitals are absolutely taken from the Board of Control's Blue-books.

I am, Sir, yours faithfully,
LIONEL A. WEATHERLY, M.D.

Bournemouth, Sept. 7th, 1918.

THE PREVENTION OF VENEREAL INFECTION.

To the Editor of THE LANCET.

SIR,—I am gratified to find that so distinguished an authority as Sir H. Bryan Donkin agrees with my suggestion that women are entitled to at least equal protection from venereal disease as is provided in the case of men. The proposition has, indeed, only to be stated clearly and fairly for public opinion to realise how monstrous the present inequality is. It is not only unjust, but it is largely destructive of the effort to improve public health, in that it concentrates remedial action upon the minor focus of infection and neglects the major and infinitely more potent. Up to the present the attitude of society towards women of the class in question, whether of the professional, semi-professional, occasionally professional, or amateur class, has been to treat them as criminals, while not daring to adopt the theoretically logical and practically absurd position of making prostitution a crime.

In a spirit that savours more of cant than of morality they have been denied protection from disease, and their consequent sufferings have been regarded as the merited result of their mode of life and as an indirect and providential means of punishing the men who consort with them. They have accordingly been subjected to incessant harrying, and infinite pains have been taken to erect a barbed wire fence round them which kept no one in and no one out. The result of this attitude is seen in the appalling spectacle of venereal disease common alike to civilised and uncivilised communities.

Surely it is time to try something more consonant with the spirit of the New Testament and more agreeable to the teaching of science—sympathy, guidance, instruction as to the best method of preserving not only her soul from contamination but her body from infection, and scientific facilities of a nature to diminish both danger to herself and to the community. Compulsory regulation and examination have utterly failed. Let us try guidance and accessible facilities for the avoidance of danger.

I am, Sir, yours faithfully,
X. Y. Z.

Sept. 7th, 1918.

SOUTHMEAD INFIRMARY, BRISTOL.—At the last meeting of the Bristol board of guardians it was decided to erect a fourth temporary block for the accommodation of 100 additional military patients—orthopædic cases.

Miss M. A. Harvey, matron of Base Hospital No. 1, who was formerly matron of the 2nd Southern General Hospital, Bristol, before she went to France, is the first woman to be mentioned in Portuguese despatches.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. J. Steel, M.C., R.A.M.C., attached Somerset Light Infantry, qualified at Glasgow in 1916, and thereupon joined up. The award of the M.C. was officially announced last Monday.

Died of Wounds.

Surg. A. R. MacMullen, D.S.C., R.N., was educated at the London Hospital and at Cambridge University, and qualified in 1913. The award of the Distinguished Service Cross was recorded in THE LANCET of March 4th, 1916, p. 537.

Capt. G. R. Cowie, South African Medical Corps, attached S.A. Brigade, R.H.A., was educated at Oxford University and qualified in July, 1917, thereupon joining up.

Lieut. W. M. Heald, R.A.M.C., attached Lancs Fusiliers, was educated at St. Bartholomew's Hospital, London, and at Cambridge University, and qualified in the early part of this year. After a short period of service as house surgeon at St. Bartholomew's he joined the R.A.M.C.

Died.

Lieut. T. M. Boyd, R.A.M.C., qualified at Belfast in 1917, and joined up two months later.

Wounded.

Staff-Surg. W. J. McCracken, D.S.O., M.C., R.N.
Capt. A. W. Holthusen, R.A.M.C., attd. S. Staffs Regiment.
Capt. T. V. Somerville, M.C., R.A.M.C., attd. Highland L.I.
Capt. J. R. A. Marin, Canadian A.M.C.
Surg. J. G. Dobson, R.N.
Surg. R. K. Shaw, R.N., attached R.N.D.
Major C. McN. McCormack, M.C., R.A.M.C.
Capt. J. P. S. Cathcart, Canadian A.M.C.
Capt. S. E. Holmes, Canadian A.M.C.
Capt. W. C. Walsh, Canadian A.M.C.
Capt. E. V. Beaumont, R.A.M.C., attd. Duke of Wellington's Regiment.
Capt. R. K. H. Gillespie, R.A.M.C.
Capt. H. J. Shone, R.A.M.C.
Capt. H. Black, Canadian A.M.C.
Capt. A. H. Donaldson, R.A.M.C., attached R.H.A.
Lieut.-Col. D. Ahern, D.S.O., R.A.M.C.
Capt. C. Cairne, R.A.M.C., attached R.E.
Lieut. W. F. Kivlichan, R.A.M.C.
Capt. J. P. McGreehin, R.A.M.C., attached Royal Fusiliers.
Capt. R. Ward, M.C., R.A.M.C., attached London Regiment.
Maj. H. S. Hollis, R.A.M.C.
Capt. H. B. Sherlock, M.C., R.A.M.C., attached King's Own Scottish Borderers.
Lieut.-Col. E. R. Selby, Canadian A.M.C.

Previously reported Missing, now reported Prisoner in German Hands.

Major N. A. A. Hughes, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. (acting Capt.) C. F. Sandoe, M.C., Duke of Cornwall's Light Infantry, killed in action, second son of Dr. J. W. Sandoe, of Broad Clyst, Exeter.

Lieut. R. H. Sanders, R.E., attached R.A.F., killed whilst flying in England, eldest son of Dr. H. Sanders, of Hampden Park, Sussex, late of Hampstead, London.

Second Lieut. M. B. Cassidy, Irish Guards, killed in action, youngest son of Dr. J. L. Cassidy, late of Harley-street, London.

Capt. E. S. Davies and Lieut. E. O. Davies, both North Staffs Regiment, and killed in action, sons of the late Dr. G. Davies, of Bayswater, London.

THE HONOURS LIST.

A very lengthy list of awards to officers for their gallantry and devotion to duty in the field was issued on Monday last, and we purpose commencing the publication of the names of the medical section next week.

FOREIGN DECORATIONS.

Serbian.

Order of the White Eagle.—2nd Class: Lt.-Gen. Sir A. Keogh, G.C.B., G.C.V.O., ret. pay. 4th Class: Lt.-Col. C. H. Straton, R.A.M.C.

Order of St. Sava.—3rd Class: Temp. Col. L. S. Dudgeon, C.M.G., A.M.S.; Lt.-Col. C. B. Martin, R.A.M.C. 4th Class: Temp. Capt. R. C. Brown, R.A.M.C.; Temp. Capt. N. S. Carmichael, R.A.M.C.; Capt. B. Hughes, R.A.M.C.; Temp. Lt. A. R. Jennings, R.A.M.C.; Temp. Capt. T. W. E. Ross, R.A.M.C.; Temp. Maj. J. W. Struthers, R.A.M.C. 5th Class: Temp. Capt. J. T. Carson, R.A.M.C.; Temp. Lt. A. F. Martin, R.A.M.C.; Capt. G. S. Davidson, R.A.M.C., S.R.; Temp. Capt. F. P. Wigfield, R.A.M.C.

Italian.

Order of St. Maurice and St. Lazarus.—Officer: Col. T. du B. Whalte, C.M.G. Cavalier: Maj. G. W. W. Ware, D.S.O., R.A.M.C.

Order of the Crown of Italy.—Officer: Col. R. W. Wright, C.M.G., R.A.M.C.

Italian Bronze Medal "della Salute Publica."—Capt. J. J. H. Beckton, R.A.M.C.

PHARMACISTS AND VOLUNTEER SERVICE.

The general rule that men exempted from military service must, unless the tribunal orders to the contrary, join the Volunteers threatened to have a prejudicial effect on the national pharmaceutical service. A pharmacist is expected to be in or about his pharmacy at all times, and, as a matter of fact, most of them still "live over the shop." A large proportion of the qualified assistants are in the Army, so that, as a general rule, there is now only one pharmacist for one shop, and it is obviously impossible for a pharmacist to conform strictly to his obligations under the National Insurance Acts and at the same time dig trenches and fight sham fights. On representations from the Pharmaceutical Society the authorities have recognised the difficulties and taken steps to remove them by issuing a memorandum on the subject, which is taken as an instruction to tribunals, that it is generally inappropriate that practising pharmacists should be required to undertake the Volunteer obligation.

Obituary.

JOSEPH KIDD, M.D. KING'S COLL., ABERD.

THE death occurred of Dr. Joseph Kidd, at Hastings, on August 20th, after a few days' illness, in his ninety-fifth year.

Joseph Kidd was born at Limerick in 1824, the seventeenth of 18 children. His grandfather was a solicitor in the same town, and his father dealt in corn for exportation by ships calling at the Port of Limerick. His mother came of a Quaker family, a fact which had a certain influence in the development of his character. He received a good general and classical education at a Quaker school in Limerick, where he acquired a love for classical authors that he never lost throughout his long life. During his spare hours he often gave clerical assistance in his father's business, which proved of use to him in later years. In 1841, when 17 years of age, he became a pupil of Dr. O'Shaughnessy in Limerick. On the opposite side of the road lived another doctor, one of whose pupils, Richard Quain, afterwards acquired a great reputation as a physician. In 1842 he became assistant to Dr. Walter in Dublin, with whom he obtained experience in surgery, dispensary, and visiting practice, the value of which he always gratefully acknowledged. During his two free hours in the day he attended the course of lectures necessary for the diploma M.R.C.S. Engand, and among all the lectures which he heard Corrigan's impressed him most. He never ceased to regret that his duties at the surgery prevented him from attending Stokes's lectures. For six months he studied midwifery at the Rotunda Hospital in Dublin, where he was a witness of the wonderful reduction in mortality which followed the bold action of the then Master, who secured free ventilation of the wards by the simple process of cutting off the tops of the sash windows so that an open space of 2 feet was left above each window. Dr. Walter had been attracted by the principles of homœopathy, and his interest in the subject was shared by his pupil. Accordingly, when a vacancy for the post of house surgeon at the new Homœopathic Hospital in Hanover-square was advertised in the *Times* Kidd set off at once to London to make a personal application for the post, though he was not yet qualified to practise. On his arrival in London he found that 16 qualified men had already applied for the appointment, which was to be filled up in a month's time. He applied to the College of Surgeons to be admitted to the next examination for the diploma M.R.C.S., which was to take place in three weeks' time, but he was told that only 20 candidates could enter at one time and the list was full. Nothing daunted, he presented himself at the College on the day of examination, and finding a student whose courage had failed him at the eleventh hour he took his place, passed the examination, and shortly afterwards was elected house surgeon to the hospital. At the new Homœopathic Hospital he worked under Dr. Curie, father of Professor Curie, whose name with that of his wife is for ever commemorated in the discovery of radium. Thus he was introduced into practice on homœopathic lines. In 1847 during the Irish famine he was sent over to Bantry Bay by the Homœopathic Hospital to try the effect of the new treatment on the fevers which were devastating the country. An account of his experiences was published in a small volume entitled, "Narrative of a Mission to Ireland during the Famine and Pestilence of 1847."

On his return to England he commenced practice in the City of London, where he met with speedy success. At first his practice lay mainly among City men and their families, who in those days lived in or near the City. But in a few years he attracted patients of all classes from all parts of England and he divided his time between the City and the West-End, in both of which he had consulting-rooms. In 1853 he graduated M.D. of King's College, Aberdeen. Though he commenced his professional life as an avowed homœopathist, his outlook on medicine was always wider than this term would imply, and he never hesitated to adopt any form of treatment that seemed to promise relief. Indeed, it may be said that as he grew older the influence that homœopathy exerted on his practice gradually diminished, and in later years he disclaimed the title of homœopathist. Yet at the same time he always held fast to the opinion that there is a truth contained in the doctrine of homœopathy which at times supplies a clue to the treatment of obscure cases. But his success in practice and the extraordinary influence he exerted on his patients, both high and low, were entirely due to his personal qualities. In person he was tall and handsome, and his manner was unaffected and sympathetic. Sanguine and optimistic to a degree, he inspired his patients with his own confidence in his treatment. He was deeply religious, and his faith in spiritual things found its counterpart in his profound faith in drugs and other forms of treatment. From an early period he adopted the practice of prescribing only one drug at a time so as to be better able to study the action of individual remedies. A large part of his success must be attributed to his careful survey of small details. This habit undoubtedly helped to create the confidence reposed in him by his patients. His fertility of resource was extraordinary and at times was almost embarrassing. He had an accurate knowledge of human nature, which lay at the root of his skilful management of men and women. He trusted little to written notes, but he seldom forgot a name or an important fact. For many years he made a large income but no one cared less for money, and he gave freely to those that needed help, as many a poor patient has gratefully testified.

Though his reputation as a homœopathist cut him off from association with the consulting physicians of the day, except in the celebrated case of Lord Beaconsfield, he had frequent consultations with some of the leading surgeons of his time. Among these may be mentioned Sir James Paget, Sir Henry Thompson, Sir Spencer Wells, Lawson Tait, Lister, and in later years Sir Frederick Treves and Sir Rickman Godlee.

He retained his mental and bodily powers far beyond the ordinary limits of age, and he only retired from practice when he had reached his ninetieth year. He was twice married, first to Sophia, daughter of George Mackern, of Limerick, by whom he had eight children, and secondly to Frances, daughter of Robert Rouse, of Balham, by whom he had seven children. Four sons, Percy, Walter, Leonard, and Frank, and one daughter, Mary, have followed their father's profession.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).—The following awards have been made:—Burney Yeo Scholarship: A. D. Porter, Pembroke College, Cambridge; H. L. Rayner, Balliol College, Oxford. Senior Scholarship, Tanner Prize, and Todd Prize and Medal: L. M. Moody. Class Prizes: Surgery and Psychological Medicine, A. N. M. Davidson; Obstetric Medicine, H. Kamal; Forensic Medicine, H. N. W. Collins; Hygiene and Diseases of Children, E. A. Crichlow.

URBAN VITAL STATISTICS.

(Week ended Sept. 14th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 11·3, against 11·2 and 11·9 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 10·5, or 0·9 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 2·0 in Swindon, 3·3 in Barrow-in Furness, and 3·8 in Gloucester, to 17·8 in Lincoln, 17·9 in Grimsby, and 18·0 in Dudley. The principal epidemic diseases caused 432 deaths, which corresponded to an annual rate of 1·4 per 1000, and included 346 from infantile diarrhœa, 27 from whooping-cough, 24 from diphtheria, 19 from measles, 10 from scarlet fever, and 6 from enteric fever. The deaths from diarrhœa, which had been 305, 435, and 431 in the three preceding weeks, further declined to 346, but were 84 in excess of the number registered in the corresponding week of last year; 71 deaths belonged to London, 32 to Liverpool, 20 to Birmingham, 17 to West Ham, and 14 each to Leeds and Sheffield. The 778 cases of scarlet fever and 953 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 30 and 78 above the respective numbers remaining at the end of the previous week. Of the total deaths in the 96 towns 115 resulted from violence. The causes of 34 deaths were uncertified, and included 4 in Birmingham, and 3 each in Nottingham, Liverpool, Preston, and Hull.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 10·6, against 9·4 and 10·9 per 1000 in the two preceding weeks. The 235 deaths in Glasgow corresponded to an annual rate of 11·0 per 1000, and included 24 from infantile diarrhœa, 6 from whooping-cough, 4 from diphtheria, and 1 each from measles and scarlet fever. The 69 deaths in Edinburgh were equal to a rate of 10·8 per 1000, and included 3 from infantile diarrhœa and 1 each from measles and diphtheria

Irish Towns.—The 146 deaths in Dublin corresponded to an annual rate of 19·1, or 1·8 per 1000 above that recorded in the previous week, and included 24 from infantile diarrhœa and 4 from whooping-cough. The 109 deaths in Belfast were equal to a rate of 14·5 per 1000, and included 9 from infantile diarrhœa.

VITAL STATISTICS OF LONDON DURING AUGUST, 1918.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 3·2 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 4·1, 4·5, and 3·5 per 1000. The lowest rates in August were recorded in Paddington, Hammersmith, the City of Westminster, Hampstead, Holborn, Wandsworth, and Lewisham; and the highest rates in Finsbury, Bethnal Green, Stepney, Southwark, and Bermondsey. The prevalence of scarlet fever was slightly less than in the preceding month; this disease was proportionally most prevalent in Finsbury, Bethnal Green, Stepney, Southwark, Bermondsey, and Battersea. The Metropolitan Asylums Hospitals contained 690 scarlet fever patients at the end of the month, against 786, 846, and 753 at the end of the three preceding months; the weekly admissions averaged 101, against 129, 127, and 105 in the three preceding months. Diphtheria was considerably less prevalent than in any recent month; the greatest proportional prevalence of this disease was recorded in Finsbury, Bethnal Green, Stepney, Southwark, Bermondsey, and Deptford. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1358, 1232, 1179, and 918 at the end of the four preceding months, numbered 886 at the end of August; the weekly admissions averaged 107, against 143, 202, 165, and 122 in the four preceding months. The prevalence of enteric fever was about equal to that in the preceding month; of the 29 cases notified in August 6 belonged to Wandsworth, 3 to Hammersmith, 3 to Woolwich, 2 to Poplar, 2 to Southwark, and 2 to Greenwich. There were 32 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 32, 40, and 23 at the end of the three preceding months; the weekly admissions averaged 6, against 5, 6, and 4 in the three preceding months. Erysipelas was proportionally most prevalent in the City of London, Shoreditch, Bethnal Green, Stepney, and Southwark. The 8 cases of puerperal fever notified during the month included 3 in the City of Westminster, 2 in Chelsea, and 2 in Poplar. Of the 10 cases of cerebro-spinal meningitis 2 belonged to Hackney and 2 to Wandsworth; while of the 4 cases of poliomyelitis 2 belonged to Stepney.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended August 31st the deaths of 3118 London residents were registered, equal to an annual rate of 10·1 per 1000; in the three preceding months the rates had been 13·7, 11·8, and 14·8 per 1000. The death-rates ranged in August from 5·7 in the City of London, 7·3 in Woolwich, 7·8 in Lewisham, 8·1 in St. Marylebone, 8·4 in Hampstead, and 8·6 in Deptford, to 11·2 in Battersea, 11·4 in Holborn, 11·6 in Southwark, 11·9 in Hackney, 12·4 in Shoreditch, and 12·5 in Finsbury. The 3118 deaths from all causes included 244 which were referred to the principal infectious diseases; of these, 39 resulted from measles, 3 from scarlet fever, 27 from diphtheria, 29 from whooping-cough, 7 from enteric fever, and 139 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded during the month in St. Marylebone. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Hammersmith, the City of Westminster, Hampstead, Bermondsey, Camberwell, Lewisham, and Woolwich; and the highest in Fulham, St. Pancras, Stoke Newington, Finsbury, and Bethnal Green. The 39 deaths from measles were 24 below the average number in the corresponding period of the five preceding years, and included 9 in St. Pancras, 5 in Paddington, 4 in Lambeth, 3 in Stepney, and 3 in Wandsworth. The 3 fatal cases of scarlet fever showed a decline of 11 from the average. The 27 deaths from diphtheria were 1 less than the average; of these, 4 belonged to Finsbury, 3 to Islington, 3 to Stepney, and 3 to Southwark. The mortality from whooping-cough was lower than

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING AUGUST, 1918.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1917.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.								Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	**4,026,901**	—	**399**	**404**	—	**29**	—	**8**	**132**	**10**	**4**	**986**	**3·2**	—	**39**	**3**	**27**	**29**	**7**	**139**	**244**	**0·8**	**3118**	**10·1**
West Districts:																								
Paddington	122,507	—	4	8	—	1	—	—	6	—	—	19	2·0	—	5	—	—	3	—	1	9	1·0	90	9·6
Kensington	151,535	—	9	14	—	—	—	1	4	—	—	28	2·4	—	1	1	1	—	—	5	8	0·7	125	10·8
Hammersmith	114,952	—	7	7	—	3	—	—	1	1	—	19	2·2	—	—	—	—	—	1	2	3	0·3	86	9·8
Fulham	145,186	—	13	11	—	1	—	—	7	—	—	32	2·9	—	1	1	—	3	—	14	19	1·7	104	9·3
Chelsea	57,368	—	4	3	—	1	—	2	—	—	—	10	2·3	—	—	—	1	—	—	2	3	0·7	41	9·3
City of Westminster	122,046	—	1	11	—	1	—	3	3	—	—	19	2·0	—	—	—	1	—	—	—	1	0·1	88	9·4
North Districts:																								
St. Marylebone	92,796	—	6	9	—	—	—	—	2	—	—	17	2·4	—	—	—	—	—	—	—	—	—	58	8·1
Hampstead	75,649	—	2	7	—	1	—	—	3	—	—	13	2·2	—	—	—	—	2	—	1	3	0·5	49	8·4
St. Pancras	186,600	—	19	14	—	1	—	—	6	—	—	40	2·8	—	9	—	2	2	—	6	19	1·3	138	9·6
Islington	297,102	—	29	26	—	1	—	—	12	—	—	68	3·0	—	1	—	3	2	—	7	13	0·6	248	10·9
Stoke Newington	47,426	—	3	6	—	—	—	—	1	—	—	10	2·7	—	1	—	1	—	—	3	5	1·4	37	10·2
Hackney	196,598	—	11	16	—	—	—	—	5	2	—	34	2·3	—	1	—	1	—	—	14	16	1·1	179	11·9
Central Districts:																								
Holborn	35,393	—	1	1	—	—	—	—	1	—	—	3	1·1	—	1	—	—	—	—	1	2	0·7	31	11·4
Finsbury	68,011	—	20	12	—	—	—	—	—	—	—	32	6·1	—	—	—	4	—	—	2	6	1·2	65	12·5
City of London	16,138	—	—	1	—	—	—	—	2	—	—	3	2·4	—	—	—	—	—	—	1	1	0·8	7	5·7
East Districts:																								
Shoreditch	89,675	—	9	7	—	1	—	—	9	—	—	26	3·8	—	—	—	—	—	—	6	6	0·9	85	12·4
Bethnal Green	107,362	—	21	16	—	1	—	—	7	1	—	46	5·6	—	2	—	2	2	1	5	12	1·5	91	11·0
Stepney	232,010	—	33	41	—	1	—	—	13	1	2	91	5·1	—	3	1	3	2	1	5	15	0·8	178	10·0
Poplar	143,443	—	14	18	—	2	—	2	3	1	—	40	3·6	—	1	—	2	—	—	5	8	0·7	119	10·8
South Districts:																								
Southwark	167,936	—	51	30	—	2	—	—	10	—	—	93	7·2	—	1	—	3	2	—	6	12	0·9	150	11·6
Bermondsey	107,635	—	17	23	—	1	—	—	2	—	1	44	5·3	—	1	—	—	1	—	2	4	0·5	84	10·2
Lambeth	272,038	—	33	22	—	—	—	—	12	1	—	68	3·3	—	4	—	1	—	1	14	20	1·0	221	10·6
Battersea	150,023	—	22	9	—	—	—	—	2	—	—	33	2·9	—	2	—	1	3	—	5	11	1·0	129	11·2
Wandsworth	300,787	—	17	14	—	6	—	—	9	2	1	49	2·1	—	3	—	—	3	—	12	18	0·8	216	9·4
Camberwell	239,461	—	20	27	—	—	—	—	2	1	—	50	2·7	—	—	—	—	—	—	4	4	0·2	187	1·2
Deptford	103,527	—	8	19	—	—	—	—	1	—	—	28	3·5	—	1	—	—	—	2	6	9	1·1	63	8·6
Greenwich	90,440	—	5	11	—	2	—	—	3	—	—	21	3·0	—	1	—	—	2	—	4	7	1·0	73	10·5
Lewisham	161,405	—	6	13	—	—	—	—	4	—	—	23	1·9	—	—	—	1	1	—	3	5	0·4	97	7·8
Woolwich	131,942	—	14	8	—	3	—	—	2	—	—	27	2·7	—	—	—	—	1	1	3	5	0·5	74	7·3
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

in any preceding month since January, 1917, the deaths numbering 29, against an average of 42; 3 deaths belonged to each of the boroughs of Paddington, Fulham, Battersea, and Wandsworth. The 7 fatal cases of enteric fever were 3 less than the average number; of these, 2 belonged to Deptford. The 139 deaths from diarrhœa and enteritis among children under 2 years of age were about one-third of the average; of these deaths, 14 belonged to Fulham, 14 to Hackney, 14 to Lambeth, and 12 to Wandsworth. In conclusion, it may be stated that the aggregate mortality in London in August from these principal infectious diseases was 57 per cent. below the average.

Medical News.

THE distribution of prizes at Charing Cross Hospital Medical School (University of London) will take place in the out-patients' hall of the hospital on Tuesday, Oct. 1st, at 3 P.M., by Mrs. George Verity. The chair will be taken by Mr. George Verity, chairman of the hospital.

THE SCOTTISH UNIVERSITIES PARLIAMENTARY ASSOCIATION.—Medical practitioners who are graduates of Scottish universities will be interested to learn of the formation of this Association with the following as executive officers:—Chairman: Professor Sir Thomas Oliver, M.D., D.Sc. Honorary Secretaries: Professor W. J. R. Simpson, C.M.G., M.D., and Miss Ellen B. Orr, M.B., Ch.B. The Association has come into existence in consequence of the reconstitution of university representation in the House of Commons, and in view of the probability of a General Election, and the offices are for the present situated at 37, Russell-square, W.C. 1, where communications to the honorary secretaries should be sent.

BOOKS, ETC., RECEIVED.

BUTTERWORTH AND CO., London and Calcutta.
Sir Wm. Ramsay as a Scientist and Man. By Tarini Charan Chaudhuri. With Introduction by Pauchanan Neogi, Ph.D. Rs. 1.8.

HODDER AND STOUGHTON, London.
For Dauntless France. By Laurence Binyon. With Preface by H. E. Paul Cambon. 10s. 6d.

KIMPTON, HENRY, London.
The Wassermann Test. By O. F. Craig, M.D. Yale. 15s.

KING, P. S., London.
Archives of Neurology and Psychiatry from the Pathological Laboratory of the London County Mental Hospitals. Edited by F. W. Mott, F.R.S., Brev. Lt.-Col., R.A.M.C. (T.). 10s. 6d.

LEWIS, H. K., London.
Clinical Case-Taking. By R. D. Keith, M.D. 3s. 6d.

OXFORD PRESS WAREHOUSE, London.
Vaccines and Sera in Military and Civilian Practice. By A. G. Shera (Hon. Capt., R.A.M.C.). Introduction by Sir Clifford Allbutt, M.D., F.R.S. 7s. 6d.

SAUNDERS (W. B.) COMPANY, London and Philadelphia.
Clinical Diagnosis. A Manual of Laboratory Methods. By J. Campbell Todd, M.D. 4th ed., revised and reset. 14s.
Diseases of the Male Urethra. By I. S. Koll, M.D. 14s.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Asylum.—Med. Supt. £1000.
Ashton-under-Lyne District Infirmary, Lancashire.—H.S. £200.
Barnsley, Beckett Hospital.—Two H.S.
Bedford County Hospital.—Res. M.O. £150.
Bethnal Green Infant Welfare Centres, Green-street, E.—Female Doctor. £1 1s. a session.
Birmingham City Sanatorium and Anti-Tuberculosis Centre.—Sen. Asst. M.O. £400.
Birmingham and Midland Hospital for Skin and Urinary Diseases, John Bright-street.—Medical man. 26 guineas. Also Anæsthetist. £20.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Bury St. Edmunds.—Radiographer.
Central London Ophthalmic Hospital, Judd-street, W.C.—H.S. £50.
Chesterfield and North Derbyshire Royal Hospital.—Jun. H.S. £150.
Derby, Derbyshire Royal Infirmary.—H.S. £200.
Dorset County Council.—Female Asst. M.O. £350.
Hospital of St. John and St. Elizabeth, N.W.—Res. M.O. £250.
Isle of Man Mental Hospital.—Asst. M.O. £250.
Leeds City Public Health Department.—Female Med. Asst. £400.
Leicester Corporation Isolation Hospital, Groby-road.—Asst. Res. M.O. £300.
Lindsey, Lincolnshire.—Asst. M.O. £400.
Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Surgeon. £200.
Much Wenlock, Salop, King Edward VII. Memorial Sanatorium.—Temp Asst. Med. Supt. £300.
National Hospital for Paralysed and Epileptic, W.C.—Registrar. £100.
Netley, Welsh Hospital.—Pathologist. Also Two M.O's. £400.
Plymouth, South Devon and East Cornwall Hospital.—M.O. for Venereal Diseases Department. £500.
Rotherham Hospital.—Jun. H.S. £150.
Sheffield Royal Infirmary.—Res. S.O. £200.
Southampton County Borough Isolation Hospital.—Res. M.O. £400.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Dumbarton and Dingle.

Births, Marriages, and Deaths.

BIRTHS.

GREENFIELD.—On Sept. 15th, at 142, Clonmore-street, S.W., the wife of Captain J. G. Greenfield, R.A.M.C., of a daughter.
JACOB.—On Sept. 16th, at South Hill Park, Hampstead, N.W., to Margaret, the wife of Captain L. G. Jacob, R.A.M.C., of a son
LONG.—On Sept. 16th, at Sandhills, Fleet, Hants, the wife of Major H. W. Long, R.A.M.C., of a daughter.

MARRIAGES.

DYKE—SMITH.—On Sept. 9th, at All Saint's Church, Llanelly, Caermarthenshire, Sidney Campbell Dyke, Captain, R.A.M.C., M.B., B.Ch. Oxon., to Janet Mary, younger daughter of Mr. and Mrs. W. Dickson Smith, Yr Hen Dy, Llanelly.
LAKE—STORMONT.—On Sept. 12th, at St. Mary's, Bryanston-square, Richard Lake, F.R.C.S., to Ellen, widow of Arthur Stormont and second daughter of Mr. and Mrs. Sapsworth, of Steyning.
MCCLOY—KYLE.—On August 31st, at Powerscourt Church, Captain John Moorcroft McCloy, R.A.M.C., to Kathleen Theodora, daughter of R. A. Kyle, Belfast.
ROBERTSON—DAVIES.—On Sept. 10th, at the Parish Church, Stroud, Major H. Playfair Robertson, R.A.M.C.(T.F.), to Doris Primrose, younger daughter of Mr. and Mrs. A. B. Davies, Dirleton House, Stroud.
ROPER—STATHAM.—On August 19th, at the British Consulate-General, Alexandria, Richard Roper, Captain, R.A.M.C., to Gladys, widow of the late Alfred Foster Statham and daughter of George Walker and Mrs. Walker, of Cairo.
SELLS—DAVIES.—On Sept. 11th, at St. John's Church, Southend, Roland Sells, Surgeon, R.N., to Frances Elizabeth, eldest daughter of Mr. and Mrs. T. Davies, Priory-street, Carmarthen.

DEATHS.

COLLINS.—On Sept. 12th, very suddenly, at St. Lawrence, Isle of Wight, Henry Beale Collins, Surgeon, R.N. (retired), Medical Officer for Kingston-upon-Thames, aged 66.
COWIE.—On Sept. 3rd, at a Casualty Clearing Station, of wounds, Graham Robertson Cowie, Captain, S.A.M.C., S. African Brigade, R.G.A., aged 27.
DAVIS.—On Sept. 12th, at his residence, Tower-street, West Hartlepool, E. H. Davis, M.R.C.S., J.P., aged 67.
HAMILTON.—On Sept. 16th, suddenly, at Heathfield, Heswall, Robert J. Hamilton, F.R.C.S. Edin.
HEALD.—On Sept. 8th, in hospital abroad, of wounds, Lieutenant W. M. Heald, R.A.M.C., attached Lancashire Fusiliers.
MUSSON.—On Sept. 10th, at King-street, Clitheroe, Lancashire, Alfred William Musson, M.B., B.C. Cantab., aged 53.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

EDITORIAL NOTICE.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. E. Anzà, Rome.
B.—Board of Agriculture and Fisheries, Lond.; Mr. V. Bonney, Lond.; Capt. D. D. Brown, R.A.M.C.(T.); Board of Trade, Lond.; Mr. J. Burns Edinburgh; Mr. C. H. Bubb, Lond.
C.—Charing Cross Hospital Medical School, Lond.; Dr. S. Coupland, Lond.; *Canada*, Lond., Editor of; Capt. J. C. Clayton, R.A.M.C.; Dr. S. D. Clippingdale, Lond.; Sir Anderson Critchett, Bart., C.V.O., Lond.; Mr. J. Cabburn, Lond.
D.—Mr. C. Dodgson, Lond.; Dr. T. V. Dickinson, Lond.; Dr. J. C. Drummond, Lond.
E.—*The Ex-Service Man*, Lond., Editor of; Capt. R. C. Elmslie, R.A.M.C.; Dr. J. W. Eyre, Lond.
F.—Factories, Chief Inspector of, Lond.
G.—Mr. H. Grimsdale, Lond.; Lieut.-Col. M. H. Gordon, C.M.G., R.A.M.C.; Capt. R. L. Gamlen, I.M.S.
H.—Major A. F. Hurst, R.A.M.C.; Dr. T. E. Hill, Durhan; Col. W. Hunter, C.B., A.M.S.
I.—Incorporated Society of Trained Masseuses, Lond.
J.—Dr. W. F. Jackson, Manchester; *Journal of the American Medical Association*, Chicago; Major A. J. Jex-Blake, R.A.M.C.(T.)
K.—Mr. O. H. Kahn, New York; Dr. P. Kidd, Lond.
L.—Local Government Board and Scottish Office, Lond.; Sir W. Arbuthnot Lane, Bart., C.B.; Messrs. Lea and Febiger, Philadelphia; Prof. J. A. Lindsay, Belfast; Dr. E. M. Little, Lond.
M.—Capt. S. A. Moore, N.Z.M.C.; Mr. H. A. Mess, Lond.; Sir John W. Moore, Dublin; Ministry of Food, Lond.; Dr. Doris L. Mackinnon, Lond.; Mr. W. A. Maggs, Lond.
N.—National Association of Trained Masseuses and Masseurs, Ltd., Manchester.
O.—Overseas Military Forces of Canada, Lond., Director-General, Medical Services.
P.—Major J. Phillips, R.A.M.C.; Mrs. M. Proctor, Ballater; Dr. E. Pritchard, Lond.
R.—Mr. S. C. Ranner, Lond.; Royal Sanitary Institute, Lond.; Miss L. Ricci, Lond.; Mr. A. Rutherford, Lond.; Major J. C. A. Rigby, S.A.M.C.
S.—Scottish Universities Parliamentary Association, Lond., Sec. of; Capt. J. S. K. Smith, R.A.M.C.; Scottish Association of Insurance Committees, Motherwell, Sec. of; Dr. Agnes Savill.
T.—Dr. J. B. Tuke, Polton.
W.—Dr. L. A. Weatherly, Bournemouth; Mr. S. G. Watson, Southampton; Mr. R. C. Wingfield, Lond.; Capt. P. Wood, R.A.M.C.; Mr. A. Winterbottom, Lond.; Mr. C. H. Whiteford, Plymouth.
Y.—Capt. E. M. Young, R.A.M.C.(T.)

Offices: 423, STRAND, LONDON, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

"TOY" KINEMATOGRAPHS.

AN inquest was held recently at Islington upon the body of an elderly woman who had been burnt to death in a fire caused by the ignition of a kinematograph film in the house in which she lived. A fellow-lodger had bought a lantern and films for domestic exhibition, but the precise way in which the accident occurred does not appear to have been known. The jury, however, found a verdict of accidental death, exonerating from blame the owner of the machine, and added a recommendation that the sale of "toy" kinema lanterns and films should be prohibited, a suggestion which the coroner endorsed and with which every sensible person should be in agreement. Celluloid films in professional hands and exhibited with due observance of all the precautions prescribed by the law are safe, and the absence of accidents in "picture-palaces" during the past few years is fairly conclusive that the precautions referred to are loyally carried out. Films in the hands of an amateur are quite another matter, and "toys" sold to grown-up persons with a view to their amusing the children pass by an easy transition into the children's hands for self-amusement. For this purpose films are no better fitted than unexploded bombs, not merely because they are made of celluloid, but because, owing to their shape and material, if once unrolled they are apt to coil themselves in unexpected directions, so that they may come in contact with fire when least expected to do so. With children accidental fires are likely to arise from their being given old strips of film pictures to play with, no less than from their being permitted to give exhibitions with the lantern on their own account. No doubt most parents would have too much sense to allow the films in any circumstances out of their own hands, but at the same time we do not forget the casual manner in which some fathers and mothers allow their offspring to handle pistols or to dress up in cotton-wool for festivities conducted round the pyramid of lighted candles represented by a Christmas tree.

A MEDIÆVAL MEDICAL AUTHOR.

"John of Burgundy," surnamed "A la Barbe," was a professor of medicine and a practitioner at Liége, and also the author of some medical works. Two treatises by him written in the later part of the fourteenth century are mentioned. The first upon the plague and the second, in point of time of composition, upon the Corruption of the Air as Cause of the Plague. The French originals are, apparently, lost, but a learned Jew, Benjamin C. Isaac of Carcassone, rendered the last treatise in Hebrew, and a copy of his work may be perused in Manuscript Bibliothèque Nationale, Paris, fonds Hebreu, No. 1191.

The other book may have been one in the library of Charles V. entitled, "Le Traité que les Maistres de Medicare les Astronomies de Paris firent de la Pestelence, que fisique appelle Epydimme en l'An de N.S. 1368." The work translated by Benjamin was dated 1363 and translated about A.D. 1370. In it John of Burgundy speaks of his earlier book, which he says he wrote after the ravages of the plague.

THE METROPOLITAN WATER-SUPPLY DURING APRIL, MAY, AND JUNE, 1918.

RAIN fell in April to the extent of 3·47 in., this being 1·78 of an inch above the average mean rainfall for that month during the previous 35 years. The effect of this increased fall on the raw river waters (Thames, Lee, and New River) according to chemical examination was a deterioration in quality as judged by the albuminoid nitrogen, permanganate, turbidity, and colour tests, and the bacteriological results showed a worse condition. There was a falling off in quality also, with some exceptions, in the filtered waters. Compared with last year, however, the filtered waters generally showed better results on chemical examination and not unsatisfactory results on bacteriological examination. In May the mean rainfall was 1·98 in., which is the average mean rainfall for that month during the previous 35 years. Compared with 1917, both the raw and filtered waters gave better results according to chemical examination, and a similar improvement was shown on bacteriological examination. June was a relatively dry month, the mean rainfall being 1 in., which is 1·23 of an inch below the average mean rainfall for that month during the previous 35 years. The chemical quality of both raw and filtered waters showed a general improvement and, compared with 1917, both chemical and bacteriological examination of the raw waters gave better results, and the filtered waters were satisfactorily free from *B. coli*. The work of control is obviously carried out with that vigilance which in the interests of the public health is demanded.

CERTIFIED OCCUPATIONS.

A NEW list of certified occupations (R. 136, revised, to be obtained from H.M. Stationery Office, price 1*d.*) has just been issued, and comes into operation on Sept. 26th. It supersedes all previous lists; and while it does not touch medical men in their professional capacity—for their cases are dealt with by the Central Medical War Committee—there are reservations with regard to hospitals and institutions which it may be useful to set out. Subject to the obtaining of an individual certificate of exemption, men engaged or employed as under will not be called up for service with the colours, provided they were before Jan. 1st, 1918, and have since been so engaged or employed:—

1. Hospitals, infirmaries, and similar public institutions for the treatment of the sick:

	Man certified if born in or before the year stated. Grade I.	Grade II.
(*a*) Steward	1878	1883
(*b*) Pharmacist, dispenser, male nurse, theatre attendant, mortuary attendant, out-patient porter	1880	1885
(*c*) All other classes of employees	1875	1880

Grade III. men must have been born in or before the year 1893 to obtain exemption.

2. Institutions for lunatics and institutions and houses for mental defectives under the Mental Deficiency Act, 1913:

Man employed in or about, to be treated as if in a certified occupation if recommended by the Board of Control; but the Board will not, without the concurrence of the Ministry of National Service, issue a certificate of recommendation (*a*) to any attendant in Grade I. who was born after 1883, or in Grade II. who was born after 1888; or (*b*) to any other employee in Grade I. who was born after 1878, or in Grade II. who was born after 1888.

THE PHYSICIAN'S TECHNIQUE.

MODERN developments in diagnosis and treatment make a much greater demand on the physician in regard to the use of instruments, especially of the syringe and needle type, than was the case even ten years ago. Their successful and expeditious use demands ingenuity and practice, and, above all, an orderly mind. Dr. H. Willoughby Gardner, senior physician to the Royal Salop Infirmary, has performed a useful service in tabulating in a small volume (Instruments and Apparatus required for the Investigation and Treatment of Medical Cases. Second edition. Shrewsbury: Wilding and Son, Ltd. 30 pp., interleaved. Price 1*s.*) the proceedings in such "medical" operations as aspirating the chest, investigating a fever of unknown (which should perhaps read "uncertain") origin, and administering a vaccine. The directions were drawn up for the use of nurses in the Royal Salop Infirmary, and the call for a second edition shows that they have been found useful by a wider circle, including, we believe, medical students and practitioners. We think that the usefulness of the brochure might be further increased by the introduction of a few simple diagrams, and a third edition would give the author the opportunity of correcting some blemishes in the way of misspelt words (guiac, opthalmoscope) and of a certain indecision in terminations (morph*ia*, strychn*in*, and hyosc*ine*; all occur on the same page).

MEDICAL INVENTIONS: DR. GATLING AND THE GATLING GUN.

To the Editor of THE LANCET.

SIR,—An American medical and military centenary occurred last week, which on account of the prowess of the United States Army in the battlefield seems worthy of notice.

On Sept. 12th, 1818, Dr. Richard Jordan Gatling was born in North Carolina. After spending some years in the practice of medicine, paying especial attention to small-pox, Dr. Gatling turned his fertile brain to the subject of armaments, and in 1861 invented the famous gun which bears his name, a gun which first came into use during the American Civil War, and has since been used all over the world.

I am, Sir, yours faithfully,

S. D. CLIPPINGDALE.

Holland Park Avenue, W., Sept. 15th, 1918.

PS.—In my note in THE LANCET of Dec. 22nd, 1917, upon Medical Inventions the name of Richard Gatling was included.

THE latest fasciculus of the *Athenæum* Subject Index to Periodicals (Bream's Buildings, London, E.C. 4) is a small but useful section dealing with language and literature in two subdivisions: Classified and Oriental; Modern. The price is 2*s.* 6*d.*

Nasal Drill in the Treatment of Adenoids.—An unsigned letter with this title, which we shall be happy to insert when duly vouched for, has reached us from an address in Harley-street, where several medical men have consulting-rooms. There is nothing particular in the contents of the letter to indicate the authorship to us.

Report
ON
THE ESSENTIAL CHARACTERISTICS OF SUCCESSFUL AND UNSUCCESSFUL AVIATORS.

WITH SPECIAL REFERENCE TO TEMPERAMENT.

BY T. S. RIPPON, M.R.C.S., L.R.C.P. LOND.,
CAPTAIN, R.A.M.C.; ATTACHED R.A.F.;
AND
E. G. MANUEL,
LIEUTENANT, R.A.F.

INTRODUCTION.

THE authors of this paper are respectively a pilot of 600 hours' experience and a medical officer stationed at an aerodrome. Their observations led them to the conclusion that the mark of the successful aviator was the possession of a suitable temperament, and in the following columns will be found a description of this faculty as shown in the cases they personally studied. In the second part of the paper will be found certain information obtained from experienced pilots, together with a few brief statistics, which are intended to show that the opinions of the authors are shared by pilots and confirmed by actual flying tests.

THE TEMPERAMENT OF THE SUCCESSFUL AVIATOR.

The enormous number of pilots who have qualified recently is a proof that the aviator is not a "super-man." It is true that we see certain men who perform marvellous "stunts," but when we come to talk to them and examine them with regard to physique and mentality we find that they are quite ordinary people.

Flying is not now confined to the public school boy, the cavalry officer, or the athlete. We take many of our pilots at present from the lower middle classes and some from the artisan class. The most useful method of discovering whether or not the candidate or pupil is likely to become successful is to study the life-history of the pilots whom we know to be efficient. This demonstrates the fact that there are many characteristics common to the successful pilot which are absent from the pupil who has been withdrawn from instruction in flying on account of lack of aptitude.

Sport.—The successful aviator has always the attributes of a sportsman. As a schoolboy he takes part in all forms of athletics and usually played for the school in one game at least. After leaving school he still keeps it up, and probably goes in for other kinds of sport—hunting, shooting, fishing, rowing, golfing, motoring, &c. He joins the Air Force because he is keen on flying, as it appeals to his sporting proclivities.

Character.—He possesses resolution, initiative, presence of mind, sense of humour, judgment; is alert, cheerful, optimistic, happy-go-lucky, generally a good fellow, and frequently lacking in imagination.

Age.—The majority of successful pilots are under 25 years of age, the explanation obviously being that the resiliency of youth enables them to accustom themselves more rapidly to a new occupation and to recover quickly from the strain and stress they are called upon to undergo.

High-spirited.—Anyone who has lived with pilots for any length of time cannot fail to notice that they possess in a very high degree a fund of animal spirits and excessive vitality.

Amusements.—When they have finished flying for the day their favourite amusements are theatres, music (chiefly ragtime), cards, and dancing, and it appears necessary for the well-being of the average pilot that he should indulge in a really riotous evening at least once or twice a month.

Alcohol.—Alcohol is taken freely by the older men, but the young, fit pilot serving at home hardly ever touches it. It is not necessary to legislate on the subject of alcohol for pilots; they are well aware of the danger of taking too much before flying. The desire for alcohol comes with "nerves," staleness and stress of service, but the fit pilot needs no stimulant. In so far that on active service it enables a man to sleep after an exciting day and promotes good-fellowship in the mess, its effect may be said to be beneficial, but for the young cadet and the fit pilot on home stations it is entirely unnecessary.

Marriage.—The majority of successful pilots are unmarried, and our own observations tend to show that marriage is a definite handicap owing to the increased sense of responsibility. If a man marries after he has flown several hundred hours, and flying has become automatic, marriage may not apparently affect him for some time. In some cases it may even make him steadier and more careful, but sooner or later it will in most cases have a definitely deteriorating effect.

Although this objection could be advanced for any branch of the service, yet a careful consideration will show that there are special reasons why marriage is an exceptional disadvantage to the pupil under instruction. The training of officers for the infantry, for example, is practically unaccompanied by danger, and it is only when drafted overseas that they may be said to begin to know fear. By this time, however, they have learned all their duties, and the discipline acquired will help them to face their possibilities. The pupil under instruction in flying, on the other hand, whilst learning to fly in conjunction with his other training, faces great dangers, in some ways almost as great as he will ever be called upon to undergo. Being generally in England, he has not the feeling that he is in the actual zone of hostilities, and the risks he takes are, as one might say, undergone in cold blood.

The unmarried man (faced with the possibility of crashing whilst doing his first solo) in most cases dismisses the thought or takes the risk in the same way as a horse-rider puts his mount at a fence in strange country. The married man has the knowledge of what death may mean to his wife and family, and, moreover, has the opportunity in many cases of discussing it with his wife and manufacturing in his own home a condition of nervousness which eventually becomes so great that he confesses to his instructor that he has completely lost his nerve.

Occupation.—We found that the best type of pilot was seldom drawn from a sedentary occupation, that those who had lived a sheltered life were not so good as those who had roughed it, and we discovered the interesting fact that most of those pilots who before they joined were in business or doing clerical work possessed considerable sporting aptitude, and as soon as they had finished work would hurry to the cricket or football field.

Hands.—One of the most important characteristics we have noticed in successful aviators is "hands." This characteristic is difficult to define, but may be described as follows. The horse-rider with good hands is able to sense the mentality of a horse by the feel of the reins and also to convey his desires accurately to his mount. We have never known of a man who has consistently been in the first flight in the hunting field making anything but a good pilot.

In the same way the pilot with good hands senses unconsciously the various movements of the aeroplane, and rectifies any unusual or abnormal evolutions almost before they occur. The skilful pilot appears to anticipate "bumps." He is invariably a graceful flyer, never unconsciously throws an undue strain on the machine, just as a good riding man will never make a horse's mouth bleed.

"Hands" appear to be congenital and cannot be acquired, although they may be improved and *vice versa*. Motor-car and motor-cycle racing, owing to the powerful grip that must be maintained to keep the machine on the track, tend to spoil "hands" even if this faculty was previously in existence. We have produced a mechanical contrivance for the purpose of demonstrating the difference between light and heavy-handed pilots with which we are at present experimenting and which we hope will prove of practical value.

The fighting scout.—The fighting scout is usually the enthusiastic youngster, keen on flying, full of what one might call the "joy of life," possessing an average intelligence, but knowing little or nothing of the details of his machine or engine; he has little or no imagination, no sense of responsibility, keen sense of humour, able to think and act quickly, and endowed to a high degree with the afore-mentioned quality, "hands." He very seldom takes his work seriously, but looks upon "Hun-strafing" as a great game.

Mechanical knowledge.—The question whether this type should possess a knowledge of mechanism, and of the whys and wherefores of flying is a very debatable point. The authors, however, desire to express their definite conviction that the less the fighting scout pilot knows about his machine from a mechanical point of view the better. From the very nature of his work he must be prepared to throw the machine about, and at times subject it to such strains that did he realise how near he was to the breaking-point, his nerve would go very quickly. It has not been possible as yet to obtain a sufficient body of evidence in support of this statement, owing to the unwillingness of pilots to confess their ignorance of engines, for reasons of *amour-propre*. Some of the most experienced and prominent pilots of the present day, however, uphold our conviction.

Examples of Successful Pilots.

The following are examples of flying officers who have demonstrated their ability to fly and also to fight.

1. Lieut. D. Educated at Stonyhurst. Joined the R.F.C. after leaving school at age of 17. Played football, cricket, racquets, fives, and golf—obtained his first eleven colours at school. Rode, hunted, and drove a motor. Was self-confident, self-reliant, quiet, had a keen sense of humour, was able to make a speech in public, and did not mind being alone. Courage and bravery with him was a "cult." After a distinguished career in France, and being decorated with the D.S O., he was wounded and became a test pilot. He was subsequently killed in an accident.

2. Capt. O. He was brought up on a farm and learned farming from a practical standpoint. He came of a stock of sporting farmers and was accustomed to hunt and shoot regularly as a boy. At the early age of 17 he took over the entire management of one of his father's farms which had previously been unsuccessful, and conducted it in such an able manner that it showed a profit at the end of the year. When war broke out he joined the infantry, where he obtained the Military Cross; he subsequently joined the R.F.C., and after obtaining a bar to his M.C. he had a serious accident, which has up to the present prevented him from resuming flying.

3. Lieut. L. This officer was brought up on a farm in South Africa. He was the descendant of the original Dutch emigrants to this colony. He was a skilful big game hunter and had the primitive instincts of hunting and fighting in a marked degree. At regular intervals he would disappear from his father's farm and wander by himself for months in the forest, subsequently returning and resuming his occupation. After a strenuous time with the infantry and unfit for further service on account of wounds, he became a pilot, and eventually was killed in France.

TABLE I.—*Answers to Questionaire.*

Series 1.

Serial number.	Age.	No. of hours flying.	Whether on active service.	Types of machines flown.	Married or single.	Occupation in civil life.	Is alcohol necessary?	Do you ride a horse?	Hunt?	Motor?	Favourite amusement.	Is marriage a handicap.
1	21	250	Yes.	Bleriot; Bristol; Avro; Sopwith, &c.	S.	Schoolboy.	No.	Yes	Yes	Yes	Cards.	Slightly
2	31	1600	No.	All types.	M.	—	,,	,,	,,	,,	Women.	Yes
3	26	500	Yes	Scouts.	S.	Farmer.	Yes	,,	,,	,,	Sports.	,,
4	26	250	,,	Curtis; Avro; R.E.8; B.E.2 C.; E.L.	S.	Army.	No	,,	,,	,,	Motoring.	,,
5	25	70	,,	M.F.S.H.; F.E.8; B.E.	M.	Mechan. engineer.	,,	No	No	,,	,,	,,
6	35	4000*	,,	Farman; Bleriot; Dep. &c.; all sorts.	M.	Engineer.	,,	,,	,,	,,	Natural history.	No
7	24	350	,,	F.E.; D.H.4, 6,	S.	Manufacturer.	Yes (mod.)	,,	,,	,,	Theatres.	Yes
8	27	150	No	B.E.; R.E.; D.H.4, 6, 9.	S.	Barrister.	,,	Yes	,,	,,	,,	,,
9	20	568	,,	D.H.4, 5, 6, 9; Pups, Martyde, &c.	M.	Nil.	,,	,,	,,	,,	Shooting.	Doubtful
10	27	800	Yes	Scouts.	M.	Motoring (hobby).	Doubtful	,,	Yes	,,	Betting.	Yes
11	30	450	,,	H.F.; Vickers; D.H.2, 5.	S.	Naval architect.	No	No	No	,,	Theatres.	,,
12	18	175	No	Camel; D.H.4, 6, 9; S.E.5, &c.	S.	Schoolboy.	Yes (to some)	Yes	,,	,,	Dancing.	,,
13	20	200	Yes	34 types.	S.	,,	No	No	,,	,,	Motoring.	,,
14	21	600	,,	30 types.	S.	Student.	,,	Yes	,,	,,	—	No
15	26	1700	,,	B.E.; D.H.4, 5, 6, 9; S.P.A.D., &c.	S.	Land agent.	Yes (mod.)	No	,,	,,	Theatres.	Yes
16	22	160	,,	B.E.; Camels; S.E.5; Scouts.	S.	—	No	Yes	—	—	—	,,
17	30	70	No	D.H.4; R.E.8; B.E., &c.	S.	Mechanic.	,,	,,	Yes	Yes	Theatres, skating.	No
18	24	365	Yes	Everything.	M.	Motor mechanic.	No or mod.	No	No	,,	Billiards.	,,
19	26	350	,,	D.H.4, 6, 9; Handley Page, &c.	S.	Engineer.	No	Yes	,,	,,	Whisky.	Yes
20	33	3000*	,,	All types.	S.	,,	,,	,,	,,	,,	Motoring.	Slight
21	23	400	No	B.E.; A.W.; R.E.; B. Fighter.	S.	—	,,	,,	,,	,,	Flying.	—
22	25	300	,,	D.H.4-9; F.E.; B. Handley Page.	S.	Various.	,,	,,	Yes	,,	—	Yes
23	24	215	,,	21 types.	S.	Draughtsman.	,,	,,	No	,,	Music.	Doubtful
24	26	1000	Yes	All types.	—	—	,,	,,	Yes	,,	Sports and women.	No
25	23	370	No	All sorts.	S.	None.	,,	,,	,,	,,	Open air.	Yes
26	30	130	Yes	B.E.; R.E.; F.E.; A.W.; D.H.4.	S.	Teaching.	,,	No	No	No	Theatres.	No
27	19	75	,,	Camel; S.E.5; D.H.4-5; A.W.	S.	Schoolboy.	,,	Yes	,,	Yes	—	,,
28	18	150	,,	B. Fighter; D.H.4; S.E 5; R.E.S.	S.	Student.	,,	No	Yes	,,	Theatres.	Yes
29	19	70	,,	Pups; Camel's, &c.	S.	—	,,	—	—	,,	Billiards.	No
30	23	200	,,	Rotary's and Stationary's.	S.	Horse breeding.	,,	Yes	No	,,	Flying.	Yes
31	—	—	—	—	M.	Farmer.	,,	,,	,,	,,	—	No
32	20	120	Yes	Camel's; D.H.4 &c.	S.	—	,,	,,	Yes	,,	—	,,
33	19	290	,,	All types.	S.	Draughtsman.	,,	,,	,,	,,	—	Doubtful
34	25	400	,,	Mostly two-seaters.	S.	Civil Service.	,,	,,	,,	,,	Theatres.	—
35	21	1000	,,	44 types.	S.	Schoolboy.	,,	No	No	,,	Flying.	Yes
36	20	200	No	14 ,,	S.	School.	Yes (mod.)	,,	,,	,,	,,	,,
37	27	4000	,,	D.H.1-10; Flying Boats, &c.	M.	Pilot.	No	Yes	Yes	,,	Shooting.	,,
38	21	350	,,	22 types.	S.	School.	,,	,,	,,	,,	Killing Huns	,,
39	22	400	Yes	S.E.5; D.H.5 (Scouts).	S.	Student.	,,	,,	,,	,,	and dancing.	,,
40	25	2000	,,	All types.	S.	Nil.	,,	,,	No	,,	Billiards.	,,
41	22	1000	,,	,,	S.	Mechan. engineer.	,,	,,	,,	,,	—	,,
42	22	350	,,	,,	S.	—	,,	,,	Yes	,,	—	No
43	21	350	,,	Scouts.	M.	Nil.	Yes	,,	,,	,,	Skating.	Yes
44	19½	150	,,	D.H. 4-6-9; A.W.; R.E.; B.E., &c.	S.	School.	No	,,	No	,,	?	,,
45	24	150	No	Several types.	S.	Accountant.	,,	No	,,	,,	Sports (any kind).	Doubtful
46	24	500	,,	All stationary engines.	S.	Prospector.	Doubtful	,,	,,	No	Dancing.	Yes

Series 2.

1	27	600	Yes	B.E.; R.E.; A.W.; D.H.; Handley Page.	M.	Dyer.	Yes	Yes	Yes	Yes	Racing.	No
2	19	25	,,	Curtis; Avro; B.E.; Pup; Camel, &c.	S.	Motor engineer.	No	,,	,,	,,	Shooting.	Yes
3	23	95	No	D.H.5; S.E.5; Camel; Pup.	S.	,,	Doubtful	,,	—	,,	,,	No
4	22	490	Yes	F.E.; Camel; S.E.5, &c.	S.	Electrical engineer.	,,	,,	No	,,	—	Yes
5	19	300	,,	Pup; Triplane; Camel; D.H. 9.	S.	Engineer.	No	,,	Yes	,,	Sports.	No
6	26	800	,,	26 types.	S.	,,	,,	,,	,,	,,	Women and sports.	Yes
7	25	165	,,	Pup; S.P.A.D.; S.E.5; Camel; Dolphin.	S.	Manager.	,,	No	No	,,	Athletics.	No
8	19	364	,,	A.W.; M.F.	S.	Camb. undergrad.	,,	Yes	,,	,,	Motor cycling.	Yes
9	26	150	,,	M.F.; B.E.; R.E.; D.H.4; D.H.9.	S.	Accountant.	,,	,,	,,	No	Reading.	?
10	27	275	,,	B.E.; A.W.; Camel; Avro.	S.	Engineer.	Yes	,,	,,	Yes	Theatres.	Yes
11	20	120	,,	M.F.; B.E.; D.H.6; Bristol fighter.	S.	Farmer.	Doubtful	,,	,,	,,	,,	,,
12	25	320	,,	G.W.; D.H.; F.E.; Avro; B.E.; Camel; Pup.	S.	,,	No	,,	Yes	,,	Sport.	No
13	19	209	,,	D.H.6; B.E.; R.E.8; Avro.	S.	Student.	,,	,,	No	,,	Music.	Yes
14	26	196	,,	M.F.; B.E.; R.E.8.	S.	Window designer and dresser.	,,	No	,,	,,	Motoring.	—
15	20	200	,,	Curtis; Bristol; Newport; D.H.5; S.E.5.	S.	Schoolmaster.	,,	Yes	Yes	,,	Boating and swimming.	—

* About.

Mechan., mechanical; Mod., moderation.

4. Capt. C. Educated at Harrow and Cambridge. Played cricket, racquets, football, went in for swimming and gymnastics. Obtained his house colours for cricket and would have also got his first eleven colours but was expelled. At Cambridge he would probably have got his blue but for the fact that he was sent down. From the University he went to South Africa, where he played cricket to a considerable extent. He joined a cavalry regiment when war broke out, and subsequently transferred to the R.F.C. His favourite amusements are shooting and fishing. He rides, hunts, and motors. He does not read much, but prefers H. G. Wells when he does. He hates poetry, and prefers men's society to women. He was subsequently shot down by an anti-aircraft shell in France.

RESULTS OF INQUIRIES ADDRESSED TO FLYING MEN.

In order to satisfy ourselves as to the accuracy of our opinions we decided first of all to apply to fully qualified pilots for information, and issued a questionaire in which information on the following points was requested.

Age.—Number of hours flying. Whether in France with R.A.F. Types of machines flown.—Married or single.—What is the essential characteristic of a good pilot?—Is alcohol necessary for aviators?—What is your occupation in civil life?—What games and sports did you go in for? What was your special game? Do you ride a horse? Hunt? Motor?—What is your favourite (1) author; (2) poet; (3) amusement; (4) composer?—Is marriage a handicap to an aviator?—What are your views on the selection of candidates with regard to temperament, &c.?

We issued about 250 forms, some to the pilots in our own mess. We gave others to visitors who landed on the aerodrome, and several delivery pilots who flew to France took with them copies and distributed them among the pilots serving on active service. Out of the first issue only 47 were returned to us completed, and with one exception (which was of a frivolous nature) they have been faithfully reproduced. We subsequently issued 200 more and circulated them among pilots in various hospitals and obtained 15 more.

The result of an examination of the replies to the questionaire showed that our opinions agreed with the ideas of the pilots, and some of the answers were very instructive. The authors wish to point out, however, that in their opinion the pilots who answered the questionaire consisted chiefly of the older and more experienced men, and therefore cannot be said to be representative of all classes of aviators. When the questionaire was given to the younger and more frivolous pilots they frequently regarded it as a joke or stated that they had no opinion to express on the question as to the characteristics of pilots.

There are one or two other points which should be noticed also—viz., the question, "Do you ride a horse?" was answered almost invariably in the affirmative, but this does not mean that the pilot was necessarily an expert horseman. Moreover, the question, "Do you hunt?" was misunderstood in one case, the answer showing that the candidate did not realise that "fox-hunting" was meant.

It will also be noticed that in a few cases the replies are distinctly in opposition to the opinions expressed by the authors, but taking the answers generally it will be found that the opinions of the pilots as expressed in the questionaire agree in a remarkable extent with our own. The suggestion which we desire to make, which it is hoped will be of practical value to medical officers, is that every medical examination should be preceded by a few minutes' conversation to ascertain the temperament or make-up of the individual, after which the usual routine methods may be carried out. (See Table I.)

QUESTIONAIRE—SERIES I.

What is the essential characteristic of a good pilot?

The following answers were received:—

1. Quick decisions, control of all actions, and regular habits.
2. To deal quick with all kinds of situation.
3. Alertness and the clear-headedness of a sportsman.
4. Keenness, guts, judgment, and common sense.
5. Youth (under 30), must be quick thinking and alert, good nerves, and of a generally sporting nature.
6. Sound judgment rather than good nerves.
7. Good eyesight, strong, sound heart and lungs, young, alert.
8. A "sport."
9. Common sense as regards his flying.
10. Dash and courage, combined with coolness and quick decision.
11. Abandonment of care.
12. Lack of imagination. Ability to think and act quickly.
13. Light-handedness. No nerve, very little imagination. Quickness in thought and action. Perfect health. Mechanical mind.
14. No imagination. No nerves. Total abstainer. Very accurate shot. Full of confidence.
15. Has good hands. (Able to get the best out of a machine without hurting it.)
16. Clear-headed and quick decision, and no nerves.
17. Perfect health. Plenty of sport and exercise. A clear head.
18. Good judgment essential. Skill and daring, combined with a certain amount of reserve.
19. Keenness, health, guts, and cool head.
20. Sound judgment, must not be over-cautious; prepared to take risks, and reasonably sound physically.
21. Steadiness, accuracy of judgment, coolness and ability to rise to occasions.
22. Youth and nerve for a stunt pilot. Cool head and sporting instinct.
23. Good sportsman.
24. ?
25. Common sense.
26. Good judgment, quickness of decisions.
27. Guts.
28. Clear and steady brain, always prepared for an emergency.
29. Good nerves. Anyone who thinks and plays most outdoor sports and shoots.
30. For war purposes plenty of guts and good hands and nerves.
31. A capacity to keep and use one's head under all circumstances.
32. Clear head and plenty of pluck.
33. A happy-go-lucky; cool head.
34. Guts for a war pilot.
35. There is none.
36. Lacking in imagination. Confidence, but not over-confident.
37. Good eye for judgment and common sense.
38.
39. Cool judgment.
40. "Guts" and a sound head.
41. To be a sound pilot and to have "gut."
42. Guts.
43. Good health, confidence, and nerve. He should be steady. Know how to enjoy himself without over-doing it. To be a stunter he should know as little about machines and engines as possible. Good sportsman, with public school training. A colonial or outdoor life. Show great keenness in his work. Be always wanting to fly. That he should be a man of either colonial type or a public school boy with a good education and manners—i.e., colonial, public school man, jockey and hunting man, racing motorist and cyclist, cavalry officers.
44. Fitness. Common sense.
45. Plenty of nerve. Lack of imagination, and to be of a type that intends not to be beaten by anything.
46. "Guts."

What are your views on the selection of candidates with regard to temperament, &c.?

1. Should be a sporting man, who has absolute control of his nerves, but he may be highly strung and emotional and sentimental, and a man with determination.
2. Different for all types of pilots required.
3. A certain atmosphere about the man which cannot be defined, but is immediately recognised by an old pilot.
4. I consider that when figures are available a great many men will be turned down at once who would go a certain distance before they proved dud, saving considerable time and expense.
5. As a general rule, select no one showing much eccentricity.
6. Have not given the subject sufficient thought to justify an answer.
7. Cheerful and bright disposition.
8. Good appearance, alert, active, decisive, 20–30 years of age.
9. Young, sporting, healthy.
10. Should be moderately highly strung, with an alert brain, but able to keep cool in an emergency and act with lightning rapidity.
11. Youth, 18–24. Spirited, quick, courageous—not caring a damn for anyone or anything. (My experience very strongly suggests that a pilot should never be persuaded to fly if he is not absolutely fit or desirous of flying. Hucks, for instance, has had a very lengthy experience only made possible by not flying when not so inclined.)
12. Candidates should be young and of a cheery disposition and keen.
13. They should have taken a certain amount of interest in aviation from its earliest days. They should be of a mechanical turn of mind. They should be quick but not nervy. They should have very little fear and a good temper.
14. Should have an engineering bent.
15. Should be a public school boy—used to an open-air life—not a clerk—should be a cavalryman or jockey or hunting man.
16. Bright, cheerful, a thorough sportsman, and keen on his job.
17. A man that is fond of sport should, in my opinion, make an excellent and reliable pilot. A man that is not sharp and alert will never be much use as a pilot.
18. A keen sportsman, not too high-spirited. One who can sum up the ordinary risks of flying without increasing same by silly, unnecessary stunting; fairly good education.
19. Two types: (1) Youth, health, and lack of responsibility for scouts and fighters. (2) Older men, steady nerves, and more cautious for other types.
20. A man who can drive a car well and hold his head in a tight corner should be an excellent pilot. Should be bright, quick, and naturally alert, a man good at swimming and all-round athletics.
21. I consider that the youth who is of an "artistic temperament," or otherwise highly strung, makes a sounder and more accurate pilot than one who possesses mere strength. Yachtsmen seem to make good pilots.
22. I think if the candidate is a sportsman, and in other respects of normal temperament, there is no reason why he should not become a good pilot. Probably the best age is 19–20–21. Lots of pilots of 20 and over will never be stunt pilots owing to imagination or foresight, but they may be exceedingly good, reliable, and steady pilots.
23. Keenness to fly ought to cover everything. If a candidate is genuinely keen he'll do. A steady nerve is most useful.
24.
25. They ought to be of good organic constitution, have good eyes, and be of a cheery disposition.
26. Aptitude for sports best indication.
27.
28. One who is of quiet, steady bearing, with a fair knowledge of motors.
29. Like all games (outdoor), cannot be judged by appearance or first few hours' dual or solo flying.
30. It is hard to say at first sight, but common-sense and coolness should count most.
31. One's will-power must control one's imagination.
32. Strong nerves and a light touch.

33. A man who does not boom himself up.
34. I think it extremely difficult to decide at first appearances, which I have proved to be very misleading in many cases. If a man is not keen on and fond of flying he rarely makes good. Coolness in an emergency and a rapid appreciation of the correct thing to do in an emergency is essential.
35. Young, should have led an ordinary outdoor healthy existence. For war work he should be very ignorant of aeroplanes, but keen enough to watch good flying.
36. (1) Find out whether he is really fond of flying and keen, or whether he joined to get a soft job. (2) Previous service in infantry as a private. The knowledge of engines: (1) Necessary if you don't trust your mechanic. (2) Not necessary if you have a good mechanic you can trust. If you have not got an extensive knowledge of engines and you have a dud engine you go on and don't worry. If you have a knowledge of engines you get wind up.
37. Anyone good at games or a good car-driver will make a good pilot in all probability, but not in every case.
38.
39. He must be coolness personified, but with an ever-present alertness. A bright outlook on everything and always cheery. Honour will make him stout.
40. "Cheery-and-full-of-life" men are the best pupils and turn out well. Excitable people are very often good, but they do not last long as a rule. Even-tempered and patient people are the best, but "health is better than wealth."
41. Good health is essential.
42.
43. He must be good at sports and lead an active outdoor life. Strong nerves and patience.
44. They should be fit in every way. Under 30 years of age. Unmarried. They should not have too much imagination or be of an excitable disposition.
45. To be able to take part in everything and yet keep within limits.
46. (1) Lack of imagination, and (2) endurance.

QUESTIONAIRE—SERIES II.

What is the essential characteristic of a good pilot?

1. To realise danger on the ground but not notice it in the air. Coolness in difficulty.
2. Self-confidence.
3. Keenness and good condition (physically).
4. Coolness, quickness in emergency, and general common sense.
5. Steady head; good constitution; self-confidence.
6. Sporting, and for choice one who has travelled and roughed it.
7. Cool head, confidence, and alertness.
8. Quickness of thought and action.
9. Quick thinker.
10. Keenness and bravery toned with discretion.
11. Sportsmanship and pluck.
12. Level headed, steady, not excitable.
13. Concentration, rapid calculation and decision.
14. A quiet and steady disposition but always cheerful.
15. Good health, a clear head, strong nerves, keenness for excitement.

What are your views on the selection of candidates with regard to temperament, &c.?

1. An apparently nervous man will sometimes make the best pilot; this sort of man is very often only nervous of personality.
2. A nervous temperament does not necessarily handicap a pilot; often it is the reverse. Quickness of thought and lack of hesitation essential.
3. Self-confidence and ability to act on one's initiative.
4. An acceptable candidate should be a man of cheery, equable temperament, tending more towards the "devil-may-care" attitude than otherwise.
5.
6. One who is not too cocksure of himself and gives an impression of knowing overmuch. A shy, nervous man in most cases makes a very good scout pilot, and the man who shows great determination usually makes a heavy-handed pilot. The Colonial is at his best at the age of about 19 to 23, and the Englishman who has done little or no travelling from 23 to 26. The Englishman who has travelled vastly and roughed it makes an exceedingly good all-round man and is probably the best of all.
7. A good selection would be an athletic, outdoor living man, the rougher the game he plays the better the pilot he will make.
8. A volatile temperament is best, but does not last long. Steadiness of nerves is good for pilots during C.B. (counter-battery) shoots, but for others the essential thing is to be quick in appreciating a situation; those who do this on the ground can do it in the air.
9. Moderate smokers and drinkers. Men that go in for all kinds of sports.
10. If a man is keen to fly give him a chance to make good. Some extraordinary types of men make splendid pilots.
11. Select any sportsmanlike public schoolboy, it is then only a question of nerve, as 90 per cent. of men can fly. The best war pilot is nearly always an infantry officer with trench warfare experience.
12. Young—not highly strung—with as little imagination as possible.
13. A new pilot should always be ready to take advice, always wide awake, temperate in everything, independent, certain amount of originality.
14. Flying does not suit highly-strung or excitable people; in my opinion, it needs a man who can decide on the instant and who can fly without thinking of actually what he is doing. Anyone who can judge distance well would make a good pilot.
15. The most successful seem to be those who are not too young—steady, ready to act without thinking first, and a good sporting instinct.

THE PHYSICAL AND PSYCHOLOGICAL ASPECTS OF FLYING.

The physical condition should always be compared with the temperament of the individual, but the physical examination should always be preceded by the psychological. *Mens sana in corpore sano* is the ideal type, the healthy mind being the first essential qualification.

If we compare a first-class boxer with an aviator we notice certain similar characteristics. The essential attributes of a good boxer are courage, quickness, good muscular coördination, and ability to anticipate his opponent's intentions so as to deliver his own blow first. Powerful muscles and a large lung capacity are no indication whether a man is likely to be successful as a boxer unless he has the temperament as well.

The possession of a suitable temperament is the criterion of the individual's ability to fly; the possession of a suitable physique is the indication whether he can fly to great heights or whether he will stand the strains and stress of continuous flying. The following examples show that physical fitness without a suitable temperament is no indication of ability to fly. The cases mentioned were all able to pass the routine tests for physical condition, but after a course of instruction in elementary flying were sent by their instructors for a medical examination with statements that they showed no aptitude and recommended them to be withdrawn from instruction as "temperamentally unfit."

Examples of Unsuccessful Canaidates.

1. Second Lieut. W., aged 18, single, clerk. Used to play football for boy scouts on Saturdays. Board school education. As soon as he realised that eventually he would have to fly by himself he showed signs of "nervous breakdown," complained of headache and loss of confidence.
2. Second Lieut. S., aged 18½, single, fitter in engineering works. Played games slightly. Educated at technical school. Loss of confidence when ready for solo.
3. Lieut. J. S., aged 24, single, architect's clerk. Played games slightly. Education fairly good. After failing to pass as a cadet in the R.F.A. he joined the R.F.C. When ready for solo refused on account of fear.
4. Lieut. S., aged 23, married, one child, electrical engineer. Went in for cycle racing. Education poor. Was quite happy in the air as long as the instructor was there, but could not face the responsibility of flying alone. Joined on account of pay and avoiding infantry.
5. Second Lieut. R., single, artist. Games: Nil. Education fair. Dreamy, emotional, artistic. Showed no aptitude to fly.
6. Second Lieut. M., single, purser's assistant 4½ years. Games: Nil. Education fair. Stammers. Not keen on flying. Joined because he was always asked why he was not in the Army. Showed no aptitude.
7. Second Lieut. W., aged 22, single, clerk. Games: Slight. Education fair. Had a "breakdown" before the war. Began to stammer on active service. Admitted to hospital with laryngitis. During his stay a crashed pilot was brought into the ward and he fainted. Subsequently gave up flying.
8. Second Lieut. P., aged 19, single, at school. Played games considerably. Education excellent. Hereditary nervous temperament. Stammers when excited. Hypochondriac. After 18 hours dual showed no aptitude.
9. Second Lieut. T. D. W., aged 18, single, chartered accountant apprentice. No games of consequence. Higher grade school education. Crashed on first and second solo; was able to obtain his elementary instruction certificate at the School of Instruction, but stated that he now has a sense of impending disaster, which suggests a breakdown before long.

All the above cases passed the physiological tests for respiration, circulation, balance, &c.

Examples of Physically Unfit Men with a Suitable Temperament who were Successful Aviators.

1. Lieut. W. A pilot of great determination, resolution, and strong personality, alert, cheerful, and optimistic. Physically he was muscular, plethoric, cyanosed complexion, and short-winded. When I knew him he was flying regularly as a ferry pilot, but stated that he disliked flying over 3000 feet.
2. Lieut. T. An alert, happy-go-lucky schoolboy type. Fond of dancing and rag-time, has a keen sense of humour, is inclined to be obstinate, very keen on flying, and very jealous of his reputation as a pilot. Apparently possesses little or no imagination and knows little of the details or construction of engines or aeroplanes. Physically he is "borderline" on tests. In addition he is a confirmed mouth-breather, and there is a systolic murmur at the apex of the heart, which is displaced downwards. His present occupation is a test pilot (Camels, D.H.4 and D.H.9). He flies every day at an average height of 10,000 feet, and usually rolls, loops, and spins. He flew a Bristol fighter to 21,000 feet under my own (T. S. R.) personal observation and showed no signs of distress.
3. Lieut. C. An alert, cheerful type. Flew 60 hours in France as an observer and was successful in various combats. Showed considerable aptitude in flying. Physically he failed to pass the tests.
4. Second Lieut. M. C. Cardio-vascular debility. Cyanosis. Cold hands and feet. Distress at heights. Flying regularly as a ferry pilot.
5. Second Lieut. Y. Early phthisis. Flying to France several times a week. Has to be kept under careful observation and given a rest occasionally.
6. Second Lieut. J. Hypertrophy and dilatation of heart; occasional attacks of syncope. Fainted in the air on two occasions. Is now an instructor. Previously has been a ferry pilot and test pilot.
7. Second Lieut. B. Cardio-vascular debility. History of malaria and dysentery. Fainting at heights. Flying in India.

MARRIAGE.

The following figures show the percentage of married and single who qualified in elementary flying from Sept. 29th, 1917, to Jan. 24th, 1918, at a School of Instruction:—

Total number of pupils, 369; married, 36; single, 33.
Number of single men who failed to qualify, 13 = 4 per cent.
" married " " " 6 = 17 "

Table II. shows that the married man takes longer to learn to fly than the single man. It will be noticed that the dates of arrival and departure of the married men are compared with those of a single man who qualified in the same month, as the number of flying hours per day varies from month to month according to the weather. The age of the married men was probably greater than the single, but they were all within age-limit standard.

TABLE II.

(A) Date of arrival at school of instruction. (B) Date of departure.

Married.			Single.		
Name.	(A)	(B)	Name.	(A)	(B)
2nd Lt. P. S. ...	23- 3-18	25- 4-18	Lt. L. O. S. ...	23- 3-18	15- 4-18
2nd Lt. G. L. ...	3- 3-18	27- 3-18	2nd Lt. C. L. ...	3- 3-18	27- 3-18
2nd Lt. A. M. ...	9- 2-18	18- 4-18	2nd Lt. E. K. ...	9- 2-18	3- 4-18
2nd Lt. A. M. ...	21- 1-18	18- 3-18	2nd Lt. A. M. ...	21- 1-18	2- 2-18
2nd Lt. H. H. ...	21- 1-18	11- 3-18	2nd Lt. G. F. ...	21- 1-18	2- 2-18
2nd Lt. C. S. ...	16- 1-18	22- 3-18	Lt. J. J. ...	16- 1-18	1- 2-18
2nd Lt. C. C. ...	16- 1-18	4- 3-18	2nd Lt. K. H. ...	16- 1-18	4- 3-18
2nd Lt. T. A. ...	8- 1-18	2- 4-18	2nd Lt. L. B. ...	7- 1-18	20- 2-18
2nd Lt. J. C. ...	8- 1-18	23- 3-18	2nd Lt. H. A. ...	7- 1-18	5- 2-18
Capt. G.	26-12-17	7- 4-18	Capt. D. ...	26-12-17	2- 2-18
2nd Lt. T. O. ...	20-12-17	3- 4-18	2nd Lt. H. K. ...	20-12-17	2- 2-18
2nd Lt. J. W. ...	17-12-17	19- 2-18	2nd Lt. W. R. ...	17-12-17	9- 1-18
2nd Lt. F. W. S.	21-11-17	15- 2-18	2nd Lt. R. W. ...	21-11-17	3- 2-18
2nd Lt. W. T. ...	7-11-17	29-11-17	2nd Lt. T. M. ...	7-11-17	23-11-17
2nd Lt. F. G. ...	9-10-17	17-12-17	2nd Lt. H. S. ...	9-10-17	18-10-17

Analysis of Table II.

	Married.	Single.
Total number of days under instruction	936	433
Average ,, ,, ,, ,, ...	62·5	28·86

OBSERVATION OF THE CHARACTERISTICS OF UNSUCCESSFUL PUPILS UNDER INSTRUCTION.

We desire to draw attention briefly to the following physical disabilities which are associated with temperamentally unfit pupils: (1) Stammering; (2) minor defects of vision; (3) adenoids, or nasal obstruction; (4) poor peripheral circulation; (5) loss of tone (soft and flabby muscles, moist and cold hands, pale complexion, stomach splash, &c.). We do not suggest that any one of these defects necessarily disqualifies a pilot, but that their presence indicates a tendency to an unsatisfactory temperament.

The temperament of the unsuccessful pupil is the antithesis of that we have previously described, but we will enumerate the main points:—

1. *Early life.*—Did not play games at school to any extent, and seldom went in for sports. Amusements usually indoor.

2. *Occupation.*—Usually clerical or sedentary.

3. *Age.*—Candidates of 30 years or over were hardly ever successful.

4. *Marriage.*—The married men are rarely successful, and if they do qualify, rapidly suffer from "nerves."

5. *Object in joining the Flying Service.*—Usually on account of pay or else to avoid the infantry. Do not show any enthusiasm about flying.

6. *Mentally.*—They are sluggish, dreamy, emotional, self-conscious, lacking in sense of humour, and devoid of that elusive quality commonly known as "guts."

7. *The family history* is often suggestive. One of our unsuccessful pupils inherited a nervous temperament from his mother; another, who was lacking in judgment and also an alcoholic, was the child of an epileptic; a third gave a history of his father committing suicide; and so on.

8. *Whilst under instruction* the unsuccessful pilot flies erratically, grips the control lever much too rigidly, makes the necessary movements jerkily, over-rectifies all errors, and to the onlookers gives one the same impression as a badly ridden horse. In short, he does not possess "hands."

THE STRAIN AND STRESS OF FLYING.

BY LIEUT. E. G. MANUEL, R.A.F.

The prospective pilot, whilst a pupil under instruction, very quickly shows whether he has aptitude for flying when he goes up for his first solo. It is then, properly speaking, that the strain begins. The first solo is a great strain, but in some respects is not so great as are the second and third; firstly, because the pupil is keen to do his flight, and, secondly, he has not before realised the unconscious confidence he has in the presence of his instructor, and the utter loneliness he feels when in control of a machine of which he knows very little.

The strain of ordinary straightforward aerodrome flying, to the qualified pilot, consists chiefly in the liability to engine failure and the fear of crashing the machine on landing. In cross-country flying the strain is much greater; there is still the fear of engine failure, which, in this case, may occur over unsuitable country, with the certainty of a crash. Added to this the pilot has to find his way, try to read a map, work his controls, and keep an eye on the compass. In addition he may meet unfavourable weather, and be given the choice of flying at a dangerously low altitude or going above the clouds and frequently getting lost, with the added anxiety that in the event of engine failure he cannot see the kind of country he is over until at too low altitude to pick on suitable landing ground. In cross-country flying fog or ground mist is the pilot's greatest enemy. Unless exceptionally lucky he is bound to lose his way, and in the event of a forced landing is absolutely helpless and perfectly certain to crash into some obstruction.

The strain on the single-seater pilot is greater than on the two-seater pilot, as, in addition, he has a sense of loneliness. Irrespective of the type of machine, this is accentuated at heights in the majority of cases. Inability to stand heights is not infrequently due as much to psychological causes as to distress caused by insufficient oxygen.

Flying Overseas.

There is certainly a cumulative strain on the pilot, greater than any other form of aviation. Duties overseas consist of: (1) artillery observation; (2) offensive and defensive patrols; (3) trench strafing; (4) night bombing; (5) day bombing; (6) long reconnaissance and photography.

One of the greatest strains on the pilot's nerves is when he sees one of his friends go down in flames, or, after arriving at the mess, he learns that so-and-so is missing. When this occurs with monotonous regularity it is very hard for the pilot to maintain his mental equilibrium. There is no branch of the service where losses are more keenly felt.

In long reconnaissance and bombing raids the chief anxiety is again one of engine failure and forced landing in enemy country, or getting detached from one's flight for some reason or other and becoming a comparatively easy prey to a group of hostile machines. Probably the strain that tells most on the pilot is the constant anti-aircraft fire. He begins by disliking it intensely, has a period of complete indifference, followed by an obsession that he has escaped so long that he must be hit at any moment. Though this strain is felt by all pilots, whatever their duties, it is most marked in those on fighting machines, two-seaters or scouts. This work usually consists of patrolling a definite strip of enemy country for a period of two to three hours. They have to prevent any hostile machine from crossing the lines and engage in combat any group of enemy machines they may come across. Whilst the chance of a fight is eagerly welcomed as a distraction, it frequently happens that no combatants appear for long periods, and the pilots are left without any occupation to distract them from the constant anti-aircraft fire, which, from the fact that the machines are constantly passing and repassing the same strip of territory, allows unrivalled opportunity for good shooting.

During the last few months great attention has been paid to low flying (at 500 feet or less) attacking the enemy with machine-gun fire in his trenches, whilst marching along the roads, in rest billets behind the line, &c. The strain of this kind of flying is great, as the machine is subjected to a tremendous amount of machine-gun fire, and, when working in conjunction with an infantry attack, is continually in, or very near, the barrage fire put up by the artillery. A hit that might only temporarily disable the aeroplane and give the pilot time to recover from it flying at a height is probably fatal when so near the ground.

THE Glasgow University Unionist Association have decided to invite Sir Henry Craik and Sir Watson Cheyne, the present Members for Glasgow and Aberdeen and Edinburgh and St. Andrews Universities, to become Unionist candidates for the new constituency of the four combined universities at the next election.

MIDDLESEX HOSPITAL.—The opening of the winter session of the Medical School will take place on Tuesday, Oct. 1st, at 3 o'clock, when Lieutenant-General T. H. J. C. Goodwin, Director-General Army Medical Service, will occupy the chair. The prizes will be distributed by the Dowager Countess Brassey, and Dr. C. H. Browning, the director of the hospital's pathological laboratories, will deliver the opening address, the subject being the Importance of Research Work in Connexion with National Health.

SOME REMARKS ON
CHRONIC INTESTINAL STASIS.

BY SIR W. ARBUTHNOT LANE, BART., M.S. LOND., F.R.C.S. ENG.,
CONSULTING SURGEON, GUY'S HOSPITAL, ETC.

FOOD products that are absorbed from the gastro-intestinal tract are carried by the portal vein to the liver. In that organ they undergo a process of purification. Certain organisms or toxins are destroyed or are converted into materials harmless to the tissues through which they are to pass, and are eliminated by the several excretory organs, as the kidneys, lungs, and skin.

The thyroid gland secretes material which acts as a stimulant to the tissues and keeps their metabolism working at a normal rate. This substance has been obtained in a pure form at the Mayo Clinic, and is described in the Transactions of that clinic for 1917 by Mr. E. C. Kendall. This discovery is an admirable example of the excellent research work carried on in that institution. The adrenals and the pituitary gland also act in controlling certain tissue changes by means of their secretions. The spleen produces a proportion of leucocytes and destroys a number of effete red corpuscles. Many other instances of specific glandular activity will readily occur to the reader.

Effects of Deleterious Materials on Liver.

If material of a deleterious character greater in quantity than the liver can deal with is absorbed by the radicles of the portal system, certain changes must result in all these tissues, or rather the tendencies to such changes must exist.

I have demonstrated in the anatomy of the labourer that the habitual repetition of the tendency to change results in the fixation of the change, and later in its exaggeration, so that a condition is finally obtained which differs completely from the normal and is perfectly characteristic of the occupation of the individual. In consequence the skeleton becomes unable in many instances to perform its original normal function. I refer, for example, to the ankylosis of the vertebræ and of the costo-vertebral joints in the coal-heaver. I might multiply illustrations indefinitely.

The excessive strain on the function of the liver cells, whereby poisons are rendered harmless, must after a sufficient time in a similar manner result in damage to the liver, so that it is no longer able to perform many of its normal functions efficiently.

Here I would remind the reader that in the labourer every change that is developed in the pursuit of his occupation with the object of improving his usefulness for his special function tends to shorten his life. This is also illustrated by the bands which develop about the intestines in the line of strain. At first these help to support the intestines and to obviate their prolapse. Later they form obstacles to the free passage of material through the portion of the bowel to which they are attached. I believe that a similar effort on the part of the cells of the liver to meet the habitual flooding with deleterious matter brings about a change in them that is at first advantageous and enables them to perform their increased functions more efficiently for a time. This, however, sooner or later results in their undergoing degenerative processes which render them less and less efficient.

Just as every change, which the skeleton of the labourer undergoes in order to accommodate itself to its surroundings, tends to shorten the life of the individual, so do all the changes, which the organs undergo to meet their surroundings in association with and dependent upon those in the gastro-intestinal tract, tend to shorten life. Such changes in the organs are classified as diseases.

Effects on Other Organs.

I do not know whether bacteria and toxins from the intestine reach the systemic circulation through the thoracic duct and so escape destruction in the liver, though I am aware that they reach the regional lymphatics, since Dr. N. Mutch has obtained bacteria from that source on many occasions in cases of intestinal stasis.

The deleterious materials, whatever they are, which pass unchanged through the liver and get into the systemic circulation damage every tissue in the body; none can escape their baneful effect. The liver also suffers through its nutritive supply from the hepatic artery, and its usefulness is still further depreciated in consequence.

The impure blood would appear to act in a similar manner on the thyroid gland. Clinically, in a typical case of intestinal auto-intoxication the thyroid gland at first enlarges as if stimulated to excessive function. As time goes on it steadily diminishes in size till the isthmus can no longer be felt by the finger. Associated with this atrophy symptoms develop that suggest a defective function of this gland.

It would seem fair to argue by analogy that the adrenal and pituitary glands behave in a similar manner in their attempt to meet the disability that results from the supply to their tissues of blood contaminated with deleterious products. The evidence of the defective action of the adrenal is suggested by the very typical pigmentation of the skin which develops in chronic intestinal stasis. I have described on many occasions the deleterious action of the impure blood on many others of the tissues in the body.

How the blood-forming organs behave we can judge by the anæmia which is always associated with this condition sooner or later. This anæmia would appear to be the result of flooding of these organs with impure blood which depresses their functional activity.

The kidneys suffer from the filtration through them of irritating products, and changes take place in consequence after a time. The evidence that these degenerative processes are due to the presence of toxic material in the blood is shown by the fact that all manifestations tend to disappear with striking rapidity when the source of fouling of the blood stream has been removed.

Secondary Infections.

Owing to the lowered resisting power of the tissues to the entry of the organisms foci of infection are readily developed. The septic products of such infection are carried directly into the systemic circulation and are not filtered through the liver. Consequently the effects which are exerted on the body by these secondary infections are much more harmful. This can readily be illustrated.

A patient suffering from intestinal auto-intoxication becomes affected by rheumatoid arthritis. The progress of this disease may be slow till the additional development of pyorrhœa occurs. The absorption of the toxins from the diseased gums into the blood stream at once exaggerates in a remarkable manner the rate of progress of the rheumatoidal condition. The curing of the pyorrhœa by local application or by the unnecessary removal of the affected teeth immediately effects a very marked improvement in the condition of the diseased joints. This is sometimes so apparent as to lead casual observers to assume that the rheumatoidal infection was consequent solely on the infection of the gums, since they do not realise that both infections have a common causal antecedent in the lowered vitality which results from chronic intestinal stasis. At the same time, it shows very clearly how one secondary infection may accentuate another and how necessary it is to search for such infections. Especially is this the case when the infecting organism is the same in the two foci.

The freeing of the portal circulation from products of auto-intoxication at once stops the progress of the rheumatoid arthritis and facilitates the rapid and permanent cure of the affected gums.

Another instance of a secondary infection of the alimentary canal is that which results in pernicious anæmia, a disease apparently due to hæmolysis produced by an unknown specific organism.

Changes in Liver, Breast, and Pancreas.

Not only is the liver tissue damaged by an excess of one of its functions and by the impure blood supplied for its nutrition through the hepatic artery, which also contains toxic material, but its tissues can also be injured through the ducts which permeate every portion of its structure. Dr. Mutch has demonstrated very clearly by cultures made from cases of chronic intestinal stasis operated on by me that the whole length of the small intestine, including the duodenum, often contains infective organisms, and there is no doubt whatever that these organisms may extend along the ducts of the liver and pancreas and produce changes in the walls of the ducts and in the cells and connective tissues of these organs. I suggested the probability of the existence of this sequence in my earliest papers on stasis, and it is satisfactory that these hypotheses have received such definite confirmation from Dr. Mutch's extensive and elaborate researches.

Now let us consider the conditions or changes that develop in the liver in consequence of the infection of its ducts, from the flooding of its tissues with impure blood through the hepatic artery, and from the excessive demand made upon it by the abnormal quantity of toxic materials and of organisms which are carried to it through the portal circulation. That definite and important degenerative changes must result sooner or later in varying degrees from these influences is undeniable. At the same time, we are not sufficiently well informed to be able to determine how each of these agents acts. We know enough to recognise some of the effects.

For instance, we are very familiar with cholecystitis and the associated changes in the larger ducts of the liver. We also know that gall-stones are produced by infection of the gall-bladder, and are sometimes formed in the ducts of the liver. Later results are the blocking of the cystic duct, the common bile duct, and of the intestine by gall-stones, together with cancer of the cystic and common bile ducts, from the irritation produced by the presence of these stones. How far primary cancer of the liver is produced by irritation of the terminal ducts or of the cells and connective tissue by impure blood I am not in a position to demonstrate, though by analogy there would appear to be but little doubt as to the causal association.

I think the various forms of cirrhosis are explicable in the same way. For instance, the distribution of the changes in Hanot's disease suggests an ascending infection of the biliary ducts, while those of portal cirrhosis appear to be due to toxins reaching the liver through the portal vein.

In every advanced case of chronic intestinal stasis the presence of induration of the pancreas can be demonstrated, and there is no doubt that carcinoma develops in these fibrous patches. I showed many years ago that it develops in the breast, which undergoes similar changes from intestinal auto-intoxication. I notice that since I described this sequence as occurring in the breast a number of others have observed and described it. Originally the suggestion was received with ridicule.

It is now generally recognised that traumatism is a necessary causal factor in the development of cancer, though it is probably not the sole factor. Traumatism as a determining factor can readily be demonstrated in all carcinomatous ulcers of the gastro-intestinal tract, whether produced by pressure or impact, as in ulcers of the tongue, pylorus, and large bowel, or by the exercise of excessive strain, as in ulcers of the lesser curvature of the stomach. In cancer of the breast and pancreas the traumatism is apparently effected by the damage sustained by groups of cells from contraction of the fibrous tissue about them, this formation of fibrous tissue being the result of auto-intoxication. It is probable that a similar change due to the same cause antedates the development of cancer in the liver, but this cannot be demonstrated in the same clear manner as in the breast and pancreas. The calculi which form in the pancreatic ducts owe their origin to septic infection, as in the case of the biliary calculi.

Thyroid Gland.

I have already pointed out that in the earlier stages of stasis the thyroid appears to enlarge as if stimulated to perform its function more efficiently. Later it becomes small and hard. That is what one would expect to happen on general principles. McCarrison[1] has demonstrated that the flooding of the intestine with certain fæcal products causes goitrous changes; that these changes disappear if the supply of these products be stopped and if the patient be treated with an intestinal antiseptic; and that these goitrous changes are influenced favourably by the use of such vaccines as tend to sterilise the contents of the small intestine. Also, that a similar result follows the removal of the intestinal infection by operation.

It would appear reasonable to conclude from McCarrison's experiments and observations that—as goitre results from the contamination of the water- or food-supply with ordinary fæcal matter and can be cured by the cessation of the infection—goitrous conditions as they exist among people whose food is not contaminated by sewage products are consequent on the absorption from the small intestine of material which has become contaminated by fæcal organisms which have extended up to its stagnating contents from the large bowel. This is the view that I have put forward for many years, and which has received ample confirmation from McCarrison's elaborate researches. In a number of cases of goitre in its several varieties occurring in patients whose food could not have been infected by sewage products and in whom radiography demonstrated the presence of well-marked stasis, and cultures taken from the contents of the small intestine at varying levels yielded organisms, the freeing of the ileal effluent by colectomy or by simpler means had resulted in the restoration of the thyroid body to its normal size.

The results of these operations differ materially in the various forms of thyroidal affections. While the simple goitrous enlargement yields rapidly the size of the adenomatous thyroid diminishes more slowly. The exophthalmic thyroid always benefits in that a remarkable improvement takes place in the patient's health, weight, and happiness, although the special manifestations of the disease do not always disappear completely. Instances of the results of some of these operations are described by Dr. Mutch in "The Operative Treatment of Chronic Intestinal Stasis" (fourth edition).

[1] THE LANCET, 1913, i., 223.

THE DIAGNOSIS AND TREATMENT OF MALARIA.

SOME PRACTICAL HINTS FOR PRACTITIONERS AT HOME, WITH NOTES ON 750 CASES TREATED IN SCOTLAND DURING THE PAST YEAR.

BY D. G. MARSHALL, M.B., C.M. EDIN.,
MAJOR, I.M.S.; CONSULTANT IN MALARIA, SCOTTISH COMMAND.

SINCE the beginning of the war there has been a constant stream into this country from various parts of the world of men suffering from malaria, and this is likely to continue for some years, even after the end of the war. Most of these cases are, or will be, treated in military hospitals, but a very large percentage develop attacks while on leave or after leaving the Service, when they have to be attended by general practitioners. The following notes are written in a plain fashion, devoid of unnecessary detail or complex statistics, in the hope that they may prove of help.

Incidentally these notes may present points of interest to those engaged in the treatment of large numbers of malaria cases, the system of treatment and the results obtained serving as a series of "control" observations for comparison with the results when other and more varied systems have been adopted. Of the 750 cases only one ended fatally, death being due to blackwater fever; the majority returned to duty, only a small percentage, chiefly elderly men broken down by service and the after-effects of malaria, being discharged the Service. Under the system of treatment adopted *relapses* only amounted to 10 per cent. of cases in hospital, or, including those known to have relapsed after discharge, 15 per cent. In the vast majority of relapses rise of temperature only occurred on one day. The attack seldom lasted more than two or three days, these results evidently being due to the efficient administration of quinine.

Diagnosis.

This can only be reached with absolute certainty by finding the malarial parasite in the blood; staining films by Leishman's method is a very simple process, and any medical man who has a microscope with an oil-immersion lens should, with a little practice, be able to detect them; the parasites, however, are often present in very scanty numbers in the peripheral blood, and prolonged search, maybe of several slides, is necessary before a negative diagnosis is made. When microscopic examination is not feasible, thin films of blood on slides or cover-glasses should be made, preferably about six hours after the height of the febrile attack, and sent for examination to some competent authority.

In the absence of facilities for microscopical examination, consideration of the following points will be found useful in arriving at a correct diagnosis.

History of previous attacks.—This is often of great assistance, the patients themselves practically making the diagnosis; a misleading feature is that patients often assert that though they have served for long periods in malarious countries they never suffered from malaria. Probably they

had slight attacks which passed unnoticed or contracted the disease on the journey home. Several cases of this kind have come under my notice.

A colonel who had not been on the sick list during two years' service in Salonika developed typical malaria three months after returning home.

Another, a senior officer of the I.M.S., who vowed he had not suffered from malaria for ten years, developed a temperature after an operation; it was supposed to be influenza, but examination showed the presence of large numbers of malaria parasites in the blood.

Since writing the above an interesting report of two fatal cases has been published. Both men had served abroad; neither had a history of previous malaria. One was diagnosed and treated as influenza, or "P.U.O."; the other was sent to a fever hospital as a case of typhoid.

Nature of attack.—What the old British soldier in India used to describe as "fever and ague," the presence of a distinct cold and hot stage, is fairly typical, but two very important points must be borne in mind. In the æstivo-autumnal or "malignant" type of fever the cold stage is not very marked; there may even be an absence of rigor. The temperature in the hot stage is only moderately high; it is more apt to become remittent in type; this is the kind of case often wrongly diagnosed as enteric.

On the other hand, in old malarials with a temperature due not to malaria but to other causes, as septic infection, syphilis, &c., the attack is apt to assume the character of a typical malarial attack—a cold stage, with severe rigor, rapid rise of temperature, subsiding in the course of a few hours, but recurring daily. A man recently admitted with a diagnosis of malarial relapse was found to be suffering from cerebro-spinal meningitis, which ended fatally in three days.

It may be mentioned here that attacks of this nature are often set up in persons who have previously suffered from malaria by surgical interference, especially in connexion with the genital organs, as passing a catheter on a man or a uterine sound in the case of a woman. If any operation is necessary it is advisable to keep the patient under the influence of quinine prior to and for some days after the operation.

Periodicity.—This is one of the most marked features of malaria. In a typical case of benign tertian the attack occurs every third day, in quartan (an unusual form) every fourth day, in multiple infections the attacks may develop every day, in quotidian, they almost always commence with clock-like regularity at about the same hour. This periodicity is also marked in the complications and sequelæ, such as hæmorrhages, exacerbations of skin affections and nervous or gastric disturbances, which may occur at regular intervals, possibly of weeks.

Pulse-rate.—It may be accepted as an axiom that in malaria the pulse curve always follows the temperature curve, and recognition of this fact may help in the differential diagnosis of enteric and other acute febrile affections in which the pulse is not markedly accelerated in the early stages.

Enlargement of spleen.—Except early in an initial attack this is invariably present, and can be recognised by careful percussion and palpation. During an acute attack there is often some degree of pain in the splenic region due to peri-splenitis; in old-standing cases the enlargement may be very marked, extending to, or even past, the middle line.

Effect of large doses of quinine.—In the absence of microscopic examination of the blood this is one of the surest methods; it is very seldem that a case of uncomplicated malaria resists such treatment, but it must be given in adequate doses, at least 30 gr. in the 24 hours; small doses are not only useless, but may be harmful. If a case which appears to be malarial resists such doses repeated for several days some complication should be suspected.

Complications and Possible Errors in Diagnosis.

Complications are many, varied, and apt to be misleading. Space does not permit a lengthy consideration of them.

They occur both during acute attacks and later, all systems of the body being affected. Severe or ambiguous gastro-intestinal symptoms, often simulating appendicitis or dysentery; pneumonia, hæmoptysis, localised and wandering œdema, and other signs of implication of the circulatory system; nervous phenomena, from the extremely fatal "cerebral" form of the disease to obscure signs of peripheral neuritis, are often encountered. Mental disturbance is common, and varies from "confusion" to the more severe forms.

In the case of persons who have been exposed to malarial infection, whether there is a previous history of malaria or not, the probability of malaria being the cause should always be borne in mind when the diagnosis is doubtful. The important point is not to make the mistake of treating local symptoms and leaving the real factor untreated. In reference to this two cases may be quoted:—

1. A lady returning from a visit to India, with no history of malaria, developed fever on the voyage. The case was diagnosed by the ship's surgeon as tonsillitis. After she had suffered with a temperature of 103–105° F. for several days I was asked to see her. When it was suggested to the surgeon that it was a case of acute malaria, he replied, "I never thought of it." The temperature came down and all local symptoms disappeared under quinine, but for some days the patient was in a very critical condition.

2. An officer, who had been treated for some weeks by a civil practitioner, was admitted to hospital last year; owing to attacks of hæmoptysis, pain in hip-joint, &c., the case had been diagnosed as acute tuberculosis and a most gloomy prognosis had been given. Examination of the blood revealed the presence of many malarial parasites. He eventually made a perfect recovery.

Blackwater fever.—This most serious complication so often occurs after the patient has returned to this country that it is worthy of special notice. The onset, which generally follows a chill or is perhaps attributed to a large dose of quinine, is usually sudden, with an initial rigor; there is severe and persistent vomiting, the urine soon assumes the typical "porter"-like colour, is passed in small amount, and there may be actual suppression. On the second or third day, if the patient survives, the skin becomes of an extremely bright-yellow colour. Death may result in the early stage from hyperpyrexia, or later from suppression of urine or cardiac failure.

Treatment.

The following are the routine methods employed in the special malaria wards, Bangour, to which most of the 750 cases under notice have been admitted. This resolves chiefly into the measures to be adopted (1) prior to an attack; (2) during an acute attack; (4) after an attack, to prevent relapses; (4) treatment of complications.

Prior to an attack, especially an initial one, there are often malaise, vague shivering sensations and gastro-intestinal disturbance. It is sound treatment in such cases to administer a dose of calomel followed by a saline aperient, with liberal doses of quinine as early as possible; by these means the threatened attack may be aborted.

During an acute attack careful nursing is necessary. In the cold stage the patient requires, and probably demands, much extra clothing; in the hot stage there is a danger of chill owing to the patient wanting to dispense with what he considers unnecessary clothing; when the sweating stage is past the patient should be carefully rubbed down and provided with warm dry clothing and bedding.

During the cold stage there is often distressing vomiting and severe depression; the vomiting will generally be allayed by sinapisms; in severe cases a hypodermic of morphia may be necessary, but this and the use of alcoholic stimulants should be employed with caution for fear of developing a habit.

During the hot stages there is generally intense headache, with a flushed face and marked photophobia, the patient, even in benign cases, lapsing into a state of semi-coma, the temperature rising to perhaps 105–106° with a correspondingly quick pulse. In ordinary cases cold affusions, the use of an ice cap, with a dose of aspirin and caffeine will relieve the headache. In the severe "cerebral" forms it may be advisable to administer quinine intramuscularly or intravenously, but this is seldom necessary at home. In the treatment of the 750 cases under notice neither of these methods has been employed in any case.

When the urgent symptoms have subsided and the temperature is falling, give 15 gr. of quinine and repeat the dose twice daily, giving a dose on the following day two hours before the attack is due. Continue this for three days or until the attack is definitely checked. In malignant cases the hot stage is often so prolonged that the temperature assumes a remittent type and may not come down to normal for several days; in this case quinine must be given irrespective of the temperature.

The acute attacks, if properly treated, usually subside in 2–3 days, and then the treatment for the prevention of relapses must be adopted.

Prevention of Relapses.

The means to be adopted with this aim are: (1) general treatment of patients and (2) administration of drugs.

General treatment is most important. Chill being one of the most common causes of relapses, patients must be well clothed and carefully advised to avoid chills. On the slightest sign of discomfort or shivering after exposure they should take at least 10 gr. of quinine. A bracing climate is desirable, preferably at a fair altitude. The special wards at Bangour are about 500 feet above sea level, and to this the satisfactory results in the treatment there are to a great extent attributable. The whole muscular system, including the heart muscle, suffers loss of tone in malaria. This loss is not likely to be made good by keeping patients lolling about the wards in a listless manner day by day. After an acute attack patients are kept in bed for a week, they are then given graduated exercises, culminating in the third week with route marches of 2 or 3 miles morning and afternoon or work in the garden or workshops. As soon as possible the fullest possible diet is given, occasionally supplemented by an issue of beer or stout.

Drugs.—After an acute attack the patient is put on 20 gr. of quinine per diem for a week, 10 gr. night and morning after a meal, for the next week 5 gr. night and morning, and for the third 5 gr. after breakfast. As a rule, they are discharged at the end of this period, but if kept in hospital

they are put back to the 20, 10, 5 gr. system. On discharge to duty arrangements are made by which it is ensured that the man will continue the prophylactic use of quinine for two months. In hospital the quinine is administered in the form of hydrobromide, with a small quantity of dilute hydrobromic acid; this salt causes less discomfort or cinchonism than any other.

Excepting in a few cases when it has been deemed advisable to administer it by the rectum, quinine is always administered by the mouth, the frequent reports in the medical journals of inability to give it by this means being due to faulty methods.

If the patient complains that quinine causes sickness or other discomfort, what can be done? Give 10 minims of laudanum half an hour before the quinine. Give it in "compressed" tabloid form or cachets instead of in solution, or in fractional doses—e.g., instead of giving 10 gr. morning and evening give 2 gr. every two hours, and so on until the desired amount has been taken.

In the few exceptional cases where the patient is absolutely unable to take quinine or it fails to check the fever methylene blue forms a very efficient substitute. It is given in the form of pill, 3 gr. with 1 gr. extract of hyoscyamus three times a day. There are many impure samples on the market which are likely to cause bladder irritation, tenesmus, and other discomfort. Methylene blue (pure medicinal) should always be prescribed. It has on many occasions been found to prevent relapses when quinine, by the mouth, intramuscular or intravenous injections, in other hospitals has failed. In cases with a history of blackwater fever it is always used in preference to quinine.

Quinoidin has been tried in many cases with satisfactory results; it causes less discomfort than quinine, and has the advantage of being much cheaper. Galyl is said to afford good results in obstinate cases, but its employment has not so far been found necessary. When the gastric irritation usually associated with an acute attack has subsided the patients are placed on a tonic, as follows:—

℞ Ferri et ammon. citrat... ... ... gr. x.
Liq. arsen. hydrochlor. ... ... m iii.–vi.
Tinct. nucis vomicæ ... ... m v.
Aq. chloroformi ... ... ad ℥ i., t.d.s.

The combination of arsenic and quinine often prevents relapses when quinine alone, even in large doses, fails.

The Treatment of Complications.

Blackwater fever.—The indications for treatment are: (1) Restrain the temperature, (2) promote free secretion of urine, (3) arrest vomiting, (4) maintain action of heart.

1. The ordinary antipyretics should not be employed, careful sponging is generally sufficient.

2. Keep the patient warm, apply hot poultices to the loins, give plenty of diluents—tea, coffee, barley, Vichy, or soda-water; ordinary diuretics are contraindicated, but the following (Sternberg's) mixture is useful:—

℞ Sodii bicarb. ... ... gr. x.
Liq. hydrarg. perchlor.... ... ... m xv.
Aquam... ... ... ad ℥ i.

given every two hours for the first day and every three hours afterwards until the urine clears. If suppression threatens or supervenes, renew poultices frequently, with dry cupping over the kidneys, and administer normal saline by enemata, subcutaneous infusion, or intravenously, with strophanthus by the mouth. Pilocarpine is contraindicated.

3. The ordinary methods—sinapisms, ice, champagne, &c., often fail. Morphia hypodermically is often efficacious and also diminishes the general distress. The best treatment in severe cases is counter irritation of the vagus by painting liquor epispasticus over the course of the nerve on the left side of the neck; this often arrests the vomiting in an hour or two when all other methods have failed.

4. The usual heart stimulants may be employed; strophanthus is better than digitalis; the use of alcohol except in the form of champagne is inadvisable.

There is generally hepatic congestion with constipation; a dose of calomel and an aperient should be given early in the attack.

It is a much disputed question whether quinine should be given or not. Founded on Bastianelli's rule the following lines of treatment are recommended. 1. If parasites are found in the blood during or after an attack the bihydrochlorides or hydrobromides should be given, but in fractional doses; the ordinary sulphate should not be prescribed. 2. If parasites are absent do not give quinine. 3. If in doubt—e.g., if a thorough examination of the blood is not possible, avoid quinine.

In the treatment of other complications it must be remembered that they are in great measure due to malaria, and the administration of quinine should never be neglected. It is often found that in persons returning from malarious countries affections which have resisted all other forms of treatment for long periods yield readily to quinine.

NOTES ON THE SYMPTOMATOLOGY AND MORBID ANATOMY OF SO-CALLED "SPANISH INFLUENZA," WITH SPECIAL REFERENCE TO ITS DIAGNOSIS FROM OTHER FORMS OF "P.U.O."

BY E. RIVAZ HUNT, M.D. CANTAB., M.R.C.P. LOND.,
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THE recent outbreak of what appears to be a new form of "influenza," so-called, has greatly added to the number of cases admitted to the base hospitals with the provisional diagnosis of "P.U.O.," and some months' experience in the medical wards of a large base hospital in France has suggested to me that it would be useful to attempt to classify the chief diagnostic features of some of the principal conditions which are admitted to hospital with this diagnosis.

The term "P.U.O.," although useful and in some cases necessary, is too loose to be wholly satisfactory. Moreover, a more exact diagnosis is desirable, both from the point of view of prophylaxis and, if necessary, isolation, and also for the purpose of prognosis as to the probable duration of the patient's unfitness for military service.

Certain of the conditions liable to be included under this heading have but to be remembered to be excluded in the majority of cases by appropriate clinical or bacteriological examination. Among these may be mentioned (1) malaria; (2) *Bacillus coli* infections, particularly coli bacilluria; and (3) malignant endocarditis. But a smaller group remains, comprising (4) the trench fevers; (5) the enteric group, including typhoid and paratyphoid fevers, which for my purpose may be considered together; (6) the influenzal group, including true influenza, and the recent epidemic, which in the present condition of uncertainty as to its bacteriological causation, may be provisionally termed "Spanish influenza"; and (7) certain aberrant cases of cerebro-spinal meningitis.

Symptomatology.

The symptomatology of "Spanish influenza" is characteristic, and in view of the extreme prevalence of this disease at present it will be useful first to consider in some detail the principal features of this complaint as seen in France, considering *en passant* the various points which serve to distinguish it from other diseases closely resembling it.

The *incubation* period appears to be short, about 3–4 days. The mode of *onset* is characteristically sudden. A patient may be at work in his usual health in the morning and in the evening he may be in hospital with a temperature of 102°–104° and presenting the appearance of acute illness. The earliest symptoms are usually shivering, pains in the limbs and back and very severe headache—generally, but not invariably, frontal in situation—and sore throat, and in almost all cases an irritating severe cough is also complained of.

The appearance in most cases is quite characteristic. The patient lies curled up in bed in a drowsy condition, with flushed face and injected conjunctiva, but there is little coryza, and physical signs, in the early stages at any rate, are remarkable by their absence. The facies, apart from the absence of coryza, very much resembles that of a measles patient a day or so before the appearance of the rash.

Although severe sore throat may be complained of, little can be seen in the throat beyond some general injection of the fauces, but in some cases œdema of the uvula or slight degree of tonsillitis is present. Severe and irritating dry cough is usually present, but there may be no discoverable physical signs in the lungs at first. On the other hand, some coarse rhonchi may be heard all over the larger bronchial tubes, or a few crepitations may be heard at one or both bases. In other cases there is an early generalised bronchitis, and in some few instances a dry pleurisy, particularly in the left axilla, may make its appearance almost at the onset.

A small percentage of patients develop serious *pulmonary complications*, and the pneumonia arising in these cases presents several distinctive features. It is of a mixed lobar and broncho-pneumonic type. Several large patches of consolidation may be found, but not as a rule at the extreme base of the lung. Favourite situations appear to

be in the axilla, or in the middle third of the lower lobe. A remarkable feature is the not infrequent presence of well-marked ægophony without other signs of fluid over the consolidated area. The very loud tubular breathing and crepitations, together with the increased vocal resonance and the presence of the signs of more normal lung tissue below the patch, suggest that this ægophony is due to a very thin layer of purulent exudation over the pneumonic patch, shut off by pleural adhesions, and thus prevented from gravitating to the lower part of the pleural sac. This is confirmed by the post-mortem findings.

In some of these influenzal pneumonias the toxæmia is severe, and death rapidly ensues from acute heart failure. These cases frequently present an appearance very similar to that of a patient suffering from purulent bronchitis. The colour is a curious bluish tint, suggesting at first sight that he is suffering from extreme right heart failure, but physical examination of the heart and pulse does not confirm this, and the condition appears to be due to extreme toxæmia rather than to any mechanical embarrassment of the right heart. In other cases not quite so acute œdema of the lungs supervenes, large quantities of semi-purulent sputa are expectorated, but the patient dies from heart failure secondary to asphyxia.

The *heart condition* of a very large proportion of these cases of "Spanish influenza" is interesting. Without any marked alteration in the size of the heart as discovered by physical examination, and with the apex beat little if at all displaced, there is a well-marked reduplication of the first sound at the apex or of the pulmonary second sound, which is also frequently accentuated; not infrequently both sounds are reduplicated. In many cases this probably indicates the presence of some degree of myocarditis. It is noteworthy that in a large proportion of cases examined post-mortem here myocarditis was found, and more or less dilatation of the heart was constant. In cases in which a murmur develops and becomes increasingly musical, with displacement of the apex beat, the question of an early ulcerative endocarditis must be considered, and a blood culture and leucocyte count should be done with a view of excluding this condition.

In at least four instances I have seen a *scarlatiniform rash* so closely resembling the rash of scarlet fever that very careful examination was required to decide that we were not dealing with a case of the latter disease. The rash, however, was more markedly patchy in distribution, evanescent and recurrent, and in some cases irritating; and the appearance of the patient's face and throat, together with the absence of the rapid pulse and strawberry tongue of scarlet fever, and also the comparatively low temperature at the time of appearance of the rash, enabled us to exclude the existence of this disease.

One patient, however, who gave a history of another man in his hut having had a rash, was transferred to an isolation hospital, but at a post-mortem examination made after his death from broncho-pneumonia a few days later the appearances presented were precisely those found in other cases of deaths from this influenzal form of pneumonia. The tongue of these influenzal cases is almost invariably dirty and furred, and in some cases there is an offensive, almost pathognomonic, odour of the breath.

The onset of *pyrexia* is very sudden, the temperature rapidly rising to 103° or higher. The duration of pyrexia is generally short, and under appropriate treatment and rest in bed the temperature rapidly falls about the third or fifth day to normal, thereafter probably rising to about 99° on the following evening, but within a week from the date of onset remaining below normal. If the pyrexia persists after the first week it is probable that either some pulmonary complication is present or that the diagnosis of influenza must be reconsidered, special attention being given to the possibility of the case being one of the enteric group.

The *pains* of this type of influenza are very characteristic; they are referred almost invariably to the muscles and soft tissues, and to a less extent to the joints rather than to the bones themselves. The most common sites of pain are in the muscles of the thighs and calves, the lumbar muscles and muscles of the back of the neck, and to a less extent the knees and ankle joints. The headache of influenza has already been referred to. In a very large proportion of cases it is frontal, in some cases occipital, and in a few referred to the vertex. The headache is in some cases very persistent, continuing for some days after the patient's temperature has fallen to normal, and is almost invariably extremely severe at first. The pains differ considerably from those of trench fever; in the latter disease the pains are most frequently referred to the bones themselves, particularly to the inner and outer edge of the tibiæ, and the bones are often very tender to palpation. The acute nocturnal exacerbations of the pains are more marked in trench fever than in influenza.

The pains of the abdominal group of influenza cases may arouse the suspicion of appendicitis. They are, however, more general, although frequently referred to the lower part of the abdomen. There is, however, little or no muscular rigidity, and the tenderness to deep palpation is not more marked in the right iliac region than in the left. The pain does not tend to become localised and the fever and pulse-rate do not indicate a progressive lesion.

There is a group of cases admitted with occipital headache and pain in the neck closely resembling cases of cerebro-spinal meningitis, but, as a rule, the rigidity of the neck is much less marked. In some of these cases the diagnosis is rendered more puzzling by the presence of what I may describe as a "spurious" Kernig's sign—i.e., it is impossible to say that Kernig's sign is absent, although it is more of the nature of a "clasp-knife rigidity" than a true Kernig's sign. Lumbar puncture may, however, be necessary to exclude cerebro-spinal meningitis, when, although the fluid may escape under high pressure it is clear and does not present the characteristic cytological features of the latter disease.

A *blood count* is of great value in helping to discriminate between the various causes of P.U.O. The trench fevers are usually accompanied by a moderate leucocytosis. Malaria, malignant endocarditis, scarlet fever, and cerebro-spinal fever, as a rule, show a marked leucocytosis. The enteric group is more usually characterised by a leucopenia. In "Spanish influenza" the leucocyte count usually varies between 5000 and 9000 per c.mm.

Very few cases of influenza show a true relapse, and the occurrence of pyrexia relapsing within a few days in a supposed case of influenza suggests the probability of the case being one of trench fever.

I regret that the few cases in which the urine has been examined prevent me from making any observation on this point. I have not touched on the bacteriology of these cases, for at present this aspect of the disease is *sub judice*.

Tabular Summary.

Appended are two tables: (1) a summary of the principal diagnostic points of the commoner causes of P.U.O.; (2) an analysis of the post-mortem findings in 30 cases diagnosed as "influenza" at a hospital base in France during June and July, 1918. For these latter tables and for other valuable suggestions I am much indebted to Captain T. W. G. Shore, R.A.M.C., pathologist to —— Administrative District, France.

TABLE I.—*Summary of the Principal Diagnostic Points of the Commoner Causes of P.U.O.*

Disease.	Mode of onset.	Fever.	Characteristics of pain.	Bacteriological examination.	Blood count.
Malaria.	Sudden	Intermittent as a rule.	—	Parasites in blood.	Leucocytosis.
Coli bacilluria.	Gradual	Prolonged and irregular.	Renal, vesical, or ureteric tenderness.	*B. coli* in urine.	—
Malignant endocarditis.	Gradual or sudden	Constant, prolonged, and irregular.	—	Blood culture may be positive.	High leucocytosis.
Trench fevers.	Sudden	Frequent relapses.	Pains in bones, especially shins.*	—	Mod. leucocytosis.
"Spanish influenza."	Very sudden	Short, rarely relapses, subsides by crisis.	Pain in head, usually frontal and back.†	—	Mod. leucopenia.
Influenza.	Very sudden	Short, subsides by crisis, less acute.	Pain specially in head and back.	Influenza bacilli in sputum.	Leucopenia.
Enteric group.	Gradual	Prolonged, gradual onset, subsides by lysis.	Vague; general.	Widal's reaction.	Leucopenia.
Cerebro-spinal fever.	Sudden	High and irregular.	Headache, usually occipital.	C.-s. fluid cloudy, &c.	High leucocytosis.

* Worse at night; shins tender.

† Also pains in legs, usually muscular, in calves and thighs, continuous all day.

TABLE II.—*Summary of Post-mortem Findings in 30 Cases Diagnosed "Influenza."*

More or less dilatation of heart constant.		
Myocarditis	in 20 out of 30.	
Endocarditis of mitral valves	,, 2	,,
Pleurisy	,, 26	,,
Pleural effusion	,, 8	,, (Generally purulent).
Broncho-pneumonia	,, 27	,, Broncho-pneumonia the rule. Often confluent, less so in later cases.
Lobar pneumonia	,, 1	,,
Confluent broncho-pneumonia	,, 11	,,
Miliary pneumonia	,, 4	,, Miliary or shotty broncho-pneumonia in later cases.
Pus in bronchioles	,, 12	,, Resembling purulent bronchitis, commoner in later cases.

Collapse when present along vertebral border of lung. Emphysema common anteriorly.
Nephritis { Acute in 7 ... ... Kidney as a rule pale—"toxic." / Chronic in 2 ... ... Suppression of urine in one case.
Jaundice in 2.
Spleen generally enlarged.
Pulmonary glands always enlarged.
Liver generally shows some fat.
Pulmonary abscess in 3.
Abscess in brain in 1.
Old tubercle in 7. (Much higher than average in B.E.F.)

OBSERVATIONS ON A CASE OF "LOOSE BODY" IN KNEE-JOINT.

BY PAUL BERNARD ROTH, F.R.C.S. ENG.

Origin of "Loose Bodies."

"Loose bodies" may occur as a result of (1) chronic hypertrophic osteo-arthritis, (2) trauma, (3) chondrification or ossification taking place in hypertrophied joint villi, or (4) the process known as osteo-chondritis dissecans. In the present case, in spite of the history of trauma, the osteophytic formations point strongly to the first of these conditions as the determining cause. It is therefore highly probable that this patient will at some future time again suffer from other "loose bodies" in her joint.

Notes of Case.

Patient, aged 38, was first seen at hospital on Oct. 30th, 1917. Six months previously when kneeling she tried to get up quickly, but could not straighten her right knee because of great pain in it. This pain lasted for a week or ten days, and then gradually disappeared and the knee got well. Since then she has had every other week attacks of sudden severe pain in the knee and inability to straighten it.

On examination there was found to be marked creaking accompanying movement in both knees and slight lipping at the articular margins. The right knee could be completely straightened. To test her story she was told to go home and return directly she had another attack. A week later she stated that she had had another attack on the previous day. On examination there was slight puffiness of the knee, it was hotter than the other, and it could not be completely extended. Radiograms taken the following day by Dr. W. Ironside Bruce were reported on by him as follows: "There is present an arthritis of the knee-joint with + osteophytic formation. There is also present a very nice example of 'loose body' which at the time of examination lies in the *posterior part* of the joint."

On further questioning patient remembered that seven years ago she fell with right knee doubled up; she could not get up by herself, was carried on to a sofa, and had to remain a fortnight in bed, the knee being very much swollen; she did not call in a doctor. Since then the knee had been quite well until May, 1917, when the present trouble began.

Operation (Nov. 19th, 1917).—With the knee lying slightly flexed over a sand-bag an anterior median vertical incision six inches long, with its centre opposite centre of patella, was made through the skin and subcutaneous tissues and deepened until the quadriceps extensor tendon, the patella, and the ligamentum patellæ were reached. Sterile towels were clipped to the two edges of the wound with Kocher's tissue forceps and the skin completely shut off. The patella was next split vertically into two lateral halves with chisel and mallet. With a fresh scalpel the line of cleavage was extended up into the extensor tendon and downwards into the ligamentum patellæ, so that these structures also were bisected mesially into two lateral halves. The two halves of the patella were drawn apart with blunt retractors and the knee simultaneously flexed to a right angle, the foot being kept in contact with the table. The "loose body" was at once seen lying *in front of* the anterior crucial ligament; it was removed with forceps, the knee was straightened, the quadriceps tendon and ligamentum patellæ sutured with No. 4 continuous catgut, and the skin closed with Michel's clips.

Patient made an uninterrupted recovery, no splint of any kind being used during convalescence, and a month later was again radiographed. The radiograms again showed the "loose body" present, and the report stated it to be so. On very careful study of the first radiograms I made out, lying above the shadow of what we had considered in the lateral view to be the "loose body," another much fainter shadow; and in the second radiograms this faint shadow was absent. It was, therefore, clear that originally there were two "loose bodies" present, one of which had been removed, or that the remaining shadow was due to a sesamoid bone in the gastrocnemius.

Remarks.

The following points present themselves for observation.

1. *Route adopted for operating.*—I believe this median patellar route to be the ideal one for operating on all internal disorders of the knee-joint. If used with strict adherence to the rules adopted by Lane in plating bone the risk of sepsis is nil, a splendid view is obtained of the joint interior, and no injury is done to the mechanical power of the joint. Further information as to its great utility may be obtained from the writings of Sir Robert Jones, Mr. E. M. Corner, and from my own paper,[1] in which has been given a list of references.

2. *Differential diagnosis of "loose body" from sesamoid bone in outer head of gastrocnemius.*—I have not been able to find any research done on this subject, and until this case had never heard of any difficulty in coming to a correct decision. It may be taken as a general rule, however, that a sesamoid bone when present is oval in shape when seen from the side with its long axis placed vertically; that it is as dense to the X rays as the densest parts of the femur, tibia, and patella; and that it is situated behind a line joining the most posterior portions of the tibial head and femoral condyles as seen in the lateral radiographic view and well to the outer side of the midline in the antero-posterior view. A "loose body," on the other hand, may be of any irregularly rounded shape, is not as dense to the X rays as the densest parts of the other bones, and may be anywhere in the joint cavity.

In the present case the shadow remaining after operation is circular when seen in lateral view, is as dense as the other bones, is situated almost entirely in front of the line joining the two bones, and in the antero-posterior view shows up quite plainly on the inner side of the midline of the joint—that is, the evidence is largely in favour of it being due to a second "loose body." If such it be, it is causing no symptoms, for since operation the patient has been entirely relieved, and when last seen in April the knee had entirely ceased to bother her.

3. *Passage of "loose body" from back to front of joint.*—The shadow of the "loose body" in the first radiogram showed that it lay in the posterior part of the joint, but at operation it lay in front of the anterior crucial ligament. As I have met with the same phenomenon before, and as I know of one joint surgeon who maintains he can bring a "loose body" from the back of the joint to the front at will, I am led to the conclusion that the simple manipulation of bending the knee in the manner described—the patient lying on the back and the foot being kept in contact with the table—is sufficient to press the "loose body" out of its position at the back and roll it forward to the front. This matter could be easily determined by radiograms taken before and after manipulation, but I have not since this case come across another suitable one. If this be so, in future it may not always be necessary to split the patella to get out the "loose body"; all that may be required will be to split the ligamentum patellæ and extract the "loose body" lying immediately beneath it.

Harley-street, W.

[1] Clinical Journal, March, 1918.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The opening meeting will be held on Friday, Oct. 4th, at 8.30 P.M., in the Society's Rooms, West London Hospital, when the new President, Lieutenant-Colonel E. M. Wilson, C.B., C.M.G., D.S.O., R.A.M.C., will be inducted and the presentation of the Keetley Memorial Medal will be made to the retiring president, Dr. A. J. Rice-Oxley. The Presidential Address will be on the subject of "Ancient Physic." Communications should be made to the honorary secretaries, Dr. H. H. Sanguinetti and Dr. J. F. Halls Dally, and subscriptions paid to the honorary treasurer, Dr. T. Gunton Alderton.

MENINGITIS CAUSED BY THE *MICROCOCCUS FLAVUS*.

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AND
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OF the Gram-negative cocci inhabiting the naso-pharynx the meningococcus only has so far been recognised as capable of producing meningitis. The possibility of some other member of the group giving rise to meningitis cannot be denied, but hitherto no sufficient evidence has been forthcoming. In a case of cerebro-spinal fever recorded by McIntosh and Bullook[1] the meningococcus was isolated from the cerebro-spinal fluid at the first lumbar puncture, and a mixture of this organism with the *Micrococcus flavus* at the second lumbar puncture, but all subsequent punctures yielded pure cultures of the meningococcus alone. In the case now recorded the meningitis was caused by infection of the meninges by the *Micrococcus flavus* alone.

The patient, a miner, aged 50 years,[2] was admitted to hospital for head injuries caused by a fall of coal. On admission a large scalp wound was found in the upper occipital region and some bruising about the chin. The nose was broken and there was much blackening about both eyes. Two days after admission slight delirium occurred and persisted for three days. This was followed by loss of consciousness for one day, and death ensued the next morning.

At the necropsy some atheroma was found in the coronary arteries, and considerable anthracosis and hypostatic œdema in the lungs; the liver and kidneys showed cloudy swelling, and the spleen was congested and of the "septic type," otherwise the thoracic and abdominal organs were healthy. There was well-marked purulent meningitis at the base of the brain, passing backwards round the medulla and cerebellum and forwards over the roots of the optic nerves; it extended upwards over the convexity, but the exudate was much less abundant here than at the base. The lateral ventricles contained thin, purulent fluid and the fourth ventricle thick pus. There was a fracture of the cribriform plate of the ethmoid which extended across the right orbital plate. Pus was present, extradurally, on the upper surface of the cribriform plate, but no tear in the dura mater could be made out. The nasal bones were broken, but there was no other fracture and no gross injury to the brain.

Films made from the purulent meningeal exudate at the base of the brain showed polymorph pus cells, a few large mononuclears, and Gram-negative diplococci, intra- and extra-cellular, in considerable numbers. The films were indistinguishable from those obtained in an acute case of cerebro-spinal fever, and provisionally it was thought that the organism was the meningococcus. Cultures were made on serum agar, and after 24 hours' incubation a well-marked growth was obtained. The colonies were well defined, fairly clear and translucent, but with the very faintest tinge of yellow in the centre. Although a little larger than meningococcal colonies at this stage they are not unlike them, the tinge of colour in the centre resembling somewhat the granularity frequently seen in their centres. After incubation for 48 hours, however, the yellowish colour was distinct and the growth abundant and confluent. Later the growth became more profuse and paint-like. The fermentation reactions were tested on glucose, maltose, and saccharose, in litmus-tinted serum agar. Acid was produced on all three sugars, thus confirming the diagnosis of *Micrococcus flavus*. Distinct acid production was observed on the maltose within 24 hours, but the change on glucose was only slight in this time. In 48 hours, however, both showed the reaction well marked. On saccharose slight acid production was observed only after 48 hours, and further incubation was necessary before the reaction became distinct. The organism was easily emulsified in saline, and did not agglutinate with any of Gordon's type meningococcal sera.

The *Micrococcus flavus* is a common inhabitant of the naso-pharynx, and has hitherto been regarded as a more or less harmless saprophyte, but the present case demonstrates its pathogenicity under suitable conditions. Apparently the infection passed from the nose through the fracture in the cribriform plate to its upper surface and thence to the meninges, although no rupture of the dura mater was obvious.

[1] Med. Res. Com., Spec. Rep. No. 2, 1916.
[2] G.R.I. Path. Rep. No. 9146.

CASES OF CEREBRO-SPINAL FEVER

DEFINITELY TRACEABLE TO INFECTION BY A PARTICULAR CARRIER.

BY J. A. GLOVER, M.D. CANTAB., D.P.H.,
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CAN any case of cerebro-spinal meningitis be definitely traced to one particular carrier? As this question has recently been answered in the negative by several authorities, such as Staff Surgeon G. P. Adshead, R.N.,[1] and apparently by German medical opinion, as summarised by Galambos,[2] some cases investigated in the London District Cerebro-spinal Fever Laboratory may be of interest as furnishing an affirmative reply to the same question.

The frequent changes of position and population in naval and military sleeping quarters tend to make investigation of purely military cases difficult and complicated, but when the infection of relatives by soldier carriers returning on leave is investigated we are on firmer ground.

The investigations have two main practical difficulties:—

First, conclusive evidence of infection being derived from the visiting soldier demands (*inter alia*) a correspondence in type between the meningococcus attacking the patient and that carried by the soldier. The patient being nearly always removed to a civil hospital his type of meningococcus is seldom determined, and so an important link in the chain of evidence is usually wanting.

A second difficulty is the length of time (usually at least 14 days) which elapses before the soldier is examined, and in this time many temporary carriers will clear up.

Record of Cases.

The following two cases are particularly interesting, as in them the first condition is fulfilled. The patient's type of meningococcus is known, and is the same as that carried by the soldier.

CASE 1.—This case was that of a soldier, a recruit, who was sent to a depôt where there had been a recent outbreak of cerebro-spinal fever, accompanied by high carrier rates (70 per cent. of both cases and carriers harbouring Type II. meningococcus). He was there for five weeks, and on May 4th (the carrier rate being at this date known to be over 20 per cent.) he went home on short week-end leave and slept two nights in the same room as his only child. On May 8th the boy developed the disease, was admitted to St. Bartholomew's Hospital, and died there; the meningococcus grown from his cerebro-spinal fluid was Type II. On May 12th the father was swabbed and was found to be a carrier of Type II.

CASE 2.—This case was that of a wounded soldier awaiting discharge and employed in the R.A.F. He did not sleep at home, but being within an easy distance went home every day for a period of a week. Four days after this his baby, aged 10 months, developed the disease, was admitted to St. Bartholomew's Hospital, and died there. The meningococcus in the child's fluid was grown and agglutinated by the bacteriologist to the hospital, and found to be Type I. The father was examined at this laboratory some days later and was found to be carrying Type I.

Unless we make the very unlikely assumption that in these cases the children infected their soldier parents these cases appear sufficiently conclusive.

Now to recite some cases in which, although the type of meningococcus infecting the patient was unknown, yet the other evidence is, in my opinion, sufficient.

CASE 3.—In this case the soldier returned on leave from France on Dec. 23rd, 1917. On Boxing Day he was married, and the next day he and his wife went to his father's farm for their honeymoon. On Dec. 30th his little brother, aged nine (who was not sleeping in the same room) fell ill. The soldier returned to London on the 31st, and the boy's illness proving to be cerebro-spinal fever, the soldier was examined at the laboratory on Jan. 4th, 1918. His swab furnished an almost pure culture of meningococcus (Type III.). He has since proved a carrier of persistent character.

One cannot help feeling that the bride had a providential escape.

CASE 4.—A nurse, nursing in a hospital in a large military centre where there had been a severe outbreak of cerebro-spinal fever and where the carrier-rate had been very high, went home on week-end leave, and slept in the same bed with a lady. This lady developed the disease four days later and died from it. Eight days after the contact the nurse was examined and found to be a carrier of Type II., the prevalent type of the garrison and of the hospital where she nursed.

It is just possible, of course, that the nurse was infected by the patient, but the converse is almost certain.

CASE 5, a soldier, was in hospital in London with a broken arm. He was allowed to go home to tea on three successive days, August 26th, 27th, and 28th, 1917. His child developed cerebro-spinal fever on Sept. 1st. The soldier was not examined until Sept. 26th, when he was found to be a carrier of Type I. meningococcus.

[1] Special Report, Series No. 17, Medical Research Committee, p. 90.
[2] Medical Supplement of the Foreign Press, Medical Research Committee, July 1st, 1918, p. 214.

CASE 6, a soldier, was working in a Labour Company in London and was sleeping at home every night in the same room with his 12-months'-old baby. The baby sickened of cerebro-spinal fever and died, and 12 days later the father was found on examination to yield an almost pure culture of meningococcus Type I. He was a chronic carrier, proved very resistant to treatment, and had also a chronic cough.

CASE 7, a soldier, came home on leave from France on March 1st. His only daughter, aged 12, sickened on March 5th, and was thought to have measles. On the 16th the case, which proved fatal, was notified as one of cerebro-spinal fever, and on the 18th the soldier was examined and found to be a carrier, of a somewhat chronic type, of Type II. meningococcus.

Remarks.

I have here excluded any case in which the evidence of contact or time appeared at all ambiguous.

During the 12 months ending June 30th, 1918, 33 soldiers have been examined in this laboratory in connexion with cases of cerebro-spinal fever occurring in relatives.

In 6 cases there was no evidence of recent contact with the patient before the onset, the soldier having been summoned in consequence of the dangerous illness of the relative. These 6 cases may therefore be dismissed from this inquiry.

In 9 out of the remaining 27 cases (or in 33 per cent.) the soldier proved a carrier.

Note.—The average military carrier-rate shown by 9000 "non-contact" examinations by me in the same period is 9·2 per cent., and that of 375 ordinary military "contact" examinations is 9 per cent.

In one other case the soldier was probably a carrier, but the agglutination result was not absolutely definite.

In 3 of the cases in which the soldier proved to be a carrier the other evidence was ambiguous—i.e., the soldier might have been infected by the patient. In one ambiguous case, for example, the soldier's wife who contracted the disease was the matron of a hospital where some convalescent C.-S.F. patients had been recently received. The soldier husband, who had been home on week-end leave just previous to the date of his wife's onset, was found to be a very chronic and abundant carrier (Type II.). He came from a depôt known to have a high carrier-rate. Who can decide whether he infected his wife or if he were infected by her, or if it were but a coincidence?

Considering the foregoing cases in conjunction with those of Flack,[3] in my opinion we may fairly answer the question in the affirmative.

[3] Special Report Series, No. 3, Medical Research Committee, p. 58.

Reviews and Notices of Books.

Religio Grammatici: The Religion of a Man of Letters. By GILBERT MURRAY, LL.D., D.Litt., F.B.A., Regius Professor of Greek in the University of Oxford. London: George Allen and Unwin, Ltd. 1918. Pp. 47. Price 1*s.* net.—"Religio Grammatici" is the title of a Presidential Address to the Classical Association, delivered on Jan. 8th, 1918, by Sir Gilbert Murray, and it is an earnest and reasoned defence of the study of the past. The mere Present, he says,

"enslaves us most, narrows the range of our thought, cramps our capacities and lowers our standards."

As to the Future,

"You cannot study the future. You can only make conjectures about it, and the conjectures will not be much good unless you have in some way studied other places and other ages."

In material things we are far ahead of our forefathers,

"One may say roughly that material things are superseded, but spiritual things not."

Again,

"To search the past is not to go into prison. It is to escape out of prison, because it compels us to compare the ways of our own age with other ways."

The higher and more massive workings of our literature, says Professor Murray, from as far back as the days of Alfred, come from Palestine, Greece, and Rome, the Christian and classical tradition. We might add, as a gloss on this remark, that it is surely more than a coincidence that the "Sortes," that well known form of invocation of an oracular response, superstitious and vain though it may be, has been addressed to the choicest literature of three nations alone—namely, Homer, Virgil, and the Bible. The classics do retain a strange influence over even those whose reading does not generally lie in their direction. We came across a humorous recognition of this fact the other day in a modern novel:—

"On the day when the interviewer was expected he remained all day in his study, and put away books about Mr. Jorrocks, and threw down on the table his school copy of Virgil. ..... He imagined himself saying: 'I always find myself returning to the classics; there's nothing like them really, you know.' For some reason or other the interviewer never came."

Some of us, however, read the classics without the stimulus of an interviewer and find them full of wholesome doctrine necessary for these times. There is much talk about "peace by negotiation"; this was tried long ago, and the answer of the Allies is, *mutatis mutandis*, the same as that of Diomede, Iliad VII., 400:—

"Let no man now accept Alexandros' substance, neither Helen's self; known is it even to him that hath no wit at all, how that the issues of death hang already over the Trojans."

Or go forward some thousand years and see what Horace said in words which should be brought to the attention of every "pacifist" of the kind that asks for the peace that is no peace:—

"Qui perfidis se credidit hostibus,
* * * * *
Hic unde vitam sumeret inscius
Pacem duello miscuit."

The struggle is once more between Carthage and Rome, between a Carthage who, according to the poet's view, would enslave the world and a Rome who would set the nations free. And, finally, where can we find the aim of the League of Nations better set forth than in the words of the Prophet Micah:—

"But in the last days it shall come to pass that ..... many nations shall come and say, Come and let us go up to the mountain of the Lord and to the house of the God of Jacob; and he will teach us his ways and we will walk in his paths. ..... And he shall judge among many people, and rebuke strong nations afar off ..... nation shall not lift up a sword against nation, neither shall they learn war any more. But they shall sit every man under his vine and under his fig tree, and none shall make them afraid."

These are the lessons of the past, and they are true to-day.

Thyrea and Other Sonnets. By JOHN FERGUSON. Second edition. London: Andrew Melrose, Ltd. Pp. 44. Price 1*s.* net.—In this little book Mr. John Ferguson shows himself to be a considerable master of a difficult art, for he writes sonnets with ease and distinction. And more than that, he is a thinker of fine things, who can use slang so appositely that while his colloquial vocabulary adds realism to the treatment it does not detract from the dignity of the theme. Sonnet No. V., entitled "On Tour," which appeared in THE LANCET, is a good example of this power, which W. E. Henley possessed in such a marked manner. In fact, Mr. Ferguson in his hospital sonnets has fairly earned comparison with Henley.

JOURNALS.

British Journal of Children's Diseases. Vol. XV. July–September. Edited by J. D. ROLLESTON, M.D.—Dr. E. Stolkind and Dr. A. Lorey, of Moscow, in their article on paratyphoid fever in children, adopt the classification proposed by Stolkind some years ago into the typhoid form, the gastro-intestinal form, the choleraic form, and the respiratory or influenzal form. Illustrative cases of each group are recorded, as well as two examples of local infection—viz., pyelitis due to the paratyphoid B bacillus. The etiology, morbid anatomy, symptomatology, diagnosis, and treatment are discussed, and a bibliography of 134 references is appended.—Mr. John Priestley and Dr. Barbara Richardson, school medical inspectors of the Staffordshire County Council, contribute a paper on Tuberculosis as seen in Public Elementary Schools, based on the study of cases seen from the beginning of medical inspection in 1908 to 1915. Out of a total of 42,471 children inspected, 283 cases of tuberculosis of all kinds were found; 87 of these presented pulmonary tuberculosis, the disease being usually of the quiescent or latent type. 184 showed evidence of glandular tuberculosis; the cervical glands were affected in all, and in 2 the axillary glands as well. Forty-nine showed tuberculosis of the bones or joints, which was chiefly in a quiescent state with deformity resulting from previous disease, and 13 had abdominal or cutaneous tuberculosis. The following conclusions are drawn from a comparison of the tuberculous with the average child:—

1. The weight to height ratio gives little or no help in the diagnosis of tuberculosis in children.
2. A previous attack of any of the common infectious illnesses of children does not, in general, seem to predispose to subsequent attacks of tuberculosis.

3. There is no evidence that more cases of tuberculosis arise among the badly-environed children in Staffordshire than among the better environed, but this may mean that the former are, after all, not very badly off.
4. The writers' figures give no support to the belief that enlarged tonsils and adenoids, as indicated by mouth breathing, *materially* favour the development of tuberculosis.
5. There is no evidence that caries of teeth to any appreciable extent leads to tuberculosis or favours its development.
6. There is evidence that cervical glands are enlarged in tuberculous children much more frequently than the average, not only in glandular tuberculosis, but also in pulmonary and other kinds.
7. There is no evidence that tuberculosis favours, or is favoured by, heart affections.
8. There is evidence that the tuberculous have fewer dull and backward among them than the average group, and, on the other hand, that they yield a larger proportion of mentally deficient cases.
9. There is evidence that the tuberculous group yields an unduly large proportion of cases of defective sight and eye diseases, but the difference is not marked. A similar and more marked difference is noticed in ear diseases.
10. Anæmia is very prevalent among the tuberculous, and nutrition is markedly depressed.

—In her paper on External Eye Diseases in Elementary School Children Dr. Barbara Richardson discusses (1) the incidence of these diseases according to age and sex; (2) the particular eye diseases found and their relative numbers; (3) the effect of the child's environment and its constitution on the incidence of the disease; (4) the clinical appearance of the various eye diseases as seen by the school doctor; (5) the relationship of defective vision to blepharitis; (6) the relationship of the common infectious diseases to external eye diseases; (7) the relationship of skin diseases to external eye diseases; (8) the relationship of enlarged tonsils and adenoids to external eye diseases.—Captain Alex. Mitchell, in a paper on Lacerated and Infected Joints in Children, records three cases illustrative of the modern method of dealing with such conditions. The main points are complete immobilisation, along with extension, careful excision of all infected tissue, removal of foreign bodies, and washing out all débris and clots with a weak antiseptic, or preferably with saline solution, which does not cause any irritation of the synovial membrane. This is followed by immediate closure of the synovial membrane, or when infection of the synovial cavity is evident by placing small drainage tubes down to the openings in the synovial membrane and fixing them, so that they do not project into the joint cavity. The rest of the wound is left unsutured or dressed with salt pack or Bipp, which should not be disturbed until the synovial wound has had time to heal. Immobilisation must be maintained until all fear of lighting up the infection by movement is past.—Dr. George Pernet records two cases of partial sclerema neonatorum. Although syphilis could be excluded, both cases were successfully treated with mercury, hydrarg. c. creta gr. i. t.d.s. being used in both cases, and ung. hydrarg. in one case locally as well.—Mr. Hunter Tod relates a case of multiple papillomata of the larynx removed by operation (suspension method) after tracheotomy in a boy aged 4 years. Five weeks later death took place from acute membranous tracheitis and bronchitis of streptococcal origin.—The abstracts from current literature in this issue of the journal are devoted to acute infectious diseases.

The Indian Journal of Medical Research. Vol. V., No. 4.—In this number there are two contributions on the subject of kala-azar, the first of which constitutes the fourth instalment of a series of researches on the etiology of this disease carried out jointly by Lieutenant-Colonel J. W. Cornwall and T. Kesava Menon, of the Pasteur Institute for Southern India, Coonoor. Their three previous papers have already been published in former numbers of the *Journal*. They had shown that the bed bug cannot regurgitate the contents of its stomach in the act of feeding, and that therefore it cannot transmit kala-azar, or oriental sore, by its bite. The present investigations deal with the possibility of the contents of the bed bug's rectum containing the infection of the disease. The results, however, have proved negative. Although pure subcultures of the flagellates of *L. donovani* can readily be obtained by inoculating N.N.N. tubes from the stomachs of infected bugs up to 10 days from the date of feed, no subcultures of the flagellates could be obtained from the rectal contents of the bugs from 3 to 33 days after an infected feed; nor could resistant forms be detected microscopically in the rectal contents of bugs infected by *L. donovani*. Kala-azar may perhaps be transmitted by the rupture of an infected bug on an excoriated skin, but so far no proof of this has been obtained.—The second paper is by Captain R. Knowles, of the Edward VII. Memorial Pasteur Institute, Shillong, and is entitled "Notes on Some Results in Kala-azar," in which the treatment of cases by intravenous injections of tartar emetic is discussed, and the conclusion reached that this is at the present time the best of all methods for treating this grave malady. Captain Knowles also deals with the possibility that some common intestinal parasites, such as ankylostomes, may be concerned in the hereditary transmission of the flagellates, or some developmental form of *L. donovani*. Further study of this subject is suggested.—Lieutenant-Colonel W. Glen Liston and Dr. M. B. Soparkar contribute a joint article on Bilharziosis Among Animals in India, in which the life cycle of *Schistosomum spindalis* is described.—Some observations on the Biochemistry of Post-choleraic Uræmia are supplied by Captain J. A. Shorten, to which is appended a note by Assistant Surgeon J. Makherji on the action of liquor calcis on comma vibrios, his conclusion being that as this fluid is distinctly inimical to the growth of these organisms it would help to check their growth in the intestines of the patient if liquor calcis were administered in large quantities.—Dr. Baini Prashad, D.Sc., assistant professor of zoology, Lahore, furnishes two papers on the Anopheles Mosquito, both being copiously illustrated by plates. In the first he describes in detail the constitution of the wings and thorax of the insect, and in the second he gives a description of the development of the dorsal series of thoracic imaginal buds of this mosquito, and supplies certain observations on the phylogeny of these insects.—The concluding paper of this number is contributed jointly by Dr. Karuna K. Chatterji and Dr. Charubrata Ray, of the Calcutta Medical College, and is entitled "Observations on Margosic Acid and its Salts, and their Use in Cases of Syphilis and Skin Diseases," with several coloured plates. Margosic acid is derived from the margosa tree, the Bengali *nim* or the Hindu *nimb*, the virtues of which have long been recognised in India for the prevention of fevers, leprosy, and other diseases.—As this number completes the fifth volume of the *Journal*, indices of authors and of subjects are appended.

The Military Surgeon.—In the issue for August it is shown that when the United States began to build up its great army it soon became obvious that very careful but rapid examinations must be made of all men soon after entry, in order that those infected with tubercle might be excluded, and excluded before they became chargeable to the public as having contracted the disease in the service. Special boards of examiners were accordingly set up, a standard scheme of examination devised by Colonel Bushnell was directed to be used, and the new soldiers were examined. After a million and a quarter had passed before the boards it was found that about 11,000 (0·783 per cent.) were infected and had to be discharged. If these men had been allowed to continue at their strenuous military training many would have broken down badly; from that risk they were saved, and any who did get through to France and had to be invalided from there must have cost the country, uselessly, £1000 apiece. So the advantage of the boards to the men themselves, to the Army, and to the public was very great. For their treatment the United States had already in the summer 1300 beds available and will have 6000 by Christmas. Of these beds 550 are to be used in a training school in which physicians are being specially trained as examiners for tuberculosis and to take posts in sanatoria. It is recognised that rest is the great need of the tuberculous patient, so he is sent at once to a sanatorium, and is given no leave until he is strong enough to withstand the fatigue of a visit to his home and friends, and in the sanatoria treatment is standardised so that patients may not be confused by varying directions given by different medical officers. A very interesting article on the organisation of one of these tuberculosis examining boards and on its work is given by Surgeon Lawrason Brown, U.S. Army, and Major J. H. Pratt, M.R.C. It is noted that, commencing daily at 8 A.M. and 1 P.M., it is easy for each member to examine 40 or 50 men in each session of two or three hours. This paper will well repay perusal.—Major Eric P. Quain and Captain Carl Eggers, M.R.C., U.S. Army, report having seen a considerable number of soldiers complaining of painful abdominal scars. Many of the complaints were exaggerated in the hope that the condition might excuse them from service. Yet none have been discharged; seven were operated on and have returned to duty. These seven could be arranged in four classes: (1) Adhesions of gut and omentum to parietal peritoneum beneath the scar; (2) submuscular herniæ of omentum through peritoneum incompletely closed; (3) thin scars (treated by excision); and (4) retained appendix following abscess drainage (treated by removal). This is a valuable paper.—There is also a most appreciative account of the orthopædic hospital for disabled soldiers at St. Helens in Lancashire.—As we read this number of the *Military Surgeon* it is constantly brought before us how great a work was the organising of the U.S. National Army, in how wise a scientific spirit it was undertaken, and what an advantage it was that they were not so overwhelmed as France and England with the suddenness of the war.

LONDON SCHOOL OF MEDICINE FOR WOMEN.—The inaugural address for the session 1918–19 will be delivered on Tuesday, Oct. 1st, at 3.30 P.M., by Miss A. Maude Royden (assistant preacher at the City Temple), who has taken as her subject "Revolutionary Thought."

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 28, 1918.

The Attributes of the Successful Flying Officer.

"IF men were meant to fly they would have been given wings." A few years ago such a remark was common enough, especially during the period when the pioneers of flying were making their fundamental experiments. Now, as a result of their successful efforts, man is able to fly, and flying is an everyday performance. It is true that man has not developed wings, but he has provided himself with a motor and wings. These are accessories to himself, but nevertheless, in flying he and his machine become, to all intents and purposes, a single entity. But that this entity is an artificial one is shown by the fact that, although flying has become possible, not all men can acquire the art of flying. To do this certain physiological attributes are especially necessary. In addition, if not perhaps even more important, is a psychological attribute—namely, the flying temperament; and to identify this temperament, and give it full play, is one of the difficult tasks before the executive, medical and other, of the Royal Air Force.

From a strictly physiological point of view it is obvious that, since man has added to himself wings and a motor, the most important factor in the art of flying is the nervous control and coördination of the reflexes necessary for the successful management of these accessory parts. An insight into these reflexes and their control is easily afforded by getting into a stationary machine and studying the fundamental effector movements ("effector responses") necessary to flying. The combination of hand and foot movement is by no means familiar to the average person, and while attention is directed to one movement, the other movement, equally important, is for the time being neglected. Thus when the attention is directed to the hand movement, the foot movement is forgotten for the time being, and becomes incoördinate. This is brought out even more effectively if, instead of being performed in a stationary stable machine, the movements are tried in an unstable apparatus which responds to each movement of the joystick and rudder. In these circumstances it is quickly realised that it is a matter of very great difficulty to maintain by appropriate arm and leg movements an even keel while in a state of unstable equilibrium. In practically no other acquired accomplishment has man to keep so many groups of antagonistic muscles in a state of "static" wakefulness, or to perform such a variety of constant coördinated leg and arm movements. It is for this reason that the acquiring of the art of flying, even in the apt pupil, is a matter of hours and not of minutes. For this reason also the period of training for flying is relatively long; time is necessary before the essential movements in flying can develop into more or less subconscious reflexes. It is certain that the man who has not the power of accurately coördinating his arm and leg movements will be deemed "ham-handed" or "heavy-footed," and will be held unable to acquire the art of flying. It is because of the importance of the delicately coördinated effector responses that great value is attached to a history of proficiency in sport in the selection of aviators. While a history of sport is of great importance, even greater is a history, if it can be ascertained, of acquiring a proficiency in sport easily. In other words, the likely man will have shown himself an adept at acquiring rapidly a new series of reflex acts.

On the sensory side of the flying reflex arcs it is necessary that the sense of vision be good and that the subject be possessed of a good "eye," wherefore great attention is paid in all the Allied countries to the determination of the time of the experimental visual reflex, especially in the selection of scout pilots. Again, the auditory sense is of considerable importance, especially in the detection of any mechanical defect in the running of the engine, and also because the airman obtains much information as to the position of his machine by the singing of the wind through the wires. Considerable divergence of opinion exists as to the part played by afferent impulses from the eye, kinæsthetic sensibility, and the vestibular mechanism. In regard to the last, it is frequently argued that since the vestibular mechanism is especially developed in birds, it is important that men in whom the mechanism is functioning especially well should be selected for aviation. True as this may appear at first sight, the fact must not be overlooked that, regarding the man and his machine as a single entity, the accessory parts added to man have, to a considerable extent, their own sense of balance. In other words, it must not be overlooked that most modern machines are possessed of an appreciable degree of inherent stability, and on this account there is no reason to suppose that machines cannot be effectively flown by men in whom the vestibular mechanism is not especially sensitive. This may well be the case, since it is known that cutaneous sensations, especially those derived from contact with the seat and from alteration in the direction of wind pressure against the cheeks, play with most pilots a really important part in giving them an idea of their projection in space. The visual reflex also normally has a great share in the sense of balance; an especially capable pilot found by experiment that he was quite unable to fly when blindfolded. Early in his flying career the aviator must be able to divert his attention from the arm and leg movements of flying. It becomes necessary for the pilot to find his way across country, to read maps, to practise photography, bomb-dropping, and gunnery, during all of which actions the machines should be flown more or less subconsciously. Finally, having acquired such flying sense, it becomes the lot of many pilots to perform subconsciously difficult aerobatics, while acquiring what may be known as the "fighting sense." It must again be emphasised

here that in the acquisition of these adjuncts to flying, quick visual response is needed. It is for this reason that during ground training of the flying officer, and also throughout his career, especial attention should be given to those sports which aid in the acquisition of what may be termed "eye." Of especial value in this connexion is fencing, but other sports—such as boxing, tennis, and badminton—are of great service.

Thus far we have been dealing with the acquisition of the art of flying. It is necessary also to consider the strain imposed on the body by the effects of altitude. The increased speed of the machines, their heightened ceiling, the greater rapidity with which they climb have carried aerial warfare to such an altitude that the aviator has to be able to perform relatively heavy work in an atmosphere where the oxygen tension is diminished. Thus, superadded to the nervous strain involved in learning to fly is the physical one which falls particularly upon the respiratory and circulatory mechanisms. To understand this strain it should be explained that these mechanisms are called upon to function in an atmosphere of diminished oxygen, where if anything an increased supply is required; there is thus the tendency to the establishment of a vicious circle, a demand for increased oxygen-supply in an atmosphere in which it is progressively diminishing as the aeroplane mounts. Many of the symptoms from which airmen are liable to suffer are due to the strain thrown upon the respiratory and circulatory systems. For this reason the would-be aviator must start out upon his training with a particularly sound constitution, above all with flawless circulatory and respiratory mechanisms. On this account great care must be exercised in his selection for the service, while herein lies a reason for the elaborate and careful organisation of a medical branch of the Royal Air Force. The conditions of service in this Force are published on another page of THE LANCET, and the way in which they have been devised to secure for aviators the best scientific assistance will be recognised at once. Obviously, the flying officer after admission should keep himself fit by sports which train these circulatory and respiratory mechanisms. Such sports are football, boxing, and cross country running. But given all the right physiological attributes, a man will never fly successfully unless he possesses the flying temperament, and so we come back to the points with which we started. Generally speaking, the really successful aviator is possessed of the temperament so characteristic of the pioneers of flying. He is endowed with absolute fearlessness, love of sport and adventure, and a dogged determination to overcome difficulties, no matter how insuperable they appear.

But, as Captain T. S. RIPPON and Lieutenant E. G. MANUEL point out elsewhere in our present issue, the airmen of to-day are not necessarily super-men. On intimate acquaintance it is found that practically all aviators possess one most precious asset—cheerfulness. Successful flying officers are, as a rule, most cheery souls. In trying to particularise in regard to the temperament of the successful flying officer, it must be borne in mind that there are various forms of aerial work which by no means require the same form of temperament. Thus a temperament suitable for the pilot of a scout machine is not necessarily suitable for the pilot of a low-flying reconnaissance machine or even of a two-seater bomber. For this reason, therefore, it is not prudent to do more than generalise as to the characteristic attributes necessary for success in flying. An idea of these attributes is excellently portrayed in the article by Captain RIPPON and Lieutenant MANUEL. There is sometimes a tendency in the popular estimation to allow the work of the fighting scout who has "downed" many enemy aviators to obscure the value of the less pretentious activities of the flying officers engaged in bombing, photographic reconnaissance, and artillery observation. The men engaged in these forms of aerial work are serving the cause every whit as successfully, although from the public point of view they do not enjoy so spectacular a career. The flying officer must be an enthusiast. To achieve success every flying officer must be keen. Without the flying temperament the pupil will never learn to fly successfully; without the fighting temperament he will never make an efficient war-time pilot. Given equal machines, the British pilots should in the end outdo their German rivals, since, by virtue of heredity, education, and training they have acquired those characteristics which make for successful flying. They possess in great measure the all-essential cheerfulness of spirit; their love of sport has given them soundness of wind and limb, cultivated the "eye," and endowed them with the power of rapidly acquiring new reflexes. Above all, they have learned to go in and win, even against odds, to "stick it" when in, and never to leave a "pal" in the lurch. With such a spirit prevailing, and an adequate supply of material, there need be no apprehension as to the British position in the air.

Medical Men for Parliament.

THE names of several medical men have been mentioned recently in connexion with various Parliamentary constituencies, some having decided to stand out of individual wish, and others responding to invitation from responsible bodies. Their action is the expression of a widely held feeling among medical men that as medical science is to play a large part in the social reconstruction of the nation in the near future it is high time to determine what that part is to be. Not only is it high time, but, supposing that a general election is imminent, the date has probably gone by when any medical man can hope to be adopted as a party candidate for a seat, and the point is not without significance. Those members of our profession who attempt to enter the House of Commons in any election that may be near at hand will have to depend upon their individualities and reputations for their chances, together with such public recognition as can be

obtained from the fact that in the immediate future medicine will form a common ground upon which all plans of rehabilitation of ordinary life, and all schemes for the betterment of social conditions, must depend. Party organisation will, as a rule, not assist medical candidates.

As we have already announced, a meeting will be held at the Steinway Hall, Wigmore-street, London, on Tuesday, Oct. 1st, at 5.30 P.M., under the chairmanship of Sir HENRY MORRIS, the object being to secure the election of representative medical men to the House of Commons, so that expert advice may be available on vital questions concerning national health. All members of the medical profession are invited to attend this meeting, which is designed to support the view that medical men are wanted in the legislature, not to speak for the medical profession, but to make clear to those who frame our laws the bearing that the various measures may have upon the prevention and the spread of disease, and especially upon the general physique of our population. The probability is that the meeting will be rather preliminary to future movement than influential at the present moment, but as it will be open to all members of the medical profession—and we hope that there will be a large attendance—the questions to be debated should be of the first importance in clearing the ground for subsequent action. Hitherto the opinions of the medical profession have not had the influence in public affairs that they should have. The medical voice when raised in protest has often been disregarded. Medical advice has been usually sought when the mischief has been done. Medical views have been quite regularly as well as quite untruthfully represented as being directed only to obtaining privileges and monopolies for the members of the medical profession. The reasons for this position are numerous, and before we blame the public for not understanding collective medical aims and aspirations, we have to think how far those aims and aspirations in a form representing unity of spirit and ideal ever find public voice or public expression. The medical profession is quite insufficiently represented in the House of Commons by men who are in actual touch with some of the most important questions of local government and national welfare; but before we can expect the public to signify by ballot that they wish to be represented by medical men, we must satisfy them as to our common policy, as a profession, upon the principal matters requiring social adjustment and reformation. The ideal medical man in Parliament must not represent medicine only. He should be an interpreter of medical thought and aims to his fellow legislators. The better housing of the poor and the improvements of the conditions of labour are two things which will occupy the attention of legislation immediately after cessation of the war, and probably the future progress of this country will be enormously influenced by the method in which the indicated problems are attacked by the popular representatives in the House of Commons. If medical men are to be accepted with warmth as candidates for the popular suffrage, it will not suffice for us merely to go on attributing much disease to bad domestic environment or to evil factory conditions: it will be necessary for us to show how a medical profession, which has a common aim and to which there has been given proper opportunities, can lead in the abolition of social abuses.

Recently we asked the question how far the medical practitioner of the future, whether as a candidate for the House of Commons, or as a canvasser or voter, will have to "mix himself up with politics." It is a question which the future must, to some extent, be left to decide; but the attitude of standing aloof from social questions, when or because they have acquired a political aspect, must be dropped by all the doctors of the future. The medical man's part will be to place his science at the disposal of the public, and justify that science by precept and example. As candidate for Parliamentary election and later as Member of the House of Commons the medical man will necessarily have to study party questions, but his views even here will require the endorsement of his professional colleagues if they are to be of weight. The medical man who enters Parliament will not be able to do so as a "Member for medicine"; he will have to appeal to constituents as a man of affairs who will serve their interests and that of his country with full qualifications to do so; but his value to those constituents will be enhanced by his medical training and knowledge. The ideal medical candidate for Parliament is not likely to be found in large numbers or in many constituencies. When he is found, however, he should secure the support of his medical colleagues where they can conscientiously give it, and this should bring him votes where the public hold the profession of medicine high. A medical practitioner, equipped by his calling and experience of life to exercise judgment in many subjects outside the range of his profession, broad-minded and independent, will be more likely to serve his country usefully in Parliament than the majority of those who compete with him for the honour of doing so. On general grounds he should be a good Member of Parliament, while his special attributes must be valuable in countless directions. We hope that the meeting at the Steinway Hall next Tuesday will lead to practical steps.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND: SUBSCRIPTIONS TO THE SECOND APPEAL.—The following subscriptions have been received up to Monday last, Sept. 23rd:—

	£	s.	d.		£	s.	d.
Dr. G. Vernon Bull ...	2	2	0	Dr. Alfred Cox (monthly)	1	1	0
Capt. J. S. Clarke, R.A.M.C.	3	3	0	Capt. E. L. Lilley, R.A.M.C. (T.)	2	2	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

Annotations.

"Ne quid nimis."

THE WORK OF THE NATIONAL SERVICE BOARDS DURING 1918.

AN official statement emanating from the Ministry of National Service illustrates the practical value of the work which has been done by the National Service Medical Boards in Great Britain during the current year. In the course of the eight months of the year ending August 31st the number of medical examinations conducted by the boards in Great Britain amounted to over 2 millions, and during this period 28,000, or about 1·3 per cent. of the examinations, led to applications for medical re-examination. Of this number of applications less than half were considered by the appeal tribunals to rest on substantial grounds, while in the case of those applicants who obtained leave to be further examined by the medical assessors of the Local Government Board, the grading of half remained unchanged. The words of the Ministry of National Service that "converted into practical terms this result is expressed by the statement that National Service Boards working full time and examining 25 men per day of two and a half hours graded one man per week incorrectly" are fairly based on the figures, but the Ministry is of course perfectly aware that a very large number of appeals might have been made which for patriotic reasons were not advanced. This is a spirit of which the country has a right to be proud. Moreover, in many men the grading must to some extent be conditional; the great probability that a man may be able to discharge the responsibilities of his grading may not be justified in the event. The National Service Medical Boards have had many critics—some wise and some not, some honest and some not; but such figures form a challenge to criticism, however inspired, so long as those who challenge them understand their limitations as well as their origin. For our part, having all the circumstances in mind amidst which the National Service Medical Boards were created, we agree with the Ministry in considering that so fractional a percentage of error constitutes a record of which the medical profession has every right to be proud. And those responsible for the administrative machinery may similarly feel satisfied with their work, for it must be remembered that this machinery was created in a period of unprecedented strain upon the medical profession, in a country where the whole idea of conscription was novel, and where the difficulties were enhanced by the alteration in military age made by the Military Service (No. 2) Act. An important medical aspect of the work is the fact that the results of grading reveal a low state of national health, and it appears that the boards engaged upon the medical examination of women for State service have arrived at broadly similar results. The details of this immense mass of medical examinations have not, of course, been worked out, but we cannot hope that analysis will reveal anything but a most unsatisfactory story. Sufficient indications, and those of a pressing sort, have been obtained that the State must be ready to take effective measures on broad lines directly the war ends. The figures will undergo sifting and collating at the hands of the scientific advisers of the Ministry—indeed, this work has already been started.

CONCERNING MALARIA.

THE *Indian Medical Gazette* for July, 1918, is a "Special Quinine and Malarial Number," containing four original articles—two on treatment, two on prophylaxis. Those who have followed the researches on malaria conducted in this country during the war well know that so far it has not been found possible to *cure* simple tertian malaria infections by quinine used in any dose in any way, and that the fundamental fallacies underlying the pre-war text-book were traceable to a lack of adequate post-treatment observation period. Nor, so far, has salvarsan proved any more effective, though its "specific" action is just as well marked as that of quinine. How far these statements apply to malignant tertian malaria we cannot say, though the evidence is very clear that *Plasmodium falciparum* and *P. vivax* react differently to quinine and salvarsan, and it is consequently imperative that authors when they write of quinine and malaria should state to what exactly they are referring. There is, so far as we are aware, no evidence on record proving that a first attack of any form of malaria is more readily cured than a relapse. Of the efficiency of intramuscular injections of quinine, even in the strength 1 g. in 2 c.c. of water, in simple tertian malaria there is not the slightest doubt. Those who still conduct academic discussions on the point should read the literature. The fact, if it be so, that quinine (or what is supposed to be quinine) has been found *in situ* post mortem cannot stand against the clinical and microscopical evidence. Ramsden's and Lipkin's work suggests that it may not be quinine itself but a metabolite of quinine that is the actual parasiticidal agent; and, further, there is evidence that muscle possesses this power of metabolising quinine. The finding of "quinine" *in situ* in muscle may be, in fact, the very reason that intramuscular injections are so successful—viz., the muscle is exercising its metabolising function, a function which blood as compared with muscle possesses to hardly any appreciable extent. These are speculations, however, and do not in the least touch the established fact that intramuscular injection of quinine, even in 50 per cent. solution, is a good method of administering quinine in simple tertian malaria. Captain W. Fletcher, R.A.M.C., in a letter published in our present issue, expresses his belief "that 'quinine resistant' types of malaria are either extremely rare or non-existent." "A relapse," he says, "during adequate quinine treatment (defined above as 20 gr. or more every day) is, to say the least, uncommon"; but not only the records of such cases, in *simple tertian malaria*, but the frequency of their occurrence can be found in the literature for 1917. Major D. G. Marshall, I.M.S., has some instructive teaching on the matter on another page. In *simple tertian malaria* very little result is to be expected from such a quinine course. Quinine for the attack is a proved remedy, but no short road to *a cure* of *simple tertian malaria* by its means has hitherto been found. Quinine prophylaxis has not yet emerged from the ocean of contradictory statements that exist on the matter. There is only one method of putting an end to the confusion, and that is, to begin again, defining strictly the conditions of each experiment; it has not been generally recognised hitherto, for instance, that prophylaxis of a non-infected population and the "prophylaxis" (so-called) of an already infected population are two distinct questions.

The papers in the special number of the *Indian Medical Gazette* do not add much to our knowledge, and when quotations are given from older work, much of it is not satisfactory for various reasons.—"The Malaria Problem in Peace and War," by F. L. Hoffman, is a pamphlet of 100 pages, based on papers read at the annual meeting of the National Committee on Malaria, Memphis, Tenn., and at the Annual Convention of the New Jersey Mosquito Eradication Commission, Atlantic City, N.J. This able digest contains much matter difficult of access elsewhere, but while it gives a vivid idea of the vastness of the malaria problem, it can in no way replace the original papers, the study of which alone will reveal whether they are of value or not, a matter frequently impossible to ascertain from an abstract.

HELIOTHERAPY IN AFRICA.

HELIOTHERAPY has been principally practised on the continent, and only to a small extent in this country, partly because of less favourable climatic conditions and partly from want of appreciation of its value. In the *South African Medical Record* for July Dr. J. F. Haegert has reported remarkable results in South Africa, of which the following are some examples:—

An emaciated woman, aged 32 years, suffered from attacks of abdominal pain. The urine contained tubercle bacilli, which on catheterisation of the ureters were found to come from the right kidney. As an alternative to nephrectomy sun treatment was suggested. In two months she gained 15 lb. in weight and in a year was apparently cured.

A boy, aged 6 years, had been treated in hospital for tuberculosis of the hip by extension and fixation. He was pale and flabby and had a high evening temperature after any exertion. The head of the bone was eroded and there was shortening. After a few weeks of sun treatment he discarded his crutches and got about comfortably. After a few months he was robust and sturdy and apparently cured.

A Basuto, aged 40, had a rheumatic stiff hip-joint, with atrophy of the thigh muscles. After four months of sun baths, with massage, the hip-joint was quite free and the thigh muscles were normal.

A man, aged 52 years, had severe sciatica, with effusion into the knee-joint. The thigh muscles were flabby and atrophied. Sensation was practically absent in the three middle toes. He had been treated for 18 months by various practitioners in the large towns and operation on the nerve had been strongly suggested by one. He had tried different baths in the Orange Free State. The result was that he was bedridden and in constant pain. After a short period of sun treatment, with massage, he was a different man and could look after his farm work.

In early cases of tuberculosis cure was practically invariably obtained. In beginning sun treatment the first thing to do is to remove the coverings and confining apparatus and restore light to the atrophied limbs. By gradual stages the patient is trained to live in the open air and to tolerate prolonged exposure to the sun. Dr. Haegert recommends that the sun-bath be taken in a rectangular enclosure about 20 by 10 feet, the long axis pointing east and west, the sides made of reeds, mealie stalks, or zinc. The patient is clad in some white material and the head is protected with a white hat or an umbrella fixed to the bed. Dark glasses are worn to avoid the dazzling light. Irrespective of the locality of the disease, insolation is always begun on the lower limbs. Sunburn should never be produced. On the first day only the feet are exposed, next day the legs to the knees, then to the groins, then the abdomen, and finally the head and neck. As pigmentation advances precautions, at first essential, become superfluous, and daily insolations of four to six hours are given. Patients vary in the tolerance of the exposure. The rule is: Expose the patient as long as he bears it with pleasure and without lassitude.

SOCIAL INSURANCE IN GERMANY.

THOSE who have duties in connexion with National Insurance in the United Kingdom have been brought face to face with serious problems, increasing as the war is prolonged; but they may console themselves by considering how far more heavily the difficulties which weigh upon them are pressing upon those who in Germany are providing medical attendance, drugs, and necessary extra food for insured persons, out of limited and diminishing funds. In the New York *Spectator* for August 22nd the statistician of the Prudential Insurance Company of America calls attention to these difficulties as proved by the annual report of the Communal Sick Fund of the city of Leipzig, and criticises severely statements which he has met with, to the effect that Germany, by adroit falsification of Census returns in the past, deceived the rest of the world as to her man-power, and has since been able to maintain her resources by restoring an impossible proportion of sick and wounded soldiers to the battle-line. From the report of the Leipzig Communal Fund a diminution may be gathered amounting to more than one-half of the number of male members in the compulsory insurance section, and an increase from 31 to 56 per cent. in the proportion of women members of the same class. The report, however, gives no information as to the age of the women liability for whose health is imposed for the first time upon the fund, nor as to what proportion of them are married. The administration of the fund has evidently been lax, to the extent that it has not confined benefits to those provided for by its contract with insured persons, but has gone outside such limitations, charitably perhaps, or in obedience to instructions imposed by the State, but to an extent likely to have serious financial consequences. The results of dear and scarce food are to be clearly seen in the accounts of the Leipzig Fund, and are perhaps most strikingly illustrated by the increase in the number of malingerers. A large number of persons claimed medical benefits at Leipzig in 1917 in the hope of being able to supplement their food-supply under the doctor's orders, but failed to establish the fact that they were suffering from ill-health. In Munich a proposal that increased contributions to the Communal Fund should be demanded to meet an obvious shortage was defeated, and a resolution was carried by the employed persons interested that the deficit should be supplied from the reserve funds, a policy which must lead to insolvency if persisted in. The difficulties experienced in administering the National Insurance Acts in this country are growing, but they are still slight when compared with those experienced by our enemies.

"THE JOURNAL OF GENERAL PHYSIOLOGY."

THE opening number of a new periodical of great scientific interest in its outlook, entitled *The Journal of General Physiology*, is announced for issue this week in New York. The journal is intended to serve as an organ of publication for papers devoted to the investigation of life processes from a physico-chemical view-point. The preliminary statement points out what we have often suggested in these columns—that under the pressure of the demands of medicine and of other professions, physiology has developed in the direction of an applied science, with limited opportunity for the investigation of purely theoretical problems. On the other hand, the physico-chemical methods

of analysing life phenomena have thus far made little inroad into the domain of zoology and botany. In these circumstances the establishment of *The Journal of General Physiology* has been made with a very definite programme before the editors, namely Dr. Jacques Loeb, the Rockefeller Institute for Medical Research, 66th-street, New York City, and Professor W. J. V. Osterhout, Harvard University, Cambridge, Massachusetts. Contributions are invited relating to the physico-chemical explanation of life phenomena, no matter in what field of science they originate, and should be addressed to the editors at the Rockefeller Institute or 60, Buckingham-street, Cambridge, Mass. The subscription price is $5.00 per volume, is payable in advance, and issue is bi-monthly at the Rockefeller Institute, and should be paid by draft or cheque on New York or by postal money order.

THE VALUE OF TESTIMONIALS.

THE case of Nurse Eva Grace Thompson, tried before Mr. Justice Darling at the Central Criminal Court for the murder of a child aged 2 months at an "infant welfare centre," would have attracted more notice if the war were not absorbing the attention of all, for a second child's death and serious injury suffered by a third were probably due to the nurse's acts. Possibly, however, in time of peace no such tragic incidents as these would have occurred, for greater competition for the post held by Thompson would have caused a stricter inquiry into the character and antecedents of the candidate for it. As it is, this unhappy young woman was found guilty, but was also proved to have been insane when she fractured her little victim's skull. Evidence was given that she had spent three years in a home (1909 to 1912) as the result of addiction to drugs, and that she had recently fractured her own skull probably by striking it against the floor. She herself admitted that she had been under treatment for drugs, and Mr. F. J. W. Sass, deputy medical officer at Holloway Prison, gave evidence entirely consistent with these statements based upon his observation of the prisoner. In these circumstances it is evident that any close inquiry into the previous history of Thompson, described as a trained nurse, 33 years of age, would have prevented her engagement at an infant welfare centre or at any kindred institution. In her case, however, a written "reference" from a lady who "had known her personally and her work" had been accepted without further question. The difficulty of obtaining suitable persons in war-time for almost any post may account for, but cannot justify, the readiness with which such a vague testimonial was accepted. Many persons may now be obliged to employ for their private convenience men and women whom they would not consider for a moment if they had others to select from, but it is different where an institution is charged with the care of children or of other helpless persons. Moreover, at such institutions there is, or should be, no difficulty in obtaining the assistance of a medical practitioner in the selection of a trained nurse where the evidence to character and attainments is unduly slight.

KING'S COLLEGE MEDICAL SCHOOL.—The opening of the winter session will take place at the school, Denmark-hill, on Tuesday, Oct. 1st, when Sir Watson Cheyne will deliver the introductory address, after a short statement as to the position of the institution has been made by Dr. H. Willoughby Lyle, the dean of the school.

ROYAL AIR FORCE MEDICAL SERVICE.

THE conditions of the Medical Service of the Royal Air Force have now been made public, and will be received by our readers with considerable gratification. In obvious directions—for example, in the allocation of officers to suitable posts and in the opportunities given for promotion by merit—the conditions mark a real advance. The task of selecting flying officers, to mention one grand duty of the Medical Service of the Royal Air Force, presents many difficulties, which are discussed elsewhere in these columns; and from this point of view alone the recognition of scientific counsels by the Royal Air Force is very welcome.

CONDITIONS OF SERVICE.

General.

1. For the present two main, or special, divisions of the medical work of the Royal Air Force will be recognised—namely, (*a*) care of the effective personnel, and (*b*) care of the non-effective personnel.

2. The former may be considered to represent the hygiene and preventive side of the work, and to include such special subjects as selection and care of the flying personnel, maintenance and improvement of the physical efficiency of all ranks, sanitation, &c. The latter represents the curative side of the work, and certain subdivisions that Air Force experience has shown to be necessary will be recognised—namely, neurology, surgery of the eye, throat, nose, and ear, and plastic surgery, &c., in addition to general medicine, surgery, and pathology, &c.

3. Subject to the exigencies of the Service, a medical officer will be selected for, and eventually allocated to, work in the subdivision for which his ability best suits him. Since, however, the success of any special work in the Air Force will depend upon a sound knowledge of the conditions of life of the effective personnel, medical officers will not be earmarked for one of the special subdivisions of the Medical Service until selected for the higher or Grade A pay, vide Appendix II.

4. While it would be impossible for the Air Council to give any guarantee that an officer will be employed continuously on a line of work in which he happens to have acquired special knowledge, the endeavour of the administration will be in this direction.

5. It should also be generally realised by medical officers that the direction, or administration, of the divisions and subdivisions will be entrusted to those whose special knowledge of the subject, or subjects, will ensure the best technical control.

6. It will be observed (para. 21 and Appendix II.) that the system of charge pay as in vogue in the Navy and Army Medical Services has been replaced in the Air Force Medical Service by a system of special merit pay. An officer once selected for Grade A pay will draw such pay for a probationary period of one year, and if then confirmed, will, except in the case of incompetence or misconduct, continue to draw this pay however employed until promoted to the next higher rank, when he will be placed in Grade B until again selected for Grade A.

7. An officer appointed in charge of a hospital or other unit which in the Navy or Army would carry charge pay, or which previously was held by an officer drawing Grade A pay, is not thereby entitled to Grade A pay; nor will seniority of itself entitle an officer to Grade A pay.

8. A limited number of commissions as administrative officers (medical) will be available, and warrant officers and non-commissioned officers transferring from the R.A.M.C. or entering the R.A.F.M.S. direct will be eligible for promotion to these appointments.

9. Particular attention is drawn to the difference between the terms "transferred" (as applied to temporary officers) and "attached." The former implies relinquishment of any temporary commission held at the time of transfer; the latter is analogous to seconded service, and enables the officer in question to return to his original service at the end of a stated period without loss of seniority or pension in respect of such attachment.

10. Permanent commissions will not be granted at present, and the conditions of service and scales of pay set out in this Memorandum will be subject to revision at the end of the war, or before that time if the Air Council so decide. When a permanent Air Force Medical Service is established previous experience as medical officer in the R.A.F. will be taken into account in granting such permanent commissions.

Duration of Service.

11. No person will by reason of attachment or transfer to the R.A.F. become liable for service with the Forces for a longer period than that for which he would have been liable had such attachment or transfer not taken place.

12. Subject to para. 11, permanent officers of the Royal Navy, including officers who have joined the Reserve of Medical Officers from the permanent list, and Royal Naval Volunteer Reserve Medical Officers, will be *attached* to the R.A.F. for a period of three years or the duration of the War, whichever is the longer. Regular and Territorial officers or members of the Special Reserve of the R.A.M.C. will be *attached* to the Royal Air Force for the duration of the War. (Officers who are seconded from the Navy and Army will receive assurance in writing that their prospects of promotion by selection in their own service will not be prejudiced. Ref. 7070/18.)

13. Subject to para. 11, temporary medical officers of the Royal Navy or Royal Army Medical Corps and dental surgeons will be *transferred* to the Royal Air Force for the remainder of the period for which they were liable to serve with the Royal Navy or R.A.M.C., as the case may be.

14. Subject to para. 11, R.A.M.C. orderlies will be transferred to the R.A.F. for the remainder of the period for which they were liable to serve with the R.A.M.C.

Rank.

15. Promotion to ranks above that of Captain in the R.A.F. Medical Service will be by selection to fill vacancies in the establishment.

16. On attachment or transfer to the R.A.F. officers will receive temporary commissions in the R.A.F., with rank corresponding to their rank, substantive or temporary, prior to attachment or transfer as shown in Appendix I.

17. An officer attached to the R.A.F. receiving promotion in the Navy or Army during such attachment will receive corresponding rank in the R.A.F., and be held supernumerary to the establishment until a vacancy occurs in such higher rank in the R.A F. for which he may be selected.

18. Officers lent to the R.A.F. becoming attached or transferred to the R.A.F. will receive seniority in the R.A.F. from the 1st April, 1918, and will be placed upon the R.A.F. list in order, based on their seniority in the service from which they are attached or transferred.

19. R.A.M.C. orderlies transferring to the R.A.F. will be graded in ranks corresponding to their rank in the R.A.M.C.

Pay, Allowances and Gratuity.

20. Officers attached to the R.A.F. will be paid at the rates set out in Appendix II. (Grade B) subject to reserved rights as in para. 29.

21. A proportion of officers will be selected for pay at the higher rate (Grade A) on the recommendation of the Medical Administrative Committee. The Committee will take into consideration: (*a*) Length of service; (*b*) war or specially meritorious service with the R.N.A.S. or R.F.C.; (*c*) medical qualifications; and (*d*) any other special service or qualification possessed by the officer in question. The names of all officers transferred or attached will be periodically considered for selection to Grade A.

22. Medical officers attached to the R.A.F. will receive allowances on the scales laid down for corresponding ranks in the R.A.M.C. These allowances may be varied from time to time to meet the conditions prevailing in the R.A.F., but are at present similar to those issued to Army officers.

23. Temporary medical officers, both R.N.A.S. and R.A.M.C., transferred to the R.A.F., if not above the rank of Captain, will be paid at rates similar to the rates paid to temporary medical officers of the R.A.M.C.—namely, 24*s.* a day inclusive of all allowances except (*a*) ration allowance when rations are not issued in kind, and (*b*) travelling allowances and expenses when travelling on duty.

24. Temporary medical officers with the rank of Major (or senior to Major) transferred to the R.A.F. will receive pay at the rates for medical officers as shown in Appendix II., Grade B or A, as the case may be. This also applies to promotions after transfer.

25. Dental surgeons transferred to the R.A.F. will receive pay at rates similar to the rates paid to dental surgeons in the Army inclusive of all allowances except travelling allowances and lodging, fuel and light allowances when quarters are not found and they are required to live away from their usual place of residence in civilian life.

26. Temporary medical officers of the R.A.M.C. transferred to the R.A.F. will receive such proportion of their annual gratuity of £60 as has accrued up to the date of transfer and will hereafter receive a gratuity at the rate of £60 for each year's service in the R.A.F. This gratuity is awarded under the terms of the contract set out in Appendix III.

27. R.A.M.C. orderlies transferred to the R.A.F. will receive pay at the rates they were receiving in the R.A.M.C. as corps pay and basic pay. A special rate of pay for R.A.F. medical orderlies is under consideration.

28. Temporary medical officers of the Royal Navy transferred to the R.A.F. will receive a gratuity of £60 for each year's satisfactory service (vide Appendix III.) with the R.A.F., subject to a minimum of two months' pay at R.N. rates.

29. While it is impossible to pledge the future as to the prospect of individuals, and while reasonable latitude must be allowed to the Air Council to deal with any privilege or emoluments which are not subject to vested rights, it may be taken as a general principle that no person will suffer loss of emolument or pension by reason of attachment or transfer to the R.A.F.

30. In pursuance of this principle any person becoming attached or transferred to the R.A.F. will continue at the rate of pay he was already receiving where such rate was higher than the rates set out in this Memorandum.

31. An outfit allowance of £25 will be granted to officers becoming attached or transferred from the Royal Navy, and £10 in the case of officers becoming attached or transferred from the Army. Officers becoming attached or transferred from the Royal Navy with the rank of field officer in the R.A.F. will receive an outfit allowance of £30.

32. Officers having already received an allowance for khaki uniform in the Royal Navy will receive only £10.

APPENDIX I.

Rank in R.N.	Rank in R.A.M.C.	Rank in R.A.F.
—	Lieutenant.	Lieutenant.
Surgeon.	Captain.	Captain.
Staff Surgeon.	Major.	Major.
Fleet Surgeon.	Lieut.-Colonel.	Lieut.-Colonel.

APPENDIX II.

Daily Pay for Medical Officers (Excluding Temporary Medical Officers Under the Rank of Major).

Rank.	Grade B.	Grade A.
Lieutenant	14*s.*	—
Captain...	16*s.* and 19*s.*	22*s.*
Major	24*s.*	27*s.*
Lieut.-Colonel ...	35*s.*	40*s.*

APPENDIX III.

A.M. Form 161.

FOR GENTLEMEN SUBJECT TO THE MILITARY SERVICE ACTS.

To His Majesty's Principal Secretary of State for the Royal Air Force.

I.....

of.....

being qualified to practise medicine and surgery, and being registered under the Medical Act now in force in the United Kingdom, hereby offer and agree if accepted by you to serve at home or abroad as a Surgeon to His Majesty's Forces with the temporary rank of Lieutenant in the Royal Air Force while so employed, on the following conditions:—

1. The period of my service hereunder shall commence as from the day on which I shall commence duty, and shall continue until the termination of the present emergency, or until my services are no longer required, whichever shall first happen.

2. My pay shall (subject as hereinafter appears) be 24*s.* a day for the said period, such rate to be inclusive of all money allowances, except the regulated travelling allowances and expenses when travelling on duty.

3. In addition to such pay, I shall receive a free passage to any country abroad to which I may be sent, and (subject as hereinafter appears) a similar free passage back to England.

4. I shall receive free rations, or an allowance in lieu thereof, and when considered necessary for the performance of my duties the use of a Government horse and forage.

5. During the said period I will devote my whole time and professional skill to my service hereunder, and will obey all orders given to me by superior Air Force, Naval, or Military officers.

6. In case I shall have completed my service hereunder to your satisfaction in all respects, I shall receive at the end of the said period a gratuity of £60 sterling for each 12 months or part thereof, but in case I shall in any manner misconduct myself, or shall be (otherwise than through illness or unavoidable accident) unfit in any respect for service hereunder, of which misconduct or unfitness you or your authorised representative shall be sole judge, you shall be at liberty from and immediately after such misconduct or unfitness to discharge me from further service hereunder, and thereupon all pay and allowances hereunder shall cease, and I shall not be entitled to any free passage home or gratuity.

Dated this.....day of.....19.....

.....(here sign).

Witness to the signature of the said

.....

..... (Witness).

On behalf of the Secretary of State I accept the foregoing offer.

.....

Medical Administrator, Royal Air Force.

SOCIETY FOR THE STUDY OF INEBRIETY.—The next meeting of this society will be held on Tuesday, Oct. 8th, at 4 P.M., in the Rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W. 1, when Major Robert B. Wild, M.D., professor of materia medica and therapeutics in the Victoria University of Manchester, will open a discussion on "The Pharmacology of Alcohol." All interested in the subject are invited to be present.

Correspondence.

"Audi alteram partem."

QUININE RESISTANT MALARIA.

To the Editor of THE LANCET.

SIR,—Nowadays one hears frequently of malaria which is resistant to quinine, in the sense that while the patient is taking 20 gr. or more every day the fever endures beyond the fourth day; and though he continues to take quinine in undiminished doses, from time to time he has relapses associated with the presence of asexual parasites in the peripheral blood.

In this sense I believe that "quinine resistant" types of malaria are either extremely rare or non-existent. I am not concerned here with relapses which occur *after* the patient has reduced his daily dose of quinine below 20 gr., or has stopped taking it altogether; all of us are but too familiar with such cases, and I remember an *obiter dictum* of Sir Patrick Manson:

"We don't cure protozoal infections with drugs. We keep them in check until the resisting power of the patient can overcome them."

There are relapses in malaria after treatment with quinine; but a relapse *during* adequate quinine treatment is, to say the least, uncommon.

Now that many medical men without experience of tropical diseases are called upon to treat cases of malaria, it is of the utmost importance that they should know what a trusty weapon lies ready to hand and that their faith in quinine should not be undermined at the outset. Sir Patrick Manson writes:—

"Many drugs have been employed in the treatment of malarial disease, and many drugs have some influence on it; all sink into insignificance in comparison with quinine. To use any drug to the exclusion of quinine is serious trifling."[1]

In THE LANCET of June 22nd is an article by Major E. B. Gunson, Captain F. W. Winning, and Lieutenants G. A. Johnstone, J. H. Porter, and G. B. Scott, entitled "The Treatment of Severe Relapsing Cases of Malaria." The "routine treatment by oral quinine" consisted in putting the patient to bed and giving him at least 20 gr. every day until he was discharged from hospital. In this way 328 men were treated, with the result that 30 per cent. relapsed while they were taking quinine, and some of them developed long periods of sustained pyrexia or became increasingly cachectic.

These results are quite contrary to my own experience, and to that of many other workers. Captain David Thompson has reported[2] on the results of treatment by quinine of 200 patients who had contracted malaria in many different parts of the world. Only one of these 200 patients showed "quinine resistance," and in this instance the nurse "admitted that some doses had been omitted about the time of the relapse."

During the years 1904 to 1908 I was in charge of the General Hospital, Kuala Lumpur, Federated Malay States. This was in the early days of rubber planting; virgin jungle was felled, great tracts of country were brought under cultivation, new roads and railways were being constructed, and large gangs of imported coolies were gathered together for the work. In a tropical country such conditions almost invariably give rise to malaria in epidemic form, and the Malay States proved no exception.

Large numbers of patients were admitted to the hospitals, and the General Hospital at Kuala Lumpur had its share. I have no access to the figures at present, but the number of cases of malaria treated in that hospital during those years was well over 2000, about one-sixth of which were simple tertian infections and the remainder subtertian and quartan. These patients were under my personal care, and I saw them at least three times a week. In not more than half a dozen cases did a relapse occur while the patient was taking 20 gr. of quinine sulphate daily, and in each of the half dozen cases I had grounds for suspecting that the quinine had not been taken regularly. I have never seen a patient relapse a second time while he was taking 20 gr. of quinine every day.

My experience with soldiers who have contracted malaria during the present war has not been different from that gained in the tropics. From February to July, 1918, malarial parasites were found in the blood of 301 patients examined in this laboratory (*P. vivax*, 278; *P. falciparum*, 22; *P. malariæ*, 1). Each patient was given 10 gr. of quinine twice a day while he remained in hospital, with the result that in the great majority of cases the temperature came down to normal in a day or two. In 11 cases the fever lasted until the third day and in one until the fourth day after the commencement of treatment. Only two men relapsed, and I suspect that they had managed to escape some doses of quinine, for after special attention was paid to them the fever and the parasites quickly disappeared. This series is not strictly comparable with Major Gunson's; his patients stayed in hospital for seven weeks, but only 73 of these remained for more than a fortnight.

There is no cogent evidence that the malaria parasites in one part of the world are more resistant to quinine than those found elsewhere. *P. vivax* is as readily influenced by quinine whether it come from the Near or from the Far East or from any other part of the world. We have, most of us, heard of "quinine-fast" malaria parasites, but how many have actually encountered them? Has anyone ever seen a case of malaria in which the fever continued and asexual parasites were still to be found in the peripheral blood after the patient had been taking quinine in doses amounting to 20 or 30 gr. a day for four days and was continuing to take it?

The commonest cause of "resistance" is insufficient concentration of quinine in the patient's blood, due to insufficient dosage or to failure to take the drug regularly. Quinine is unpleasantly bitter and the soldier is not alone in trying to get out of taking it. Most people find it a dull business to look after cases of malaria who are up and about, so that it is not always difficult for the patient to escape his dose. If the administration be left to the patient one can be certain that quinine is not taken regularly. When I have been recovering from malaria myself I have found it impossible to remember my quinine; the only way in which I could insure taking it regularly was by making my "boy" put two capsules beside my plate at breakfast and again at dinner.

With reference to the form in which quinine should be administered a good deal has been written lately about the advantages of quinine injections in the routine treatment of malaria, but Sir Patrick Manson holds the opinion that "the intramuscular injection of quinine must not be practised without good reason or as the routine treatment of ordinary malarial attacks."[3] In 1905 I treated several hundred patients with injections of quinine, but I did not find that the results were any better than when it was given by the mouth, and I came to the conclusion that intramuscular and intravenous injections should be reserved for patients with very urgent symptoms, persistent vomiting or coma. It is very rarely necessary to continue to administer the drug by these routes for more than one or two days. Sir Ronald Ross writes: "I really do not know why this form of medication is continued in malaria."[4]

I do not wish to enter upon the question of malaria-prophylaxis and the prevention of relapses after treatment, but I will say at once that I have seen the best results from the routine administration, by the mouth, of 10 gr. of quinine twice a day, continued for as long as three months if possible, and then stopped entirely. I have found it a good rule to add 2 gr. to the 20 gr. for each stone above a weight of 10 st.

It is quite common to meet people who say that they cannot take quinine, but in reality an idiosyncrasy with respect to it (as manifested by urticaria with vomiting and collapse) is a great rarity. I have never seen anyone harmed by 20 gr. of quinine a day, even when continued over a long period. If the patient objects to the drug in liquid form the powder can be put up in the gelatine capsules which are supplied, empty, by Messrs. Parke, Davis, and Co.

In spite of general opinion, I think that quinine should be commenced as soon as malaria parasites have been found. To wait until the temperature comes down is wasting time; in some cases the temperature never comes down until the patient dies. Ten grains of aspirin give the greatest relief when there is fever.

[1] Manson: Tropical Diseases, fifth edition, p. 118.
[2] Journal, Royal Army Medical Corps, July, 1917.
[3] Loc. cit., p. 124.
[4] See Annals of Tropical Medicine and Parasitology, June, 1917.

I will conclude by quoting Sir Patrick Manson once more: "If a supposed ague resist ..... quinine ..... the diagnosis should be revised."[5]—I am, Sir, yours faithfully,

WILLIAM FLETCHER,
Captain, R.A.M.C.; Pathologist, Institute for Medical Research, Kuala Lumpur, F.M.S.
The Laboratory, University War Hospital, Southampton, Aug. 1st.

HYPNOSIS IN HYSTERIA.

To the Editor of THE LANCET.

SIR,—I am glad to take the opportunity afforded me by Captain J. R. O'Brien's courteous letter in your issue of Sept. 21st to enlarge somewhat upon the question of the relation between hypnosis and hysteria, although a really adequate discussion of this relation would fill volumes. It is well known that Charcot failed therapeutically through his excessive enthusiasm for hypnosis. His methods were so vigorous, and he applied them so frequently upon the same subjects, that these subjects became more and more dissociated, more and more suggestible, more and more hysterical. Hence the *grande hystérie*, the *attitudes passionnelles*, &c., which are now so seldom met with. In other words, he "cultivated" hysteria at the Salpêtrière. But in doing so he made great additions to our theoretical knowledge of both hypnosis and hysteria. His failure as a physician and his success as a scientist are both summed up in his statement, "Hypnotism is an artificial hysteria." I consider this statement, as far as it goes, to be absolutely true. The more one sees of hysteria and the more one sees of the results of hypnotism the more convinced one becomes of the intimate relation between the two. That is why hypnotism is such a dangerous method to use in the hands of operators whose enthusiasm outruns their psychological knowledge and skill. Safeguards are necessary, and in my article in THE LANCET of August 17th I have indicated the modifications of ordinary hypnotic procedure which I have found practically satisfactory in dealing with hysterical soldiers in the field shortly after their exposure to shell fire. Shell concussion, or the mental strain of being under shell fire, had already hypnotised them and produced a certain amount of mental dissociation in the form of amnesia, loss of motor or sensory functions, &c., without demonstrable organic nerve lesions, and by means of my method of light hypnosis I was able to remove the underlying cause of this dissociation and neutralise it by subsequent re-association.

No doubt there are other forms of dissociation besides that of hysteria. But the point is that the dissociation of hysteria and the dissociation of hypnosis are identical in nature. Captain O'Brien writes: "Thousands of healthy men absolutely devoid of any trace of hysteria have been hypnotised, while hysteria itself, instead of favouring the induction of hypnosis renders it more difficult." With the second half of this statement I entirely disagree. My experience has been that the more hysterical a patient is the easier it is to hypnotise him. I also believe that when an apparently normal person is hypnotised he is rendered temporarily hysterical by the very process of hypnosis, the vigorous emotional appeal of the operator producing a dissociation of a hysterical nature. Such a person will be more hysterical thereafter, and will be more susceptible to hypnotism, unless steps are taken to counteract this effect. I, of course, recognise how large a proportion of apparently normal people can be hypnotised by one means or another—although in many cases the degree of hypnosis is slight—but then most people, if not all, have some hysterical flaw, some dissociation following upon mental conflict, in their mental make-up. "Jedermann ist ein bisschen hysterisch," said Moebius, and this slight degree of hysteria is what ensures the success of the resolute hypnotist. The mild methods which I myself use have no effect upon apparently normal persons, although they are invariably successful with hysterical soldiers hot from the firing line. In my opinion, more impressive methods are to be deprecated, as their dissociative effects are difficult to neutralise afterwards.

When Captain O'Brien writes as follows: "Pierre Janet's theory that only hysterical patients can be hypnotised rests on the assumption that the presence of the secondary self is always a symptom of hysteria," I am again unable to follow him. Pierre Janet has no dealings with a "secondary self." He prefers to avoid hypothesis as far as possible, and to speak simply of dissociated ideas. When these ideas are sufficiently numerous and linked up with one another, they may produce the appearance of an alternating or dual personality. The essential psychological characteristic of the hysteric is, in Janet's view, a weakness of mental synthesis. I can only repeat that my personal experience with cases in France agrees closely with the views of Janet, but is at variance with much that has been written elsewhere. It seems to me that only by the aid of hypnosis and other forms of mental analysis will the problem of hysteria be finally solved. I am, Sir, yours faithfully,

WILLIAM BROWN,
Major, R.A.M.C.
Craiglockhart War Hospital, Edinburgh, Sept. 21st, 1918.

[5] Loc. cit., p. 120.

DRIED *V.* CONDENSED MILK: A CORRECTION.

To the Editor of THE LANCET.

CHER MONSIEUR,—Je me permets de recourir à votre haute impartialité pour vous demander de bien vouloir rectifier dans le prochain numéro du "LANCET" l'erreur de traduction qui s'est glissée à l'occasion de ma précédente lettre sur le lait condensé.[1] Cela vous apparaitra d'autant plus nécessaire que cette erreur dénature complètement ma pensée et le sens de ma lettre. En effet, je disais:

"Mes dernières recherches me permettent de conclure que les laits condensés non sucrés sont inférieurs aux laits condensés sucrés et j'affirme que les laits *écrémés* constituent des produits dangereux pour les jeunes enfants."

Or votre traducteur a écrit:

"Unsweetened condensed milk he considers positively dangerous."

Il y a là une interprétation qui me fait dire le contraire de ce que je pense: Ce sont les laits condensés privés de leur crème qui je considère comme dangereux pour les enfants, mais si j'estime aussi que le lait condensé sucré est le meilleur aliment de la 1ere enfance je reconnais après une longue expérience et je l'ai declaré dans de nombreuses publications, que les laits condensés non sucrés (mais contenant leur crème), sont néanmoins excellents et bien préférables à tous les autres laits en usage dans l'alimentation de la 1ere enfance.

Votre souci de la vérité scientifique, m'assure que vous voudrez bien, cher Monsieur, corriger la fausse impression qu'ont pu avoir vos lecteurs.

Recevez avec mes remerciements l'hommage de ma haute et sympathique considération. P. LASSABLIÈRE.

Chef de Laboratoire à la Faculté de Médecine de Paris.
Sept. 17th, 1918.

METHODS OF CONTROL OF FRAGMENTS IN GUNSHOT WOUNDS OF THE JAW.

To the Editor of THE LANCET.

SIR,—May I be allowed to make a few remarks on an interesting article under the above heading that appeared in your issue of Sept. 7th by Major H. P. Pickerill.

I appreciate much that Major Pickerill has written, and was particularly gratified to find him adopting as a routine methods and principles that I and my colleague, Mr. Percival P. Cole, at the King George Hospital, have consistently advocated and practised since the early days of the war. I refer in particular to: (1) The importance he attaches to the control of the posterior fragment; (2) the preservation of comminuted fragment of bone; (3) his condemnation of the needless extraction of teeth in the vicinity of the fracture; and (4) his preference for the immediate as opposed to the gradual reduction of malocclusion.

As regards (1), it is interesting to note that as recently as March, 1918, at a meeting of the Odontological Section of the Royal Society of Medicine, Major Pickerill expressed doubt whether we (Mr. Cole and myself) "can control the posterior fragment at any rate by the methods shown." In view of this pronouncement it is interesting to find that, with the exception of the zygomatic screw method, his procedure of controlling the posterior fragment, when the ascending ramus is fractured above the level of the alveolar border, is identical in principle with the one I have always employed—the impression of the fragment being taken with the upper splint *in situ* and a saddle adapted to the model thus obtained and secured to the upper splint.

(2), (3), and (4) were dealt with by me in a paper read at the same meeting, and published later in the Transactions, reference to which will prove the identity of Major Pickerill's method with those therein advocated.

Major Pickerill in his article refers to "the four-tailed bandage," "screw lever splint," and a "submandibular

[1] THE LANCET, August 24th, 1918 (p. 245).

splint." The four-tailed bandage was discarded by me early in the war as being obsolete, the objections to it being so obvious. In its place was substituted a webbing bandage with soft adaptable chin-piece. Two inches of the webbing which passes vertically upwards from the chin is replaced by garter elastic (double thickness, one inch wide). To each piece of webbing at either end is fitted an independent buckle, so that any desired tension can be obtained. With splint in position this bandage efficiently controls any comminuted fragments, bringing them up in position if displaced and maintaining them there, and is, in my opinion, a much simpler and more comfortable device for achieving this than by the screw lever splint.

This bandage also exerts an inward pressure on the lower border of the horizontal ramus of the mandible, and is more than sufficient to overcome the everting pull that occurs in fractures in region of symphysis, and which Major Pickerill obviates by bolting or wiring. That the simpler method of bandaging and splinting does accomplish this end is proved by results, the percentage of non-union of fractures in this area treated on such lines being negligible. The combination of this bandage with the open bite splint entirely obviates the use of suspensory splints objected to by Major Pickerill. One omission in his article is surprising, and that is that there is no reference whatever to the employment of the open bite splint, the advantages of which are so manifold, simplifying as it does the whole treatment of jaw injuries.

As regards the submandibular splint which Major Pickerill uses in the treatment of edentulous cases, I cannot claim to have had any experience with this type. The intraoral supramandibular splint, secured by circumferential wires, being so simple, so efficient in immobilising fragments, in maintaining function, and the end results so uniformly good that occasion has never arisen to experiment with any other.

At the meeting in March above referred to, Major Pickerill made caustic comments on the method of fixation of circumferential wires as being likely to introduce "the unnecessary element of sepsis." Bearing this criticism in mind, his advocacy of a perforating bolt secured by nuts is piquantly inconsistent.—I am, Sir, yours faithfully,

CHARLES H. BUBB,
Honorary Dental Surgeon, the King George Hospital.

Burlington-gardens, W., Sept. 16th, 1918.

A NASAL DRILL IN THE TREATMENT OF ADENOIDS.

To the Editor of THE LANCET.

SIR,—I have been interested since the year 1910 in the observation of cases of chronic lymphatic stasis which have yielded to the treatment designed by Mrs. E. Handcock. In the earlier cases this was applied to the elimination of waste products in the neighbourhood of arthritic swellings; the same principle of artificial lymphatic circulation in later cases showed that the upper air passages could be cleared by external manipulative treatment in many instances of chronic inflammation.

The letters which you have published on nasal drill will draw attention to this undoubted addition to medical knowledge. I am, Sir, yours faithfully,

Harley-street, W., Sept. 24th, 1918. H. BELLAMY GARDNER.

NASO-PHARYNGEAL INFECTION AT THE ONSET OF CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—Staff Surgeon Fildes's letter in your issue of Sept. 14th, severely criticising Colonel Gordon's views on cerebro-spinal fever, obviously shows his own view to be that many cases of the disease do not have the meningococci in their throats, and he says at the end: "We came to the same obvious conclusion—namely, that Colonel Gordon's statement was much too sweeping, in fact incorrect. Our work is quite well known to Colonel Gordon."

If, Sir, you will turn to the Medical Research Committee's Special Report Series, No. 17, published on August 2nd this year by Staff Surgeon Fildes and Temporary Surgeon S. L. Baker, R.N., you will see on p. 26, under heading, "The Examination of the Patient's Naso-pharynx for Meningococcus," that after mentioning that Flack had found these organisms in this region in all his cases in the earliest stage, and deduced therefrom that their presence was a valuable diagnostic sign in doubtful cases, these authors proceed:—

"We ourselves are unable to confirm Flack's results as to the constant presence of meningococci in the throat because our swabs were taken on the average nine days after onset, while Flack took his much earlier. Rather less than half our cases showed meningococci in the throat. On general grounds, however, it would appear very probable that meningococci are constantly present in the throat, as stated by Flack; nevertheless, we doubt whether this fact can be taken as being practically diagnostic in certain cases."

It would appear, therefore, that Staff Surgeon Fildes is capable of holding two diametrically opposite views on the same subject at, substantially, the same time.

I am, Sir, yours faithfully,

T. G. M. HINE,
Central C.-S.F. Laboratory, Sept. 19th, 1918. Major, R.A.M.C.

SANDFLY FEVER OR INFLUENZA.

To the Editor of THE LANCET.

SIR,—In your annotation in THE LANCET of Sept. 14th you deal with the problem raised by Professor G. Sampietro of the belief in Italy of the identity of sandfly fever with the so-called "Spanish influenza." On superficial examination sandfly fever certainly does simulate influenza in epidemic prevalence, sudden onset, and general clinical features, and while it is well known that the signs and symptoms of certain epidemic disease may materially differ according as they occur in tropical, subtropical, or temperate regions of the world, yet there can be no doubt in the mind of the careful clinician that we are dealing with two distinct diseases, and not the same clinical disease or one modified by climatic change. In sandfly fever pharyngeal and laryngeal irritation and catarrh are uncommon, and if present are very transitory, while the pulmonary manifestations of influenza are practically never seen. Local lesions produced by the bite of the sandfly on exposed surfaces of the body occur in over 90 per cent. of patients with sandfly fever, and in any epidemic this should suffice to establish a definite diagnosis. Mortality in sandfly fever may be said to be nil.

We have in sandfly fever, therefore, a rarity of catarrhal conditions of the respiratory passages, a negligible mortality rate, and a definite local skin lesion, in contrast with the general pharyngeal, laryngeal, or pulmonary catarrh, definite mortality rate, and absence of skin lesion in influenza. These suffice to distinguish the two diseases, quite apart from any bacteriological investigations or the prevalence of the sandfly in the district affected.—I am, Sir, yours faithfully,

J. LAMBERT,
Sept. 20th, 1918. Temporary Surgeon, R.N.

MANGANESE POISONING.

To the Editor of THE LANCET.

SIR,—In the edition just published of the "Nomenclature of Diseases" the metal manganese for the first time finds a place among the poisons. At least its name does not appear in the editions issued in 1896 and 1906. So long ago as 1894 I certified manganese as the primary cause of a young girl's death. Prior to this I had discovered that manganese fumes were emitted from the chimneys of the blacksmith and the plumber during the process of melting the metals they use. The chimneys of these industries never require sweeping and the metallic fumes, along with the products from the combustion of coal such as benzene and naphthalene, go right out to the air. Just as the Gulf Stream is an oceanic current, these fumes form an atmospheric current and travel, especially in the case of the blacksmith, a considerable distance. They are wafted along by prevailing winds, and, gathering moisture, ultimately form a green deposit on wooden fences and trees and the slates and stonework of houses. The deposit in the case of the blacksmith is a bright green and that of the plumber a darker green. The vegetable part of the deposit under the microscope is seen to consist of cells of a very simple character. I have not seen moss near it.

The opinion I formed at that time was that manganese given by the mouth seemed rather inert, but that when injected subcutaneously or inhaled it became poisonous and was cumulative and the symptoms like lead, zinc, and arsenic poisoning.—I am, Sir, yours faithfully,

JAMES GAIRDNER, M.D., D.P.H.,
Crieff, N.B., Sept. 20th, 1918. M.O.H., Crieff.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Killed.

Surg.-Prob. N. C. Ward, R.N.V.R.

Died of Wounds.

Capt. J. C. Forsyth, Canadian A.M.C.

Died.

Major A. Johnston, R.A.M.C., qualified at Glasgow in 1883, and held appointments at Monsall Hospital, Manchester, at Wrexham Infirmary, and at the Victoria Hospital, Burnley. At the time of joining up he was medical officer of the Belvidere Fever Hospital, Glasgow, and deputy medical officer of health for the city. For some time he was in command of the Military Isolation Hospital at Aldershot, and died at Glasgow.

Staff Surg. C. D. Marshall, R.N.V.R., was a student at University College Hospital, London, and qualified in 1890. He held appointments at the Royal London Ophthalmic Hospital, at the Children's Hospital, Chelsea, and at University College Hospital, and prior to joining up was in ophthalmic practice in Harley-street, London. He died at the Colaba War Hospital, Bombay, and at the time of his death was principal medical officer in the Persian Gulf and Mesopotamia.

Wounded.

Capt. A. C. B. Biggs, M.C., R.A.M.C.
Capt. J. R. John, R.A.M.C., attached Sherwood Foresters.
Lieut. W. Q. Wood, R.A.M.C., attached Royal Irish Rifles.
Lieut. D. B. Leitch, R.A.M.C., attached Welsh Regiment.
Capt. G. F. Denyes, Canadian A.M.C.
Capt. A. S. Cockburn, Australian A.M.C.
Capt. G. R. Hamilton, Australian A.M.C.
Capt. A. P. Murphy, Australian A.M.C.
Major W. C. Sawers, Australian A.M.C.
Capt. J. Carrick, R.A.M.C., attached, R.F.A.

Previously reported Missing, now reported Prisoner in German Hands.

Lieut. C. Murray, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Lieut. G. K. Elliott, Royal Welsh Fusiliers, killed in action, elder son of Dr. G. Elliott, of Baschurch, near Shrewsbury.

A. D. Pole, Alberta Regiment, killed in action, youngest son of the late Dr. A. Pole, of Lenzie, near Glasgow.

Second Lieut. E. N. Andrews, The Buffs, died of wounds, youngest son of Dr. E. C. Andrews, of Hampstead, London, N.W.

Second Lieut. C. J. N. Lambert, M.C., R.F.A., killed in action, elder son of Dr. H. L. Lambert, of Barnes, London, S.W.

Capt. G. P. Randall, M.C., King's Own Scottish Borderers, killed in action, eldest son of Dr. P. N. Randall, of Bromley, Kent.

H. P. Clepperton, Queen's Royal West Surrey Regiment, killed in action, son of the late Dr. J. Clepperton, of Broughton, Hants.

Second Lieut. C. E. Hadwen, killed in action, only son of Mr. A. St. J. Hadwen, of Ilford, Essex.

Capt. L. V. Royle, M.C., Royal Air Force, killed whilst flying, elder son of Mr. A. Royle, C.B., of Esher, Surrey.

THE HONOURS LIST.

In recognition of his services on the occasion of the sortie of the *Goeben* and *Breslau* from the Dardanelles on Jan. 20th, 1918, the *Distinguished Service Cross* has been conferred upon—

Surg. James Maurice Harrison, R.N. (H.M. Monitor "M28").

A wounded man having fallen into the water, Surg. Harrison went in after him and kept him afloat until picked up. It was due to his untiring efforts that eight severely wounded cases arrived in good condition at the hospital ship 22 hours later.

For services in action with enemy submarines the *Distinguished Service Cross* has also been conferred upon—

urg.-Prob. G. E. Strahan, R.N.V.R.

The following awards to medical officers are announced. All are members of the R.A.M.C. unless otherwise stated :—

Bar to the Distinguished Service Order.

Capt. (acting Lt.-Col.) WILLIAM BLACKWOOD, D.S.O.—For conspicuous gallantry and devotion to duty while in charge of the evacuation of casualties from the Divisional front during an enemy attack. When communication with the advanced dressing station was cut by enemy barrage he re-established communication and personally visited the posts under his administration. Throughout the fighting he visited the forward area daily, and his indefatigable energy and exceptional organising ability were invaluable to the Division.

Maj. (temp. Lt.-Col.) THOMAS ERNEST HARTY, D.S.O.—For conspicuous gallantry and devotion to duty. For nearly a month this officer was in charge of the evacuations of the wounded on the front of a whole Division. His initiative, courage, and resource during much heavy fighting resulted in the successful clearing of all wounded in the forward area, which he frequently visited during heavy shelling to see that his orders were being executed properly, and also to inspire confidence. He never spared himself in his efforts to arrange for the wounded.

Distinguished Service Order.

Temp. Capt. RALPH FRANKLIN EMINSON.—For conspicuous gallantry and devotion to duty. When two companies who had made a counter-attack and reached a village were obliged to fall back 150 yards, suffering heavy casualties, whom it was impossible to rescue owing to the accurate machine-gun and rifle fire from the village, this officer went himself, regardless of fire, and in full view of the enemy, across "No Man's Land" many times, and carried and assisted back the wounded, who would otherwise have been left.

Major JAMES BEVERLEY METCALFE, M.C., Australian A.M.C.—For conspicuous gallantry and devotion to duty. In a village under heavy bombardment of gas and high explosives, this officer, with practically no protection, tended the wounded for four and a half hours. When the advanced dressing station had been moved to a new site, he remained with four men evacuating odd cases which continued to come in until two shells came right into the dressing-room, severely wounding him. His cheerfulness and coolness throughout encouraged all around him.

Temp. Capt. (acting Major) HENRY MOORE, M.C.—For conspicuous gallantry and devotion to duty. He went through heavy machine-gun and rifle fire to a dressing station which was being evacuated and cleared a large number of wounded. He also took cars to battery positions which were being shelled, and removed the wounded to safety. At the dressing stations during enemy bombardment he remained to the last, and saved many lives by his courage and devotion to duty.

Major LESLIE GEMMEL TASSIE, Australian A.M.C.—For conspicuous gallantry and devotion to duty. This officer set a fine example of coolness in going about amongst his stretcher-bearers directing and encouraging them. Day and night he visited the regimental aid-post and loading-posts, rearranging bearer relays and supervising the evacuation of wounded. Hearing there were several wounded in a village which was being heavily shelled, he organised parties and cleared the village.

Capt. and Bt. Major ARTHUR WALKER.—For conspicuous gallantry and devotion to duty in establishing forward dressing stations and continuing to work in them until forced to move by the immediate proximity of the enemy. He was repeatedly working in the open under heavy fire, no protection being available. He undoubtedly saved many lives which would have been lost but for his courage and initiative.

Second Bar to the Military Cross.

Capt. (acting Major) FRANK GRAHAME LESCHER, M.C.—For conspicuous gallantry and devotion to duty. When his camp was heavily shelled he had the wounded removed and attended them in the open for six hours. Again, during the night, when the transport was bombed, he proceeded to the scene and extricated the wounded men and attended to them, although the enemy continued to shell the position.

Temp. Capt. CLARENCE RANDOLPH YOUNG, M.C.—For conspicuous gallantry and devotion to duty. When all the officers of the battalion had become casualties, and his aid-post was almost surrounded by the enemy, he succeeded in evacuating many of the wounded in spite of continuous and heavy fire. His energy and disregard for his personal safety inspired all who came in contact with him.

Bar to the Military Cross.

Temp. Capt. GEORGE OLIVER FAIRTLOUGH ALLEY, M.C.—For conspicuous gallantry and devotion to duty. After the troops had retired past his aid-post, which was temporarily established in a shell hole, this officer continued to attend to and evacuate the wounded. He was exposed to fire from both sides, but succeeded in regaining the line after having evacuated all the wounded. He thus prevented any of them falling into the hands of the enemy.

Temp. Capt. (acting Major) BERTRAM FRIEND BARTLETT, M.C.—For conspicuous gallantry and devotion to duty as battalion medical officer. Under heavy machine-gun and shell fire he continuously bandaged wounded. Though early in the day wounded, he stuck to his duties, and his pluck and determination saved many lives.

Temp. Capt. STANLEY JAMES ANNEAR BEALE, M.C.—For conspicuous gallantry and devotion to duty in working unceasingly for 48 hours at advanced aid-posts. As each post in its turn became untenable he moved back to another, all the time carrying on dressing and evacuating wounded, while frequently exposed to machine-gun fire. By his energy he was responsible for saving large numbers of wounded from falling into the enemy's hands.

Capt. JOHN ARTHUR BELL, M.C.—For conspicuous gallantry and devotion to duty in action. He was ordered to replace a medical officer who was wounded, and at once went up through a heavy barrage, establishing a dressing station in the open, and showed the greatest coolness and devotion to duty in attending the wounded under very heavy shell fire. He continued his fine work for several days, and was the means of saving many lives. His courage and fine example greatly inspired all ranks with him.

Capt. **HAWTREY WILLIAM BROWNE**, M.C.—For conspicuous gallantry and devotion to duty. When an advanced dressing station was cut off by the enemy barrage this officer made a very plucky attempt to reach it. Later, when, owing to losses amongst battalion M.O.'s, he was sent to a regimental aid-post, he remained there until the enemy was within 300 yards of it, evacuating all his wounded and coming back with the last case under machine-gun fire. He set a fine example of coolness and resource.

Temp. Lieut. (acting Capt.) **WILLIAM KEALTY CAMPBELL**, D.S.O., M.C.—For conspicuous gallantry and devotion to duty during a withdrawal. After a long march he took over the advanced evacuation of the wounded, and having visited the whole line, made his dispositions. Next day he visited all R.M.O.'s under machine-gun fire. He showed great energy and determination.

Capt. **HARRY EDMUND CRESWELL**, M.C.—For conspicuous gallantry and devotion to duty. After an intense bombardment with gas shells a village was ordered to be cleared. He was one of the last to leave, and, though he himself was very badly gassed, he continued to work until he had done everything for the casualties that lay in his power, and was ordered to the field ambulance.

Temp. Capt. **JOHN POLSON DAVIDSON**, M.C.—For conspicuous gallantry and devotion to duty while in charge of forward bearers. By his cool courage he was largely instrumental in getting away all wounded under heavy shell fire. His consistent devotion to duty set a splendid example to all his party,

Capt. **THOMAS McNAUGHTON DAVIE**, M.C.—For conspicuous gallantry and devotion to duty. When battalion headquarters were practically surrounded, and he saw that he could be of no further use, he made his escape, and after all the officers of the battalion had become casualties, he remained with the men in the open throughout the fighting on that and the following day. The next day he again went into action with the remnants of the battalion in a counter-attack, rendering excellent service. His cool self-possession and devotion to the wounded under very heavy fire did much to steady all ranks.

Capt. (acting Major) **FRED ELLIS**, M.C.—For conspicuous gallantry and devotion to duty during an enemy attack. When the enemy had approached within 200 yards of his advanced dressing station he ordered his personnel to withdraw, and remained at his post under heavy shell fire with a few men to care for the wounded. When a bridge over which the cases were evacuated was destroyed, he evacuated by hand-carry to a point a mile distant, and he managed to salve his two ambulance cars. His services were of a high order.

Temp. Capt. **JOHN JAMES HARROWER FERGUSON**, M.C.—For conspicuous gallantry and devotion to duty. He went forward in charge of bearer squads, under machine-gun fire, to find a regimental aid-post with which contact had been lost. When there he showed great disregard for personal safety, and set a fine example to the bearers, and did not leave the post until all the casualties had been evacuated, although the enemy was almost in the immediate vicinity.

Capt. **FRANK PERCY FREEMAN**, M.C.—For conspicuous gallantry and devotion to duty during an enemy attack. Though wounded by a shell, he first attended to others wounded by the same shell. Later he accompanied his commanding officer through a heavy barrage of high explosives and machine-gun fire to the corps line, where he stayed for two hours attending to wounded.

Temp. Capt. (acting Major) **HUGH BERNARD GERMAN**, M.C.—For conspicuous gallantry and devotion to duty while in charge of stretcher-bearers. He supervised the evacuation of wounded from the front line to the advanced dressing station, often under heavy shell fire. Also he continuously dressed wounded in a dressing station unprotected from shell fire.

Temp. Capt. (acting Major) **ROBERT MASSON GREIG**, M.C.—For conspicuous gallantry and devotion to duty throughout prolonged fighting. For about a fortnight he worked with but little sleep and food, collecting and carrying in wounded under intense shell and machine-gun fire. During this period he maintained touch with six different battalions, and successfully got away all their wounded.

Temp. Capt. **AUSTIN HARVEY HUYCKE**, M.C.—For conspicuous gallantry and devotion to duty. When the officer in charge of an advanced dressing station and several of his orderlies were killed or wounded, he went forward and took charge of the station, and by his courage and energy under heavy shell fire succeeded in getting away the cases. He saved many lives.

Temp. Capt. **EDMUND BASIL JARDINE**, M.C.—For conspicuous gallantry and devotion to duty. Though his dressing-station was blown up by shell fire, and when transferred to another place was again shelled, he steadily continued his work. He gallantly made several journeys to the regimental aid-post under extremely heavy fire, and located and disposed of all casualties collected there. His zeal, courage, and untiring energy were beyond all praise.

Temp. Capt. **JAMES HUNTLY LEGGE**, M.C.—For conspicuous gallantry and devotion to duty when acting as bearer officer during a raid. He established a post in the front line, which came under continuous and heavy barrage. Hearing there were wounded in front he several times led squads of bearers through the barrage and brought in wounded. It was largely due to his magnificent efforts that the clearing was successfully accomplished, and only two men were missing. His energy and devotion to duty were the means of saving many lives.

Temp. Capt. **GEORGE EDWIN LINDSAY**, M.C.—For conspicuous gallantry and devotion to duty. Not only did this officer carry out his professional duties with a cheerfulness that inspired all ranks, but on two occasions, regardless of personal danger, he continually attended wounded in the open under heavy machine-gun and rifle fire, only withdrawing when ordered to by his C.O.

Capt. **JOHN WRIGHT MALCOLM**, M.C.—For conspicuous gallantry and devotion to duty during an enemy attack. He was at an advanced dressing station with another medical officer, and seeing the enemy advancing they loaded their car with wounded and, picking up others on the way, conveyed them to a safe place. During the journey he was under close and constant fire.

Temp. Capt. **FREDERICK BUICK McCARTER**, M.C.—For conspicuous gallantry and devotion to duty. During a severe engagement this officer established an advanced dressing station within 200 yards of the front line, where for 48 hours, continuously under heavy fire, he attended to the casualties and arranged for their evacuation.

Capt. **WILLIAM HILGROVE LESLIE McCARTHY**, M.C.—For conspicuous gallantry and devotion to duty. This officer, hearing that an aid-post was filled with wounded who could not be evacuated by the normal route owing to the enemy bombardment, led a party of stretcher-bearers through heavy shell fire and reorganised the evacuation. He dressed four wounded men in the open on the way up, and made several journeys during the day.

Temp. Capt. **DANIEL McKELVEY**, M.C.—For conspicuous gallantry and devotion to duty in evacuating the wounded. With a small ambulance car he went to and fro right up to the firing line, meeting the stretcher-bearers and bringing back the wounded as soon as dressed. In spite of heavy fire he carried on his well-organised arrangements. Later, whilst looking for a new dressing station, he was captured, but managed to make good his escape. Throughout the operations he displayed great energy, and his work was magnificent.

Temp. Capt. **GEORGE BOYD McTAVISH**, M.C.—For conspicuous gallantry and devotion to duty. Throughout nine days' operations he worked continuously in charge of the bearer division, and refused to be relieved. He went to and fro superintending the clearing of the wounded, quite regardless of the many barrages he had to pass, and no doubt saved many lives by his untiring zeal and coolness.

Capt. **DUNCAN WESTLAKE PAILTHORPE**, M.C.—For conspicuous gallantry and devotion to duty after a raid in collecting wounded under fire, working till daylight. He then went out in broad daylight, established the fact that a man reported missing was dead on the enemy's wire, and brought him in from within ten yards of the wire.

Temp. Capt. **REGINALD THOMPSON RAINE**, M.C.—For conspicuous gallantry and devotion to duty. He attended the wounded under heavy rifle and shell fire, and superintended their evacuation. By his devotion to duty he set a fine example to all ranks.

Capt. **JOHN ELVIN RUSBY**, M.C.—For conspicuous gallantry and devotion to duty. During an intense bombardment an artillery dug-out was blown in. This officer with his stretcher-bearers dug out two officers and three men who were buried. Later he went to an exposed flank to attend to wounded men under heavy fire. Throughout the whole week's operations he worked untiringly, and undoubtedly saved many lives.

Capt. (acting Major) **ARTHUR ASHTON SMALLEY**, M.C.—For conspicuous gallantry and devotion to duty in his skilful and bold leading of the stretcher-bearers and in evacuating the wounded. By his devotion to duty under the heaviest fire he was always an inspiring example to his men.

Capt. (acting Major) **CHARLES NIXON SMITH**, M.C.—For conspicuous gallantry and devotion to duty. This officer was in charge of an advanced dressing station and the collection of wounded from two infantry brigades for four days. By reconnoitring and frequent visits to his posts he was able to keep in touch with the rear aid-posts, and to vary his arrangements according to the casualties. He administered the advanced dressing station in a building with little protection, which was repeatedly hit by shells. His scheme for evacuating the wounded worked well, and a large number of casualties were quickly got away.

Temp. Capt. **JAMES WILLIAMSON TOCHER**, M.C.—For conspicuous gallantry and devotion to duty. On several occasions he showed great organising skill under very trying conditions. During the attack of a brigade he worked at and between two posts, and succeeded in evacuating all the wounded. His coolness and devotion to duty throughout were a splendid example to the officers and men working under him.

Capt. **WILLIAM JOSEPH WEBSTER**, M.C.—For conspicuous gallantry and devotion to duty when getting up to a collecting-post and supervising the evacuation of the wounded under direct enemy machine-gun fire. His ambulance car had most of its body blown away and the radiator perforated. In spite of this by plugging the holes with candle grease, he was able to bring the car back through the heavy barrage with eight wounded men. He showed fine devotion to duty.

The Military Cross.

Lieut. **JOSEPH ADAMS**.—For conspicuous gallantry and devotion to duty in dressing and attending to wounded in an aid-post under heavy shell fire, and later in organising stretcher parties and getting wounded away under heavy fire.

Temp. Capt. **DOUGLAS REID ALEXANDER**.—For conspicuous gallantry and devotion to duty in constantly attending to wounded under heavy shell fire, working day and night for six days at very high pressure. He showed a fine example of coolness and courage to all, and by his perseverance the lives of many were saved.

Capt. **FRANCIS DIGHTON ANNESLEY**.—For conspicuous gallantry and devotion to duty in action. When a report was brought to headquarters of a brigade that the cookhouse of the battery had been struck, and that there were many killed and wounded men inside, he immediately left his aid-post and went forward to see what assistance he could give. Whilst going up, a shell struck the remaining portion of the cookhouse, partially burying the occupants. He personally assisted in extricating the men, dressed their wounds on the spot under heavy shell fire, and got them away safely to the dressing station. His promptness and courage were undoubtedly the means of saving several lives.

Capt. **GEOFFREY PENROSE ARNOLD**, Australian A.M.C.—For conspicuous gallantry and devotion to duty. During a night counter-attack this officer formed his regimental aid-post in the open just in front of the jumping-off line, and continued to dress wounded there for twenty-four hours under continuous fire. The medical officers of two other battalions both became casualties early in the attack, and he attended to the wounded of these battalions besides his own. His coolness and splendid work saved scores of lives.

Capt. **FREDERICK STANLEY BEDALE**.—For conspicuous gallantry and devotion to duty. This officer was working at an aid-post in a village, a portion of which was captured by the enemy. He remained until the last possible moment, only leaving when all wounded had been evacuated. He then established an aid-post in the open, working unceasingly day and night, being the only medical officer left in the area, and his staff greatly reduced. His attention to the wounded, at great personal risk, was most praiseworthy.

Capt. **FRANCIS LIONEL PERCY GARNETT BENNETT**.—For conspicuous gallantry and devotion to duty. Seeing that wounded men were in danger of becoming prisoners, he obtained ambulance cars, and three times personally took them away under heavy shell and machine-gun fire. On the last occasion he was himself wounded, but he sent his last car away full and struggled on on foot until he met with assistance. He had been working continuously for 48 hours previously.

Temp. Lieut. (temp. Capt.) JOHN HAMILTON BOAG.—For conspicuous gallantry and devotion to duty. When his aid-post was occupied by the enemy he hastily established himself in a new position and rendered valuable assistance. He several times went fearlessly out under machine-gun fire and brought in casualties, and by his devotion saved many lives.

Temp. Capt. (acting Major) CECIL ANDERSON BOYD.—For conspicuous gallantry and devotion to duty. He repeatedly attended to wounded under heavy shell fire, and on several occasions was compelled to evacuate his aid-post, succeeding each time in removing all his wounded, often across country, and by his fine judgment and tireless energy saving a large number from falling into the enemy's hands. His conduct throughout was excellent, the conditions being exceptionally hazardous and trying.

Temp. Capt. HAROLD FRANCIS BRICE-SMITH.—For conspicuous gallantry and devotion to duty. This officer displayed great gallantry during ten days' severe fighting, attending to wounded men under severe hostile artillery fire. He was himself wounded in the arm at an early stage, but with unselfish devotion he remained at his duty throughout the operation, rendering most valuable service night and day, although suffering great pain from his injuries.

Capt. (acting Major) GEORGE ALLMAN BRIDGE.—For conspicuous gallantry and devotion to duty. This officer, who was in charge of a forward dressing station and bearer posts, hearing that one had been blown in, proceeded at once with a N.C.O. through a heavy barrage and rescued the injured men, conveying them to a place of safety. After establishing another post he filled up shell holes at a cross road to enable motor ambulances to pass.

Capt. (acting Major) CHARLES FRANK BURTON.—For conspicuous gallantry and devotion to duty in his skilful leading of the stretcher-bearers on all occasions. He has always shown great coolness under the heaviest fire.

Capt. CHARLES HOPE CARLTON.—For conspicuous gallantry and devotion to duty. He took an ambulance car into a village after the enemy had entered it, and succeeded in clearing several wounded in the face of heavy machine-gun and rifle fire. Throughout operations he showed great energy and devotion to duty under very difficult conditions.

Temp. Capt. (acting Major) PHILIP CARNEY.—For conspicuous gallantry and devotion to duty in leading motor ambulance wagons up to a village under heavy fire and bringing away the last of the wounded. On many occasions he showed a splendid example of devotion to duty under most difficult conditions.

Capt. GERALD FRANCIS CARR.—For conspicuous gallantry and devotion to duty. Although the advanced dressing station of which he was in charge was shelled out three times, by his coolness and example he got all the patients and personnel safely away, and re-established his dressing station without interrupting the evacuation.

Temp. Capt. CLIFFORD CUTHBERT CHANCE.—For conspicuous gallantry and devotion to duty. When a heavy barrage interrupted communications between regimental aid-posts and relay posts he reorganised his squads and led them through the barrage, cleared all the wounded, and re-established the chain of evacuation. He has repeatedly led his squads through heavy fire and gas shells, and has by his magnificent example of devotion to duty maintained the morale of tired and shaken bearers.

Temp. Lieut. CHARLES CLYNE.—For conspicuous gallantry and devotion to duty. He worked for 24 hours in a barn under machine-gun and shell fire, and evacuated over 200 cases. Two days later, under heavy shell fire, he continued to evacuate wounded. His devotion to duty saved many lives.

Temp. Lieut. GEORGE CARTER COSSAR.—For conspicuous gallantry and devotion to duty. This officer, who was medical officer of the battalion, performed his duties with the greatest coolness under heavy fire and gas shelling for four days, attending to the casualties with great devotion to duty, although on one occasion he became unconscious from gas. He was twice wounded, but remained at his work, though suffering all the time from the effects of gas. His gallant conduct and disregard for his own safety set the finest example to his men and maintained the steadfastness of the workers in the regimental aid-post during many dangerous periods.

Temp. Capt. DOUGLAS CRELLIN.—For conspicuous gallantry and devotion to duty in remaining at an advanced dressing station till all the wounded were clear, in spite of the enemy's approach, and the rain of gas and high explosive shells.

Capt. SPENCER STAWELL CROSSE.—For conspicuous gallantry and devotion to duty in tending wounded under heavy fire. Thanks to his untiring efforts, no wounded were left in the enemy's hands.

Capt. (acting Major) JOHN WILLIAM DALE.—For conspicuous gallantry and devotion to duty. He collected and evacuated many wounded from close up to the enemy lines. Also, he completed evacuation of all wounded from an advanced dressing station when the enemy was within 200 yards. He showed fine courage and determination.

Temp. Lieut. DAVID DAVIES.—For conspicuous gallantry and devotion to duty in organising bearers and attending to the wounded. He took forward the stretcher-bearers in a counter-attack under heavy shell and machine-gun fire to within a few yards of the enemy and collected all wounded.

Temp. Capt. (acting Major) JOHN EDGAR DAVIES.—For conspicuous gallantry and devotion to duty while in charge of stretcher-bearers. He evacuated wounded over ground heavily shelled in full view of the enemy. Although several of his bearers were wounded, he showed a personal disregard for his own safety, and set a fine example to his men.

Capt. ERNEST NOEL BROUGHAM DOCKER, Australian A.M.C.—For conspicuous gallantry and devotion to duty during an attack. He followed up with his bearers, picked up guides, gained touch with the regimental aid-posts, and organised a line of bearer relays. This was done at night under machine-gun and heavy shell fire.

Capt. DONALD GORDON DUFF.—For conspicuous gallantry and devotion to duty. He proceeded to an area that was being heavily shelled, and at once organised stretcher parties, superintended the conveyance of wounded to his dug-out, and returned to make certain that no casualties were left. His coolness and devotion to duty throughout have been most marked.

Temp. Capt. GEORGE DUNLUCE ECCLES.—For conspicuous gallantry and devotion to duty in evacuating his wounded from the firing line. Although obliged to retire on four separate occasions, he with great skill and resourcefulness cleared all his wounded safely. His complete disregard of danger was entirely responsible for a completely successful evacuation under circumstances of considerable difficulty.

Capt. (acting Major) THOMAS STOKOE ELLIOT.—For conspicuous gallantry and devotion to duty. This officer was unremitting in superintending the dressing of the wounded during four days' fighting. He was in charge of three advanced dressing stations, each of which was in turn destroyed by enemy shell fire, but he managed to evacuate all the wounded. Officers, personnel, and patients were all encouraged by his cool example.

Capt. FRANK WILLIAM FAY, Australian A.M.C.—For conspicuous gallantry and devotion to duty while in charge of the transport and evacuation of wounded from the divisional main dressing station. The station was twice hit by shells, but he succeeded in clearing all wounded, exposing himself in bringing up ambulance cars and showing great energy and devotion to duty.

Temp. Capt. JOHN JAMES HARROWER FERGUSON.—For conspicuous gallantry and devotion to duty. When a brother officer was buried amongst a mass of bricks as a result of a shell having struck his billet, this officer, hearing his cries for help, discovered his whereabouts in the darkness, and after four hours' work, although the place was being heavily shelled the whole time, succeeded in extricating him.

Capt (acting Major) WILLIAM HAIG FERGUSON.—For conspicuous gallantry and devotion to duty. When the advanced dressing station was completely destroyed by shell fire and everyone was ordered to take cover, this officer left his dug-out and carried several wounded, unaided, some hundred yards to safety, passing through a zone of gas and heavily shelled area. He did the same thing again later on.

Capt. (acting Major) ROBERT ALEXANDER FLOOD.—For conspicuous gallantry and devotion to duty. With the enemy within 300 yards of a divisional rest station he got a car loaded with wounded and took those who could walk and one stretcher case across the fields. Although knocked down by a H.E. shell, he finally got them to shelter.

Temp. Capt. AUGUSTIN POWNALL FRY.—For conspicuous gallantry and devotion to duty in going from place to place across the open, under heavy machine-gun, rifle, and shell fire, to attend to the wounded. His absolute fearlessness undoubtedly saved many men from bleeding to death. Throughout he displayed devotion to duty of a high order.

Capt. WILLIAM CLARKE GIVENS, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. He organised and maintained for two days under shell and rifle fire a first-aid post, rendering aid to a large number of cases. Next day he established a dressing station, where he worked for 60 hours without relief.

Capt. (acting Major) HENRY NORMAN GOODE.—For conspicuous gallantry and devotion to duty. He was in charge of the bearers collecting wounded, and frequently visited his posts under very heavy shell fire. He organised the evacuation of the casualties from the regimental aid-posts to the advanced dressing station, frequently being obliged to alter his routes and establish new relay posts, owing to the heavy shelling. It was largely owing to his courage and energetic ability that the removal of the wounded was carried out in such a speedy and efficient manner.

Capt. FRANCIS HENNESSEY GOSS.—For conspicuous gallantry and devotion to duty. This officer worked all night in the open in front of the line, under heavy fire, dressing the wounded and carrying them back to safety. His temporary aid-post was captured and his staff made prisoners, but he made his way back through the enemy lines alone. The following night he made many journeys into the open, carrying wounded on his back to temporary shelter. His devotion to duty saved many lives.

Temp. Capt. (acting Major) FRANK CYRIL GREIG.—For conspicuous gallantry and devotion to duty. He was in charge of the advanced dressing station for five days, working under very heavy fire the whole time organising the disposition of his bearers. When the post was almost completely destroyed by shell fire some of his men were buried in a dug-out, and he worked with unremitting energy under heavy shell fire to get them out.

Temp. Capt. CHARLES HOPE HADDOW.—For conspicuous gallantry and devotion to duty. When the enemy drove the line back to battalion headquarters he kept his aid-post established until they were within 200 yards, and succeeded in evacuating all wounded. Later, during a counter-attack, he showed untiring energy in dressing and evacuating wounded under very trying conditions. He showed fine devotion to duty.

Temp. Capt. ALFRED ERNEST HALLINAN.—For conspicuous gallantry and devotion to duty. When his aid-post was surrounded by the enemy, he got through to battalion headquarters, reported on the situation, and established an aid-post there, where he evacuated a large number of wounded. Later, he worked for hours at another aid-post, while the enemy were within a few hundred yards. He displayed great energy and efficiency.

Temp. Capt. CHESTER HARRIS.—For conspicuous gallantry and devotion to duty. When the enemy was attacking in large numbers he, in spite of the heavy shell and intense machine-gun fire, succeeded in clearing all the wounded, and three times went back through heavy barrage to dress and carry in wounded men. His conduct was admirable.

Capt. (acting Major) JOHN HENDERSON HUNTER.—For conspicuous gallantry and devotion to duty while in charge of advanced dressing stations, which were continually shelled.

Capt. GEORGE KINGSLEY EDWIN INMAN.—For conspicuous gallantry and devotion to duty. Hearing that the infantry were heavily engaged, he obtained permission to go forward and help them. He found that the position was being heavily shelled and that the regimental medical officer had been killed. He at once assumed medical charge of the battalion, and though the infantry had retired twice took stretcher-bearers back to the position, and thus rescued many wounded who might otherwise have been captured.

Temp. Capt. CHARLES GEORGE LAMBIE.—For conspicuous gallantry and devotion to duty in tending wounded under intense hostile barrage, constantly going out into the open and bringing wounded in. On a later occasion he went from battery to battery under heavy shell fire, dressing the wounded and getting them away to the nearest ambulance. He was several times hit by shell splinters.

Temp. Capt. JOHN GAGEN LEE.—For conspicuous gallantry and devotion to duty in attending to casualties under very heavy machine-gun and shell fire continuously for four days. He was wounded on the second day, but remained at duty. He had his dressing station blown up twice. Each time new stations were reorganised very quickly. He behaved splendidly, and his conduct was a very fine example to all.

Temp. Capt. (acting Major) FRANCIS CHARLES LEES.—For conspicuous gallantry and devotion to duty while in charge of the arrangements for the evacuation of wounded. For 48 hours he worked unceasingly in an advanced dressing station, and owing to his courage and energy a large number of wounded were cleared from the forward area under most difficult circumstances.

Temp. Capt. SIDNEY JOHN LIDDON LINDEMAN.—For conspicuous gallantry and devotion to duty. For ten days he worked unceasingly, tending wounded under heavy fire, saving many lives. On one occasion, under intense machine-gun fire, he still continued dressing and collecting wounded, and his complete disregard of danger set a fine example to those under him.

Temp. Capt. (acting Major) JOHN WYCLIFFE LINNELL.—For conspicuous gallantry and devotion to duty in dressing and evacuating wounded under shell fire, during five days' operations. On two of the days, at great personal risk, he cleared wounded from villages which were being shelled.

Temp. Capt. VERNON EDMUND LLOYD.—For conspicuous gallantry and devotion to duty. While in charge of stretcher-bearers he worked for hours under shell fire, evacuating wounded; and in an advanced dressing station exposed to shell fire he dressed and evacuated a large number of wounded.

Temp. Capt. GEORGE ALBERT LYONS.—For conspicuous gallantry and devotion to duty. During four days' heavy fighting he worked unceasingly. When the regimental aid-post was heavily shelled he organised a carrying party and removed all men incapable of walking. He was the cause of saving many lives.

Capt. JAMES McLEAN MACFARLANE.—For conspicuous gallantry and devotion to duty. This officer, while a town was being heavily bombarded, frequently entered it to attend to the wounded who required surgical aid before they could be evacuated. Later he attended to the wounded, and evacuated them to the casualty clearing station, for three days working day and night, and when compelled to leave owing to the heavy shelling took his party to man a bridge over a canal, carrying on until ordered to leave just before the bridge was blown up. He was responsible for the saving of many lives.

Temp. Capt. JAMES DAVID MACKINNON.—For conspicuous gallantry and devotion to duty. During very heavy fighting he attended to the wounded in the open under machine-gun and rifle fire. He showed fine courage and saved many lives.

Temp. Capt. KENNETH DUNCAN CAMERON MACRAE.—For conspicuous gallantry and devotion to duty. He constantly attended to wounded under machine-gun and shell fire. He also maintained an aid-post on the line of the enemy's artillery barrage. By his devotion to duty many lives were saved.

Capt. (acting Major) ALEXANDER CROSS MALLACE.—For conspicuous gallantry and devotion to duty when in charge of advanced dressing stations. He worked continuously under shell fire, and when our troops had to retire he remained to clear his last cases until the enemy was within 100 yards.

Capt. (acting Major) WILLIAM McCOMBIE.—For conspicuous gallantry and devotion to duty. He repeatedly visited, under very heavy fire of all descriptions, the aid-posts he was engaged in clearing, personally conducting his bearers with complete disregard for his own safety in those localities where the fire was most heavy. Under very trying circumstances he showed great devotion to duty.

Temp. Capt. (acting Major) FRANCIS DE SALES McMENAMIN.—For conspicuous gallantry and devotion to duty. He worked day and night, getting into touch with regimental aid-posts and evacuating their wounded under heavy shell and machine-gun fire. By his untiring devotion to duty he saved many lives.

Temp. Capt. DAVID GAIR McRAE.—For conspicuous gallantry and devotion to duty while in charge of an aid-post during an enemy attack. Hearing that a siege battery was being heavily shelled and had many casualties, he at once proceeded, with a non-commissioned officer, to attend to the wounded in the battery position, and stayed there, under shell fire, for an hour. Throughout he showed fine disregard of his own safety and great devotion to duty.

Temp. Capt. JOHN PEARSON McVEY.—For conspicuous gallantry and devotion to duty. He organised and established aid posts near the front line under heavy shell fire and dealt with a large number of casualties. Though short of dressing, stretchers, and bearers he successfully evacuated many wounded, while 10 out of 18 of his staff were casualties.

Capt. CHARLES GRAHAM MEADE.—For conspicuous gallantry and devotion to duty. While brigade headquarters were being shelled this officer worked unceasingly, attending wounded gunners and infantry. Later, on receiving an urgent message from a battery, he set off by himself through a heavy barrage, and though suffering from the effects of gas, performed his duties in the open, regardless of all danger. He behaved splendidly.

Capt. HARRY MIDDLETON.—For conspicuous gallantry and devotion to duty during an enemy attack. Though suffering from the effects of gas, he remained at duty dressing wounded for four days until ordered to hospital. He was frequently under shell fire and had to change his aid-post several times.

Temp. Capt. ALEXANDER DRYDEN MOFFATT.—For conspicuous gallantry and devotion to duty at an advanced dressing station. He worked continuously under shell fire for 18 hours, dressing a large number of wounded. The dressing station was hit three times, but he carried on his work in a cellar.

Temp. Capt. DUNCAN COLLINGWOOD OGILVIE.—For conspicuous gallantry and devotion to duty while in charge of a walking wounded collecting post. For 16 hours he worked single-handed under heavy shell fire, dressing and evacuating wounded. Later he reopened a dressing station which had been evacuated and worked there for 48 hours.

Temp. Lieut. JAMES CARTER OGILVIE.—For conspicuous gallantry and devotion to duty. As medical officer of the battalion he did excellent work during four days' strenuous fighting. He was continually up and down the firing line, personally attending to wounded men, and caused all men known to be wounded to be got away. He set a very fine example to his stretcher-bearers.

Capt. GEORGE PERKINS.—For conspicuous gallantry and devotion to duty. After being in the firing line all day, he went out after dark with stretcher-bearers, and stayed out most of the night tending wounded.

Temp. Capt. HOWARD GEORGE PESEL.—For conspicuous gallantry and devotion to duty in evacuating all the wounded under severe and almost continuous shell fire. His three successive collecting posts were destroyed by shell fire and he himself was wounded, but he remained at duty, declining to be relieved.

Capt. AUBREY RADFORD.—For conspicuous gallantry and devotion to duty. He established a dressing station, collected a large number of wounded cases, and by his own personal example and initiative arranged for the evacuation of those wounded, and so saved them falling into the hands of the enemy. The whole time his work was carried out under heavy shell fire.

Temp. Capt. (acting Major) ALEXANDER WILLIAM RATTRIE.—For conspicuous gallantry and devotion to duty. He dressed and evacuated wounded in an advanced dressing station under heavy shell fire for many hours. When the station became practically destroyed, he, though gassed, succeeded in evacuating all the wounded over open country to another dressing station, where he continued to work until that, too, became untenable. He showed great pluck and determination.

Temp. Capt. STANLEY ALFRED RIDDETT.—For conspicuous gallantry and devotion to duty. This officer was the only medical officer in a village that was being very heavily shelled by the enemy, and where our troops were suffering severe losses. He showed complete and self-sacrificing disregard of danger, dressing the wounded and arranging for their removal, moving about the village, which he would not leave until he had satisfied himself by personal investigation that all the wounded had been evacuated. His gallant behaviour and devotion to duty undoubtedly saved many lives.

Temp. Capt. (acting Major) JOHN RODGER.—For conspicuous gallantry and devotion to duty. The position of his advanced dressing station had to be moved on four separate occasions, and on each occasion he evacuated the wounded with great skill. It was largely due to the fine example set by him under heavy machine-gun and rifle fire that the wounded were all got away. He has shown a fine spirit and set a great example throughout.

Capt. (acting Major) JOHN ROWE.—For conspicuous gallantry and devotion to duty. Although it was known that the enemy had penetrated the line, and the area in rear of the advanced dressing station was being organised for defence, this officer never lost touch with the regimental aid-posts. He made many journeys throughout the day, at all times under heavy fire, personally superintending the evacuation of the wounded.

Temp. Capt. BASIL SAMPSON, South African M.C.—For conspicuous gallantry and devotion to duty. During a counter-attack on the enemy positions, this officer, with another, improvised an advanced dressing station and relay posts under the most difficult conditions. They remained at a point considerably forward, under very heavy shell and machine-gun fire, and it was largely due to their efforts and able dispositions that a great many wounded were dressed and evacuated who otherwise might have fallen into the hands of the enemy when later they forced back our line.

Temp. Capt. WILLIAM SMITH, South African M.C.—For conspicuous gallantry and devotion to duty. During a counter-attack on the enemy positions, this officer, with another, improvised an advanced dressing station and relay posts under the most difficult conditions. They remained at a point considerably forward, under very heavy shell and machine-gun fire, and it was largely due to their efforts and able dispositions that a great many wounded were dressed and evacuated who otherwise might have fallen into the hands of the enemy when later they forced back our line.

Temp. Capt. GEORGE WHELDALE STANLEY.—For conspicuous gallantry and devotion to duty in going to the assistance of four wounded men, dressing their wounds, and getting them removed to a place of safety under heavy shell fire. His disregard of danger not only probably saved their lives but was an inspiration to others.

Capt. JAMES STEEL.—For conspicuous gallantry and devotion to duty. This officer was one of the few regimental medical officers who were with their unit during the whole period of withdrawal. He was indefatigable in dressing the wounded, often under fire, and when he had to move invariably assisted himself in evacuating the worst cases. Although twice wounded himself, he refused to leave his work, except to have his wounds dressed.

Temp. Capt. GEORGE EDWARD STEPHENSON.—For conspicuous gallantry and devotion to duty. He organised the most advanced dressing station in the area, attending to casualties of all units under heavy fire, in the most adverse circumstances, and in the open. His devotion to duty was of the greatest value.

Temp. Capt. JOHN STEVENSON.—For conspicuous gallantry and devotion to duty in attending to wounded under heavy shell fire. Subsequently he went out into "No Man's Land" under heavy machine-gun fire and brought in a wounded officer. His coolness and devotion to duty saved many lives.

Temp. Capt. (acting Major) ROBERT SVENSSON.—For conspicuous gallantry and devotion to duty. Under heavy bombardment he led motor ambulance wagons to an advanced dressing station, and brought away all helpless cases. Later he led a convoy of ambulance wagons under shell and machine-gun fire to aid-posts, and continued going backwards and forwards until he had got all wounded away. He saved many wounded from being abandoned to the enemy, and did fine work.

Capt. WILLIAM TAYLOR.—For conspicuous gallantry and devotion to duty in his work amongst the batteries. He remained to the very last in each position, attending to the wounded officers and men, and was untiring in his efforts to assist in every way.

Capt. EWING GEORGE THOMSON, Australian A.M.C.—For conspicuous gallantry and devotion to duty. This officer tended wounded in the open from 4 A.M. to 11 A.M. one morning. During this period he was under very heavy high-explosive and gas bombardment, but, although suffering from the effects of gas, he stuck to his aid-post. His rapidity in evacuating wounded from the gassed area no doubt saved many lives.

Capt. JAMES ETTERSHANK GORDON THOMSON.—For conspicuous gallantry and devotion to duty. When his dressing station was blown up, although suffering from gas, he continued to dress the wounded, and successfully evacuated all the stretcher cases, working until he was quite exhausted. On another occasion when a regimental aid-post was blown up he carried on dressing the wounded and successfully evacuated them. His devotion to duty was an inspiration to all under him.

Capt. WILLIAM ERNEST TYNDALL.—For conspicuous gallantry and devotion to duty. For five days this officer dressed wounded under intense fire, and during the withdrawal he many times stayed behind without assistance to look after them, being in imminent danger of capture. His unceasing efforts resulted in the saving of many officers and men. Though by no means physically strong, he never relaxed his efforts, and his cheerful example greatly heartened the men.

Lieut. DOUGLAS JAMES VALENTINE.—For conspicuous gallantry and devotion to duty. He attended to the wounded in the open under heavy shell fire and superintended their evacuation under most difficult circumstances.

Capt. (acting Lieut.-Col.) GIFFORD TRAILL VAN DER VIJVER.—For conspicuous gallantry and devotion to duty under very heavy hostile shell fire. He continued to work at his dressing station until it was no longer tenable, and before evacuating, under orders, cleared all casualties in the vicinity and brought his unit away with all the equipment.

Temp. Capt. JOHN WALKER.—For conspicuous gallantry and devotion to duty in carrying on his work at an aid-post which was continually being shelled. His organisation and arrangements for the work were admirable, 120 wounded passing through his hands, all congestion was avoided, and the despatch with which they were collected and evacuated probably saved several lives.

Temp. Lieut. ROWLAND WARD.—For conspicuous gallantry and devotion to duty. Whilst under a very heavy barrage this officer attended to the evacuation of numerous casualties. The aid-post situated in a small quarry was subjected to prolonged bombardment and heavily gassed, it was crowded with stretcher cases, and there were 60 more lying in the quarry. He went round all the cases, adjusting gas masks. The aid-post was not even splinter-proof, and received one direct hit, but he continued for three days and nights attending to the cases without sleep, and eventually got away the last of the casualties.

Temp. Capt. EDWARD PARKER WELMAN WEDD.—For conspicuous gallantry and devotion to duty in traversing shell-swept roads and searching trenches under heavy fire till he found and tended the many wounded.

Capt. (acting Major) ERIC WATSON WILLIAMS.—For conspicuous gallantry and devotion to duty. He maintained advanced dressing stations under heavy shell fire until the last possible moment, and personally superintended the evacuation of the wounded. Through his energy and devotion to duty all cases were cleared without delay.

Capt. (acting Major) ARTHUR LOWNDES YATES.—For conspicuous gallantry and devotion to duty. He maintained his medical posts under heavy shelling as long as it was possible, and was responsible for the collection and evacuation of several hundred wounded of other divisions, as well as a great many of his own.

FOREIGN DECORATIONS.

Belgian.

Croix de Guerre.—Staff Surg. H. Cooper, D.S.O., R.N.

Hellenic.

Order of the Redeemer: Officer.—Staff Surg. J. C. Bringan, R.N.

Our attention has been called to an advertisement in THE LANCET of Saturday, Sept. 14th, in which Brevet Lieut.-Colonel F. W. Mott, R.A.M.C. (T.), is described as Officer in Command of the Maudsley Neurological Clearing Hospital. Lieut.-Colonel P. H. Falkner is the Officer in Command, Colonel Mott being Senior Consulting Neurologist, but the mistake on the part of the Oxford Medical Press appears to have Parliamentary support, as Lieut.-Colonel Mott was described in the House of Commons by Mr. Macpherson as Officer in Command.

OBITUARY OF THE WAR.

CHARLES DEVEREUX MARSHALL, F.R.C.S. ENG.,

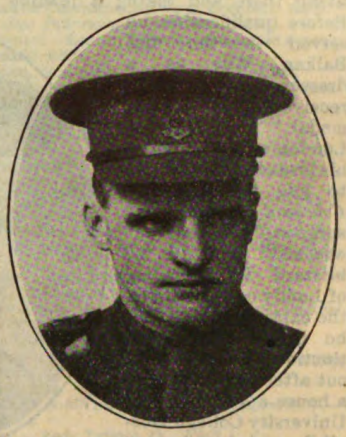
STAFF SURGEON, R.N.V.R.

Staff Surgeon Devereux Marshall, who died of cholera at Colaba War Hospital, Bombay, on Sept. 14th, whilst on active service, aged 50, was the son of the late William Marshall, solicitor, of Southsea, and received his medical education at University College Hospital, where he held the junior appointments after qualification. In 1902 he took the Fellowship of the Royal College of Surgeons of England and was appointed surgeon to the Royal London Ophthalmic Hospital, where he acquired a just reputation for great operative skill. He took a deep interest also in various questions on the scientific side of his special work and was particularly interested in colour vision. He wrote a very lucid book on diseases of the eye for the use of general practitioners and students, and contributed papers on ophthalmological subjects to several well-known compendiums. He joined the R.N.V.R. (London Division) in 1903, was promoted lieutenant 1906, transferred to medical branch 1909, promoted staff surgeon 1916. He served in a Flagship in the Mediterranean and in the Far East since 1914, and in 1917 was P.M.O. in the Persian Gulf. He was on active service during the whole of the war.

HEBER HAVELOCK MOSHIER, M.D. TOR.,

LIEUTENANT-COLONEL, C.A.M.C.; O.C. A CANADIAN FIELD AMBULANCE.

The son of Mr. D. D. Moshier of Toronto, the late Lieutenant-Colonel Moshier was born in Lambton, Ontario, in January, 1889. After graduating with distinction in medicine at the University of Toronto, at the age of 20, he undertook research in pathology at the Rockefeller Institute, New York, and later, crossing to England, worked with Professor Halliburton in the physiological laboratories at King's College, London. Returning to Canada, he had scarcely established himself at Calgary as a consultant pathologist when he was called to the University of Alberta, Edmonton, to the recently established chair of physiology. He threw himself into the work of the University with characteristic thoroughness and energy, and in three years showed himself a source of great strength to the faculty. While at first it seemed to him that his duty lay with the young university, as the war progressed he realised that his country had the greater call upon him, and when, early in 1916, the 11th Field Ambulance was raised in Alberta, he joined it. So good a name had he made for himself as a leader that, despite his youth, he was given his majority and placed second in command. That August he crossed to France with his unit, and went through the actions of Courcelette, Vimy Ridge, and Passchendaele. In September, 1917, he was given command of the unit, and later promoted Lieutenant-Colonel. In this position he rapidly gained the respect and affection of all under him. In May of this year he was mentioned in despatches. He met his death on August 29th during the recent operations, while proceeding forward to locate an advanced dressing station. Under 30 years of age, he had accomplished much, and with him Canada loses a man of great promise.



JOHN PROCTOR, M.B., CH.B. ABERD.,

MAJOR, ROYAL ARMY MEDICAL CORPS.

Major John Proctor, who died of wounds on August 12th, was the eldest son of the late William Proctor and Mrs. Proctor, of Ballater. In 1909 he graduated in Arts at the University of Aberdeen, and in 1913 took his medical degree with distinction, being immediately appointed to a resident post at the Royal Infirmary, Aberdeen, and becoming later house surgeon to the Aberdeen Hospital for Sick Children. He obtained a commission in the Royal Army Medical Corps on the outbreak of war and was sent to France, where he joined a cavalry field ambulance. He was promoted captain after a year of service, and in April, 1918, was mentioned in despatches and promoted to the rank of major. During the whole four years of service he was with the same division of cavalry. He was severely wounded on the night of August 11th, and died at the casualty clearing station the following morning. A brother officer has communicated to his relatives the following: "He was very brave and cheerful through it all, and everyone is full of admiration of his spirits. His loss to the ambulance is irreparable." Major Proctor was 30 years of age.

WILLIAM HOWARD LISTER, M.R.C.S., L.R.C.P. LOND., D.S.O., M.C.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. H. Lister was killed in Italy on August 9th, at the age of 32. He had gone forward in the discharge of his duty, and after being slightly wounded by a bullet was shortly afterwards killed by the concussion of a 15-inch mortar bomb. He was educated at Ackworth School, being a member of the Quaker Society, and entered as a medical student at University College, London, in 1904. While there he took a large share in the founding of University College Hall, Ealing, and maintained his interest in it till his death, living there and taking a leading part in its social life. Before qualification he served in the first Balkan War as a dresser, for which he received the Greek medal. Returning to London and qualifying, his love of travel led him to join the R.M.S.P. *Cobequid* as temporary surgeon, and he was wrecked in an ice blizzard in the Bay of Lundy on the voyage, the captian stating that he behaved with distinction. The war broke out after his election to a house appointment at University College Hospital, and he at once joined the R.A.M.C.,

taking part in the Mons Retreat and the first battle of Ypres. During the latter he was awarded the M.C. for an act of gallantry. His right elbow was injured and permanently ankylosed, but in spite of this, and after serving in the Mediterranean (1915–16), he returned to France and served through the battles of the Somme in 1916, gaining two bars to his M.C. The following year saw him again on the Western front, and in the autumn he was awarded the D.S.O. for gallantry. He was gassed and slightly wounded during this campaign. In the spring of 1918 he served as M.O. to a Guards' battalion, returning to England with an injury to his wounded elbow. In June he went to join a field ambulance in Italy, remaining with it till his death. During this year he was elected a Fellow of University College for "distinction in public life." The following personal testimony from a friend may be added: "Honesty, patriotism, friendship, and love of duty were some of the simple ideals which largely made up his character, and he had a dominant but most lovable personality, which won for him a number of very devoted friends. Cool in action, he always displayed the greatest gallantry and unselfishness. Twice he was recommended for the highest decoration of all. Though several times offered staff appointments which would have carried with them promotion and comparative safety, both of which he had well earned, he preferred to remain in the line, where he seemed to bear a charmed life. In many hearts his death leaves a blank which Time can never fill."

NATIONAL BABY WEEK COUNCIL AND A MINISTRY OF HEALTH.—A conference organised by the National Baby Week Council was held at Bedford College for Women, London, on Sept. 18th, to inaugurate a propaganda campaign in support of the immediate establishment of a Ministry of Health. The desire of the council to create a strong public opinion with a view to giving speedy effect to the promised Ministry of Health Bill, led to certain speakers assuring the meeting that the country would not tolerate the opposition of private or vested interests or departmental jealousies to the immediate realisation of its demands. The following resolution was carried unanimously:—

That in view of the declared intention of the Government to introduce early in the forthcoming Session of Parliament a Ministry of Health Bill, the National Baby Week Council calls upon its members and local committees to pursue an active propaganda campaign in favour of such a Ministry so that the weight of public opinion and the support of the electorate may strengthen the hands of the Government in giving speedy effect to its intentions.

The National Baby Week Council is prepared to find speakers to address meetings on application to the secretary, 27A, Cavendish-square, London, W. 1.

THE SERVICES.

ARMY MEDICAL SERVICE.

Surg.-Gen. (ranking as Lieut.-Gen.) Sir W. L. Gubbins, K.C.B.; M.V.O., ret. pay, to be Lieutenant-General on the Retired List.

Surg.-Gens., ret. pay, to be Major-Generals on the Retired List: Sir H. R. Whitehead, K.C.B., Sir D. Bruce, K.C.B., F.R.S., Sir T. P. Woodhouse, K.C.B., R. Porter, C.B., R. H. S Sawyer, C.B., C.M.G., J. C. Culling, C.B., W. S. M. Price, Sir T. J. Gallwey, K.C.M.G., C.B., R. H. Quill, C.B., Sir G. D. Bourke, K.C.M.G., J. C Macneece, C.B., T. M. Corker, C.B., Sir R. W. Ford, K.C.M.G., C.B., D.S.O., G. J. H. Evatt, C.B., W. J. Fawcett, C.B., J. D. Edge, C.B., W. W. Kenny, C.B., P. M. Ellis, O. E. P. Lloyd, V.C., C.B.

Temp. Major-Gen. Sir G H. Makins, K.C.M.G., C.B. (Lieut.-Col., R.A.M.C. (T.F.)), relinquishes his temporary commission on re-posting, and is granted the honorary rank of Major-General

Cols. (Hon. Surg.-Gens.), ret. pay, to be honorary Major-Generals on the Retired List: Sir J. Maher, K.C.M.G., C.B., Sir M. W. Russell, K.C.M.G., C.B., R. S. F. Henderson, C.B., W. F. Stevenson, C.B., M.B., K.H.S.

ROYAL ARMY MEDICAL CORPS.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Majors G. E. Ferguson, A. C. H. Gray, J. W. L. Scott, Capt. J. A. Andrews.

To be acting Lieutenant-Colonels (whilst in command of a Medical Unit): Majors L. V. Thurston, J. T. McEntire, W. J. Weston, Capt. R. E. Todd, Temp. Capt. (acting Major) H. Young, Temp. Major H. MacCormac (whilst specially employed).

The following relinquish the acting rank of Major on re-posting: Capts. J. J. H. Beckton, H. W. Carson, Temp. Capts. J. Rodger, J. P. Good, N. G. W. Davidson.

E. C. Hort to be temporary Major whilst specially employed.

Temp. Capt. Charles E. F. Mouat-Biggs to be temporary Major (without increased emoluments).

Temp. Capts. to be acting Majors whilst specially employed: Donald W. Roy, W. R. Wilson.

To be acting Majors: Capts. G. De la Cour, A. M. McCutcheon, R. F. O'T. Dickinson, J. James; Temp. Capts. M. J. Mottram, M. C. Gardner, C. D. Coyle, R. C. Cooke, G. Clarke, H. K. Wallace, F. B. McCarter, M. W. Littlewood, A. W. Uloth, W. W. Smith, T. O. Thompson, R. E. H. Leach.

Temp. Hon. Lieut. B. E. Hawke to be temporary Honorary Captain.

Officers relinquishing their commissions: Temp. Capts. E. H. Hamilton (on appointment under the Ministry of National Service), W. S. Pickup, J. S. Gilchrist (on account of ill-health contracted on active service, granted honorary rank of Captain), W. Hutcheson (on account of ill-health, granted the honorary rank of Captain), F. R. Snell (on account of ill-health contracted on active service, granted honorary rank of Captain), R. O. H. Jones (on account of ill-health contracted on active service, granted the honorary rank of Captain), F. A. Cooke, C. M. Bernays (on account of ill-health contracted on active service, granted the honorary rank of Captain), G. S. Robinson (on account of ill-health, granted the honorary rank of Lieutenant), J. R. White, W. Balgarnie (granted the honorary rank of Captain), (Acting Major) C. L. T. Arthur, L. E. Bolster, C. D. H. Corbett, J. M. N. S. Bickerton (on account of ill-health, granted the honorary rank of Captain), J. Craig, late temporary Captain (granted the honorary rank of Captain), E. F. Thomas, A. H. Walker; Temp. Lieuts. H. S. Mason, S. B. Depree, B. S. Cornell (on account of ill-health, granted the honorary rank of Lieutenant), C. W. S. Boggs, D. A. Tompsett, S. W. Smith (on account of ill-health), H. Cox; Temp. Hon. Lieut. C. F. Larson.

SPECIAL RESERVE OF OFFICERS.

Lieut.-Col. A. A. Watson to be acting Colonel whilst employed as Assistant Director of Medical Services of a Division.

Captains to be acting Majors: G. E. Pepper, R. Green.

Captain W. J. M. White relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

Lieutenants to be Captains: D. C. Buchanan, J. Marshall, P. A. O'Brien, J. J. Robertson, R. P. Crawford, W. F. Kivlichan, J. G. McK. Macaulay, A. B. Cocker, J. B. Irving.

To be Lieutenants: E. D. D. Dickson, A. J. Meek, G. W. C. Dunlop, and H. J. Parish (from Edinburgh University Contingent O.T.C.), G. R. Ross (from St. Andrews University Contingent O.T.C.), J. Morrison (from Aberdeen University Contingent O.T.C.), R. J. Patchett.

Lieut. H. Taylor relinquishes his commission on account of ill-health, and is granted the honorary rank of Lieutenant.

TERRITORIAL FORCE.

Lieut.-Col. T. Fraser to be an Assistant Director of Medical Services and to be temporary Colonel whilst so employed.

Major J. Cumming relinquishes his commission on account of ill-health, and is granted permission to retain his rank and to wear the prescribed uniform.

Major A. R. Henchley to be acting Lieutenant-Colonel whilst specially employed.

Capt. (acting Major) B. Hughes relinquishes his acting rank.

Major F. J. Smith is retired, and is granted the honorary rank of Major.

Major (acting Lieut.-Col.) W. B. Armstrong relinquishes his acting rank on ceasing to be specially employed.

Captains to be acting Majors whilst specially employed: W. H. Morrison, C. Burrows, G. S. Melvin, F. S. Jackson, C. S. P. Black, P. S. Price, F. Scroggie, A. L. Heiser, A. W. Stott.

Captains (acting Majors) relinquishing their acting rank on ceasing to be specially employed: T. B. McKee, H. Stonehouse, D. Campbell, C. E. Petley, G. B. Pritchard, H. Duguid.

Capt. J. W. Patrick is seconded for duty with a General Hospital.

TERRITORIAL FORCE RESERVE.

Major W. A. Wetwan, from R.A.M.C., to be Major.

Capts. J. O'Sullivan and C. W. Ellison, from R.A.M.C., to be Captains.

ROYAL AIR FORCE.

Medical Branch.—H. A. Treadgold is granted a temporary commission as Captain, and to be temporary Major whilst so employed, but without the pay and allowances of that rank. S. W. Fisher is granted a temporary commission as Captain.

Dental Branch.—A. C. S. Cottam is granted a temporary commission as Lieutenant.

OVERSEA FORCES.

South African Medical Corps.—E. H. Cluver to be temporary Captain.

Medical News.

ROYAL INSTITUTE OF PUBLIC HEALTH.—A course of lectures on public health problems as they present themselves under the war, and as they may present themselves at the cessation of war, will be delivered on Wednesday afternoons at the Institute during October, November, and December, commencing on Oct. 9th, when Professor Arthur Keith will discuss Anthropometry in Relation to National Health. Among other important lectures may be mentioned those by Lieutenant-Colonel L. W. Harrison on Abortive Treatment of Venereal Disease, of Miss Jane Walker, M.D., on the Tuberculous Soldier, of Professor E. W. Hope on the Rôle of Ports in the Protection of the Health of the Nation, and of Alderman C. Spencer on the Influence of National Kitchens.

A general Order of the Local Government Board, entitled the Public Health (Tuberculosis) Regulations (No. 2), 1918, has just been issued, altering the Public Health (Tuberculosis) Regulations of 1912. The Regulations as altered apply to the notification to the proper medical officer of health by the chairman of any National Service Medical Board, or by some member of the Medical Board designated by the chairman, of every case of tuberculosis diagnosed by the Medical Board, in the same way as they apply to the notification by a medical practitioner in pursuance of Article V. of the Regulations of 1912. The fee to be paid for each notification made in pursuance of this Article will be 1*s.*, and no fee will be payable to any person who holds a commission in any of His Majesty's Forces and is receiving pay in respect thereof. This Order is to be in force during the continuation of the present war.

URBAN VITAL STATISTICS.

(Week ended Sept. 21st, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 11·7, against 11·9 and 11·3 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 11·9, or 1·4 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 4·0 in Cambridge, 4·2 in Ilford, and 4·9 in Ealing to 17·9 in Grimsby, 18·1 in Tottenham, and 21·8 in Great Yarmouth. The principal epidemic diseases caused 389 deaths, which corresponded to an annual rate of 1·2 per 1000, and included 299 from infantile diarrhœa, 39 from diphtheria, 19 from whooping-cough, 15 from measles, 10 from scarlet fever, and 7 from enteric fever. The deaths from diarrhœa, which had declined from 435 to 346 in the three preceding weeks, further fell to 299, and included 74 in London, 20 in Liverpool, 16 in West Ham, and 13 in Sheffield. The 839 cases of scarlet fever and 1025 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 61 and 72 above the respective numbers remaining at the end of the previous week. Of the total deaths in the 96 towns 119 resulted from violence. The causes of 32 deaths were uncertified, of which 6 were registered in Birmingham and in Liverpool, and 4 in London.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 11·6, against 10·9 and 10·6 per 1000 in the two preceding weeks. The 274 deaths in Glasgow corresponded to an annual rate of 12·8 per 1000, and included 12 from infantile diarrhœa, 2 from whooping-cough, and 1 each from measles, scarlet fever, and diphtheria. The 75 deaths in Edinburgh were equal to a rate of 11·7 per 1000, and included a fatal case each of whooping-cough and infantile diarrhœa.

Irish Towns.—The 129 deaths in Dublin corresponded to an annual rate of 16·9, or 2·2 per 1000 below that recorded in the previous week, and included 14 from infantile diarrhœa, 2 from whooping-cough, and 1 from diphtheria. The 109 deaths in Belfast were equal to a rate of 14·5 per 1000, and included four fatal cases of infantile diarrhœa and 1 of enteric fever.

BOOKS, ETC., RECEIVED.

DORNAN, W. J., Philadelphia.
Transactions of the Southern Surgical Association. Vol. XXIX.
Medical and Surgical Reports of the Episcopal Hospital, Philadelphia. Vol. IV.
Transactions of the Gynecological Society of Philadelphia. Vol. XLII. 1917.

OXFORD UNIVERSITY PRESS, London, America, Australia, and India.
(Carnegie Endowment for International Peace.)
The Controversy over Neutral Rights between U.S. and France, 1797–1800. Edited by J. B. Scott. 15*s.*
Declaration of Independence, &c. Edited by J. B. Scott. 4*s.* 6*d.*

ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, New York.
Reprints. Vol. XXVII.

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital.—Second Female H.S. £225.
Bath, Royal Mineral Water Hospital.—Res. M.O.
Bedford County Hospital.—Res. M.O. £150.
Birmingham General Dispensary.—Res. M.O. £360.
Blackpool, Victoria Hospital.—H.S. £250.
Bolton Union, Townley's Auxiliary Military Hospital, Farnworth, near Bolton.—Female Asst. M.O. £300.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Carlisle, Cumberland Infirmary.—Female H.P.
Central London Ophthalmic Hospital, Judd-street, W.C.—H.S. £50.
Derby, Derbyshire Royal Infirmary.—H.S. £200.
Dorset County Council Education Committee.—School Dentist. £300.
Dudley, Guest Hospital and Eye Infirmary.—Asst. H.S. £120.
Exminster, Devon Mental Hospital.—Locum Tenens. 7 guineas a week.
Gravesend Hospital.—H.S. £250–£300.
Great Northern Central Hospital, Holloway-road, N.—H.S. £100.
Hospital for Consumption and Diseases of the Chest, Brompton.—Asst. Res. M.O. £100.
Hospital of St. John and St. Elizabeth, N.W.—Res. M.O. £250.
Isle of Man Mental Hospital—Asst. M.O. £250.
Leeds City Public Health Department.—Female Med. Asst. £400.
Leeds General Infirmary.—Hon. Obstet. S. or P., and Hon. Aural S.
Lindsey, Lincolnshire.—Asst. M.O. £400.
Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Surgeon. £200.
Netley, Welsh Hospital—Pathologist. £400. Also Two M.O's. £400.
Northampton, V.A.D. Headquarters, Pike-lane, Marefair.—Res. M.O. £1 per day.
Northumberland, County of.—School Med. Insp. £350.
Nottingham General Hospital.—Female H.P. £250.
Plymouth, South Devon and East Cornwall Hospital.—M.O. for Venereal Diseases Department. £500.
Richmond Royal Hospital, Surrey.—Refractionist. £50.
St. Giles Infirmary, Brunswick-square, Camberwell, S.E.—Locum Tenens Asst. M.O. £7 7*s.* weekly.
Sheffield Royal Infirmary.—Res. S.O. £200.
South London Hospital for Women, South Side, Clapham Common, S.W.—Female H.P. and H.S. £100.
Stoke-on-Trent County Borough.—Asst. Tuberc. O. £400.
Western Ophthalmic Hospital, N.W.—Non-Resident H.S. £100.
Wigan Infirmary.—Jun. H.S. £225. Also Surgical Dresser. £150.
York City.—Temp. Tuberc. O. £350.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Clitheroe.

Births, Marriages, and Deaths.

BIRTHS.

BADGEROW.—On Sept. 13th, at 2, Hill-street, Knightsbridge, the wife of Lieutenant-Colonel George W. Badgerow, C.M.G., F.R.C.S., 4, Harley-street, W.—a son.

BARTLETT.—On Sept. 15th, the wife of George Bertram Bartlett, Temporary Captain, R.A.M.C., of 21, Sutton Court, Chiswick—a son (George Adrian).

HAYLOCK.—On Sept. 22nd, at Balsham, Clifton-road, Southbourne, Bournemouth, the wife of Sydney J. Haylock, M.R.C.S. Eng., L.R.C.P. Lond., of a son.

NUTT.—On Sept. 16th, at the Highcliffe Nursing Home, Hants, the wife of Major H. R. Nutt, I.M.S., of a daughter.

ROBINSON.—On Sept. 18th, at St. Fillans, Saltash, the wife of Hugh G. Robinson, M.B., of a son.

MARRIAGES.

BRADBURY—WILLIAMS.—On Sept. 19th, at St. Swithin's, London Stone. Staff Surgeon William Bradbury, D.S.O., R.N., to Norah Michael, youngest daughter of Mr. and Mrs. G. Michael Williams, Muswell-hill, N.

GARDNER—NEWSAM.—On Sept. 18th, at St. Augustine's Church, Broxbourne, Arthur Duncan Gardner, M.D., F.R.C.S., to Violet Mary, youngest daughter of the late I. Fowler Newsam and Mrs. Fowler Newsam, of Broxbourne.

MARR—BOOKLESS.—On Sept. 20th, at the Station Hotel, Inverness, Captain David Murdoch Marr, M.B., Ch.B., R.A.M.C.S.R., to Marion Hannah Payne, youngest daughter of the late James Bookless and Mrs. Bookless, The Riggs, Inverness.

SMITH—THORNE.—On Sept. 17th, at St. Mary's, Wimbledon, John Ferguson Smith, Captain, R.A.M.C., to Ethel May Thorne.

DEATHS.

FISCHEL.—On Sept. 14th, from wounds, Captain Claude Henry Fischel, R.A.M.C., Leicesters, aged 28.

GRIFFITH.—On Sept. 24th, at The Homestead, Lingfield, Alfred Hume Griffith, M.D. Edin., D.P.H. Cantab., F.R.S.M., second son of the late Rev. Edward Moule Griffith.

HIND.—On Sept. 16th, at St. Thomas's Home, Westminster, after severe operation, Clara Hind, L.R.C.P. & S. Edin., of Ockley Sanatorium, Surrey.

JOHNSTON.—On Sept. 22nd, at a nursing home, Glasgow, Alexander Johnston, Major, R.A.M.C., M.D., D.P.H. Cantab.

MARSHALL.—On Sept. 14th, at Colaba War Hospital, Bombay, Staff Surgeon C. D. Marshall, R.N.V.R., P.M.O. in the Persian Gulf and Mesopotamia, aged 50.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

"OUR DAY."

IN consequence of the large growth of the British Armies the needs of the joint British Red Cross Society and the Order of St. John of Jerusalem in England are much greater than in any previous year. It is hoped, if sufficient help is obtained, that a new record will be created for "Our Day" Fund which is fixed for Oct. 24th next. Helpers are needed in organisation, as emblem sellers, at depôts and stalls, to call on shops and places of business, to distribute red crosses and books of stamps, as captains and teams of workers, to collect from Oct. 14th to 24th, and to pack and for general office work. Masters and mistresses of schools and children are especially invited to come in the circle for getting "miles of pennies," while any small gifts are acceptable to sell at various stalls. Anyone willing to help should communicate with Miss C. May Beeman, organising secretary, 10, West Bolton-gardens, S.W. 5.

THE DUAL PROFESSIONS.

ONE of the outstanding features of the Harvest Thanksgiving services at Giggleswick-in-Craven Church, Yorkshire, last Sunday, when the offertories were devoted to the Leeds Infirmary, was an address given, after evensong, by Dr. H. de Carle Woodcock, of Leeds, in which he pleaded for a closer alliance between the dual professions of therapeutics —viz., those of medicine and theology. He touched on the future of medical science, and stated his belief that eventually all disease would come under the Prospero spell of the physician. Whilst the State was apt to be chilling and mathematical the practice of medicine was ardent and emotional, depending on the presence of sympathy, therefore voluntary aid in our hospitals, along with individualism in private practice, would surely continue for many a long year. This was in keeping with the genius of the English character. The endowment of research was also strongly urged.

40 D.

FURTHER cases under Section 40 D, D.O.R.A. regulations have been brought before the justices at Brighton and Lewes and varying terms of imprisonment have been imposed. In a case heard at Lewes on Sept. 17th, however, the woman was discharged after evidence had been given both by a woman doctor and a bacteriologist that the results of their examinations were negative. The defending solicitor protested that it was unfair that no proceedings could be taken against the informant, and the justices agreed with the view.

THREATENED STRIKE IN AN ASYLUM.

THE attendants of the Richmond District Lunatic Asylum in Dublin last week backed up their demand for increased wages to the committee by a threat to strike if their claims were not admitted. The attendants only took this strong step in consequence of a previous request of theirs for increase of wages having been ruled out of order. It is unfortunate that any demand from an asylum staff, whether justified or not, should have been treated discourteously.

END OF SUMMER TIME.

Summer time will come to an end at 3 A.M. (summer time) on Monday next, when clocks will be put back to 2 A.M., which will be the ordinary Greenwich time.

D. M. S.—The address of the National Herb Growing Industry, Ltd., is 15, Verulam-street, E.C.; of the National Herb Federation, 29, Cockspur-street, S.W.; and of the Scottish Horticultural Association, 19, Waverley Market, Edinburgh. The Herbal Subcommittee of the Women's Farm and Garden Union, 45, Queen Anne's Chambers, London, S.W., would probably be able to give valuable information. The following books might be consulted: Ada B. Teetgen's "Profitable Herb Growing and Collecting" (office of *Country Life*, 20, Tavistock-street, W.C., price 3*s.* 6*d.*); Holmes's "Cultivation and Drying of Medicinal Plants" (E. M. Holmes, Ph.C., Ruthven, Sevenoaks, Kent, price 1*s.*); "Medicinal Herbs" (David Ellis) (Blackie and Son, Ltd., 50, Old Bailey, E.C.); Potter's "Cyclopædia of Botanical Drugs and Preparations" (edited by R. C. Wren, with additions by E. M. Holmes) (Potter and Clarke, 60, Artillery-lane, E. 1); and the pamphlets written by Mrs. Grieve, Chalfont St. Peter, Bucks; also the leaflets of the Board of Agriculture and articles in the Journal of the Board of Agriculture, to be obtained on application to the Board at 3, St. James's-square, S.W.

Medical Diary for the ensuing Week.

SOCIETIES.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY, Oct. 4th.—8.30 P.M., Presentation of the Keetley Memorial Medal to the Retiring President. Presidential Address:—Ancient Physic.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY, Sept. 30th.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Out-patients each day at 2.30 P.M.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY, Sept. 30th.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

EDITORIAL NOTICES.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Communications, Letters, &c., to the Editor have been received from—

A.—Mr. C. B. Andrews, Lond.; Major G. F. Alexander, R.A.M.C.; Mr. C. Andrew, Leyton; Association Nationale des Orphelins de la Guerre, Paris.

B.—Major W. Brown, R.A.M.C.; Rev. T. P. Brocklehurst, Giggleswick-in-Craven; Dr. C. Burland, Blundellsands; Mr. H. Blakeway, Lond.; Lieut.-Col. G. S. Buchanan, C.B., R.A.M.C.

C.—Sir Anderson Critchett, Bart., C.V.O., Lond.; Capt. D. E. Core, R.A.M.C.(T.); Mr. J. Cabburn, Lond.; Dr. H. P. Cholmeley, Forest Row; Child-Study Society, Lond., Sec. of; Capt. J. Campbell, R.A.M.C.; Mr. A. L. Clarke, Hastings.

D.—Decimal Association, Lond.; Dr. A. Distaso; Miss E. R. Davis, Lond.; Capt. H. W. Dyke, R.A.M.C.; Major H. B. Day, R.A.M.C.

E.—Dr. A. B. Elliott, Abergele.

F.—Dr. E. G. Fearnsides, Lond.; Staff-Surg. P. Fildes, R.N.V.R.; Factories, Chief Inspector of, Lond.; Mr. G. Fisher, Barnstaple; Mr. C. E. S. Flemming, Bradford-on-Avon; Surg. G. M. Findlay, R.N.

G.—Rev. J. A. Gray; Lieut.-Col. E. Goodall, R.A.M.C.; Mr. H. B. Gardner, Lond.; Capt. H. E. Gibson, R.A.M.C.(T.); Dr. W. H. Gregory, Beverley; Dr. T. S. Greenaway, Lond.; Fleet-Surg. A. Gaskell, R.N.; Dr. J. Gairdner, Crieff.

H.—Major W. E. Home, R.A.M.C.; Rev. C. W. Heald, Chale; Capt. W. S. Handley, R.A.M.C.(T.)

J.—Mr. J. C. Jefferson, Rochdale; Mr. M. H. Judge, Lond.; *Journal of General Physiology*, New York.

K.—Dr. P. Kidd, Lond.; Mr. H. A. Kennedy, Ottawa; Mr. C. T. Kingzett, Lond.

L.—Dr. W. Lansdale, Lond.; Dr. P. Lassablière, Paris; Local Government Board, Lond.; Surg. J. Lambert, R.N.; London (Royal Free Hospital) School of Medicine for Women.

M.—Miss A. G. MacMullen, Cork; Dr. J. B. Mennell, Lond.; Messrs. Methuen and Co., Lond.; Middlesex Hospital, Sec. to Council; Bt. Lieut.-Col. F. W. Mott, R.A.M.C.(T.); Municipal Waterworks Association, Lond., Sec. of; Ministry of Munitions, Lond.

N.—National Food Reform Association, Hon. Sec. of; *National Food Journal*, Lond.

P.—Messrs. Pain and Co., Lond.; Mr. V. Parr, Lond.; Messrs. Palmer, Bull, and Bartlett, Lond.; Panel Committee for the County of London.

R.—Capt. T. A. Ross, R.A.M.C.; Royal Institute of Public Health, Lond.; Royal Free Hospital, Lond., Sec. of; Rockefeller Institute for Medical Research, New York; Dr. J. D. Rolleston, Lond.

S.—Messrs. W. B. Saunders Co., Philadelphia; Society for the Study of Inebriety, Lond.; Capt. H. A. Scholberg, R.A.M.C.(T.); Mr. D. M. Storach, Edinburgh; Prof. J. W. W. Stephens, Liverpool; Lieut.-Col. J. O. Smith, Lond.; Dr. L. E. Shaw, Lond.

T.—Major R. H. Trotter, R.A.M.C.

W.—West London Hospital Post-Graduate College, Dean of; Messrs. Gilbert Wood and Co., Lond.; Dr. W. Waddell; Dr. R. C. Wingfield, Lond.; West London Medico-Chirurgical Society.

PART OF

An Address

ON

SENSORY CHANGES IN THE DIAGNOSIS OF TRENCH FEVER.

Given before a Base Medical Society in France,

BY D. W. CARMALT JONES, M.D. OXON., F.R.C.P. LOND.,

MAJOR, R.A.M.C. (T.); PHYSICIAN TO WESTMINSTER HOSPITAL.

MR. PRESIDENT AND GENTLEMEN,—It has long been known that inflammation of viscera may be associated with areas of increased sensibility of the skin. This association has been investigated by many clinical workers, notably by Sir James Mackenzie and by Dr. Henry Head.

Some work has recently been done in the medical division of a base hospital in France upon the general principles laid down by these observers. It has been made a routine practice to examine the skin for hyperalgesia in internal disease of all kinds, and the records of 500 consecutive examinations are now available. Definite segmental areas of increased sensibility to pain have been found in fairly constant relation with lesions of the various viscera, as indicated by symptoms and physical signs, and certain groups of segments have been so frequently found to be hyperalgesic in cases of trench fever that their presence appears to constitute a point of considerable diagnostic value.

Some account of this method of clinical examination is here given, together with a summary of the results obtained in visceral lesions in general and in cases of trench fever in particular.

PRINCIPLE.

The work of Gaskell[1] has made it possible to construct a working hypothesis which explains the results obtained by this method of examination, and the principle adopted in present paper is this:—

The central nervous system was originally segmentally arranged, starting behind the infundibulum and reaching to the end of the body. All typical segmental nerves have four roots, afferent and efferent somatic, and afferent and efferent splanchnic. The impulses carried by the afferent splanchnic nerves, which come from the viscera, are not appreciated in consciousness; it is impossible to tell by any consciously felt sensation what is the state of activity of any viscus, for instance, whether the kidney is secreting or the intestine contracting. But when any one of the viscera is *inflamed* the impulses which pass from it by the afferent splanchnic nerves to the cord are such that they induce a state of hyperexcitability throughout the segment to which they belong, and this excitability affects especially the somatic afferent nerves. The result is this, in a case of inflammation of any viscus, a light pin-prick, insufficient to cause pain when applied to the normal skin, is resented as positively painful over the area of skin innervated from the same segment as the affected organ.

If this is true, it follows that in a given case inflammation can be diagnosed in any viscus of which the afferent nerve-supply is known by demonstrating hyperalgesia in the corresponding segmental area on the skin. To put the matter colloquially, every segment receives an afferent nerve from a viscus, and if the viscus is inflamed the skin area connected with the same segment becomes hyperalgesic. This is the principle which has guided the examinations to be described.

PRACTICE.

The practice is as follows:—

A series of light pin-pricks is applied to the skin along a line which cuts across a number of segmental areas, a line, for instance, from the clavicle to Poupart's ligament. When the pricks pass from a normal to a hyperalgesic area the patient will be seen to flinch, for this is an objective sign which depends not upon what the patient says, but upon what he is seen to do. The spot where the flinch occurs is marked with a skin-pencil, and the experiment is repeated from below upwards and the skin marked again. The observer passes both outwards and inwards from his original line, and repeats the experiment until he has mapped a complete segmental area corresponding to one or more segments. With rare exceptions a corresponding symmetrical area can be mapped on the opposite side of the body. Nothing "counts" in this method unless the whole of one or more segments can be accurately mapped out.

If, after it has been identified, a series of pricks is made within the hyperæsthetic area, and another series outside it, and the patient be asked which feels the sharpest, he will indicate the former, but the difference is rarely very great; the *edge* of the area is chiefly sensitive, so that it is the passage from the normal to the hyperalgesic that induces the characteristic flinch.

Further, within a hyperalgesic area including more than one segment, a similar flinch occurs in passing over the border between any two. Thus, when all the lumbar segments are involved, as they often are, in trench fever, a series of pricks, starting opposite the middle toe and passing up the dorsum of the foot towards the ankle, induce a flinch about half-way across the foot, on crossing from the first sacral to the fifth lumbar area. Continuing upwards along the front of the leg towards the knee another flinch will be aroused just above the ankle, where the fourth lumbar area joins the fifth, another above the knee where the third joins the fourth; and higher still on the front of the thigh will be found the lower borders of the second and first. (See Figs. 3 and 4.) Each segment can be followed right up to the middle line of the back, and it is thus possible to map each one of a series of areas in its entirety.

A suitable pricker for the purpose is a wooden match sharpened to as fine a point as possible, it should be used in the manner taught by the late Sir William Gowers; the match is held between the thumb and index finger, and the tip of the middle finger is brought alongside of the point; the prick is made with the match held vertically to the skin, and the tip of the middle finger is made to touch the skin at the same time, for when the skin is thus always felt by the finger, it is much easier to maintain a uniform pressure throughout, which is, of course, of the essence of the experiment.

A proportion of people appear to undergo no increase in sensitiveness when any of their viscera are inflamed; for instance, there are 100 negative cases in the present series of 500, and among positive cases the degree of sensibility varies very greatly, some are so sensitive that they jump all over the bed when examined; others require considerable pressure to bring out any difference. The amount of force applied must be suited to the case under examination. The pricks should be about $\frac{1}{8}$ to $\frac{1}{4}$ inch apart, and made at the rate of about ten in 5 seconds; very light pricks should be used at first and increased in force as required; an experiment on the back of one's own hand will indicate that the stimulus is a more searching one than at first sight might be expected.

GENERAL RESULTS.

The present paper is concerned more with the application of this method to trench fever than with its general utility—a few words, therefore, will suffice for the latter.

The material examined consists of about 500 consecutive patients suffering from fevers of various kinds and from disease of the circulatory, respiratory, alimentary, and genito-urinary systems.

In the course of the examinations it has been possible to map every segmental area on the surface of the body with sufficient frequency to give a fairly definite idea of the distribution of each of them, and it is possible to state with tolerable confidence that in sensitive subjects one area is associated with heart disease, another with respiratory disease, another with renal disease, and so on. One cannot say that heart disease is associated with one group and one group only, but rather that a certain large area is involved, and any given sensitive case will show hyperalgesia of some segment within that area, of which one particular series is the most frequent.

The general results obtained are summarised below, the segmental areas most frequently found hyperalgesic in inflammation of the viscera being stated. It is only a list of instances and makes no pretensions to completeness. With regard to the first two instances given, the upper nasal passages and the middle ear appear to be

[1] Gaskell: The Involuntary Nervous System.

visceral in development and possess the visceral character of exciting hyperalgesia in a segmental area of the skin when they are inflamed. They are of importance, as they then afford opportunities of mapping the distribution of the upper two divisions of the trigeminal.

Upper nasal passages: Trigeminal, upper division.	Heart: 2, 3, 4, 5 dorsal.
Middle ear: Trigeminal, middle division.	Stomach: 7, 8, 9 dorsal.
Parotid gland: Trigeminal, lower division.	Liver: 7, 8, 9 dorsal right, 7 dorsal left.
Tonsil: 2 or 3 cervical.	Small intestine: 10 dorsal.
Larynx, trachea, lungs: 4, 5, 6 C.	Kidney: 11 dorsal.
	Testis: 12 dorsal.
	Large intestine: 1, 2, 3, 4, 5 sacral

It will be seen that, if these observations are correct, this method of examination supplies a considerable addition to the ordinary means of diagnosis.

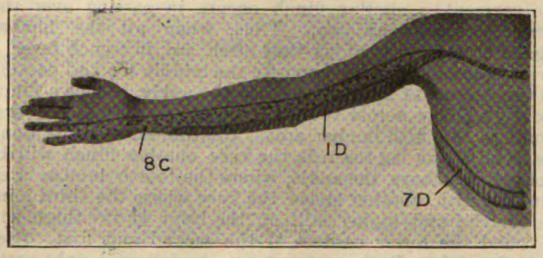


FIG. 1.—Upper and middle groups, anterior view.

In these figures the hyperalgesic areas were mapped in the manner described in the text; the outline of each segment was marked on the skin with grease-paint and the patient was photographed. The areas have been shaded-in on the prints, alternate segments being distinguished by bars and dots. The figures show the three groups of hyperalgesic segments of the "full trench-fever" distribution. Photographed by Captain C. H. Hopwood, R.A.M.C.

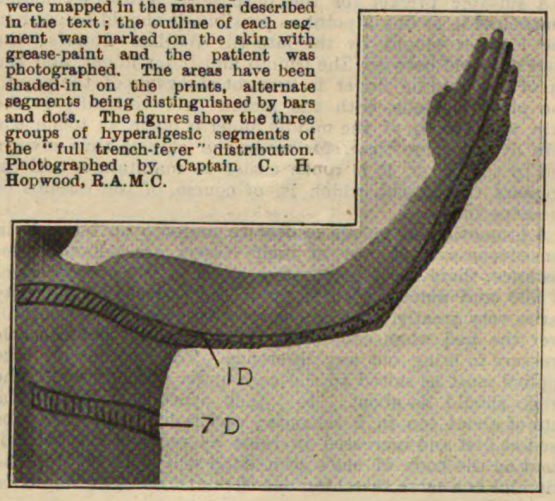


FIG. 2.—Upper and middle groups, posterior view.

RESULTS IN TRENCH FEVER.

Among the patients examined in this series were about 130 cases of "fever" of various kinds, including trench fever, malaria, cerebro-spinal meningitis, scarlet fever, measles, rose measles, mumps, diphtheria, and surgical septicæmia. Of these, trench fever and malaria were commonly associated with hyperalgesia of three definite groups of segments which do not correspond with those belonging to any of the viscera enumerated above.

In no other fever was anything of this kind found; cases in which there were clear symptoms or physical signs pointing to inflammation of any viscus often showed hyperalgesia over the appropriate segments, but that was all. The parotitis of mumps, the bronchitis of measles and the nephritis of scarlet fever all showed typical areas, and throughout the fevers, in cases of severity the eleventh dorsal area, corresponding to the kidney, was often hypersensitive, and when this was so albumin was nearly always to be found in the urine; this is especially true of surgical septicæmia. The inference is that the kidney suffers damage in the process of eliminating bacteria and their toxins.

But hyperalgesic areas of unexplained origin were found only in trench fever and malaria. In these fevers the following were found: the eighth cervical and first dorsal, the seventh dorsal, and the first, second, third, fourth, and fifth lumbar. This is the "full trench fever distribution," and is found frequently in its entirety, and in nearly every case which is diagnosed as trench fever on clinical grounds this distribution is to be found more or less complete.

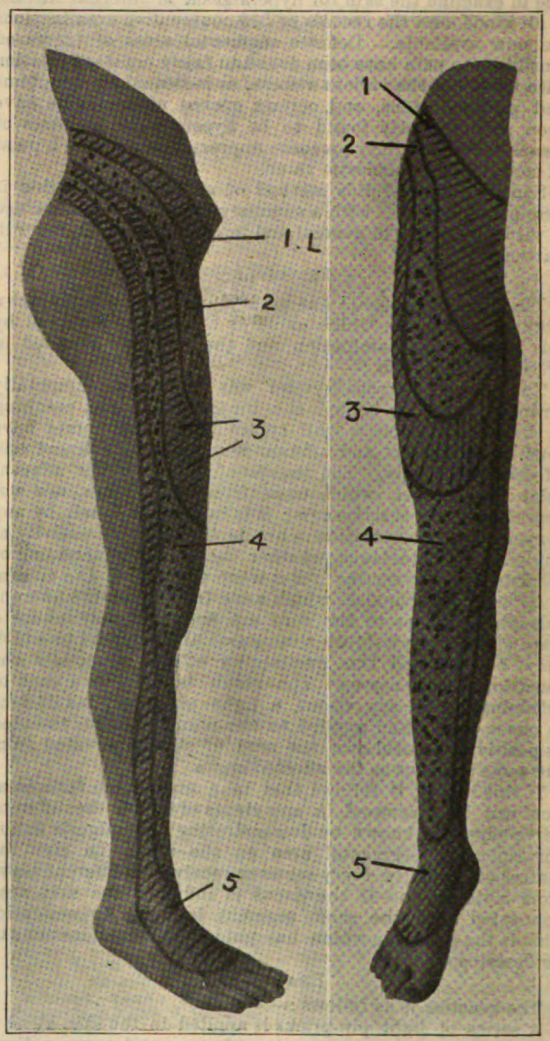
In this series 73 cases of trench fever have been examined, and in the following table are set out the segmental areas of hyperalgesia found:—

Upper Group—		Lower Group—	
8 C., 1 D.	29 } 39	1, 2, 3, 4, 5 L.	57 } 67
1 D. (alone)	10 }	Incomplete lumbar ...	10 }
Middle Group—		"Full Trench Fever"—	
7 D. (alone)	55 } 68	8 C., 1 D.; 7 D.; 1, 2, 3, 4, 5 L.	24
7 D. + adjacent areas ...	13 }	Nil	5

Eighteen cases of malaria were examined, of which 16 showed precisely similar areas to those found in trench fever. In no other fever was this the case.

CONCLUSION.

It is suggested, therefore, that hyperalgesia of these particular segments is diagnostic of a group of diseases consisting of malaria and trench fever, and it is remarkable that one of them is mosquito-borne and the other louse-borne; that both appear to be protozoal, with a definite



FIGS. 3 and 4.—Lower group, lateral and anterior views.

cycle of development, as shown by the periodicity of the febrile attacks induced by them; that both appear to lie dormant for considerable periods within the body; and that both are associated with enlargement of the spleen.

These hyperalgesiæ are precisely similar to those found in inflammation of the viscera, but it is difficult to see to

what viscera they can correspond, though a few possibilities suggest themselves.

The eighth cervical and first dorsal areas perhaps indicate an affection of the thyroid gland; no opportunity has recently arisen of examining a case of Graves's disease, but a case of acute thyroiditis lately examined showed some hyperalgesia of the first dorsal.

The seventh dorsal area may possibly indicate the spleen, which is enlarged in both the diseases concerned, or else the suprarenal gland, since there is evidence of increased excitability of the sympathetic in trench fever, as has been pointed out by Major H. F. Marris, R.A.M.C. Also the physiological association between thyroid and suprarenal should be borne in mind. Cases of Addison's disease and of splenitis from any cause would go far to elucidate this point.

The cause of hyperalgesia of the lumbar segments is quite obscure; it does not appear to be any condition of the small intestine, kidney, testis or large intestine, and it is difficult to see what remains. In the only two cases of cystitis so far examined some lumbar segments were found involved, in one of them the first three, but the absence of symptoms pointing to any vesical disturbance makes such a view difficult to accept; at present it must be said that the significance of a lumbar hyperalgesia in these diseases is unexplained.

VALUE IN DIAGNOSIS.

Anyone who systematically investigates the skin sensibility in trench fever will hardly fail to be struck with the frequent occurrence of these hyperalgesic areas. The writer regards them as diagnostic when malaria can be excluded. These particular areas are demonstrable in so many cases of typical trench fever that it is not a very long shot to suggest that afebrile cases of other disorders, such as D.A.H. and debility, which show the same changes, are suffering from a chronic form of the same infection, if there has been a reasonable chance of exposure. It is certainly the case that a large proportion of patients in military hospitals who have served for such a period as two years in France, and who show the familiar signs of exhaustion, give this evidence of trench fever infection, and trench fever thus appears responsible for a very serious amount of military wastage.

For instance, among 100 cases of D.A.H. examined at a "heart centre" in France, who showed positive changes in sensibility, 67 gave evidence pointing to trench fever alone, and 33 had signs of a true heart lesion, and of the latter 22 showed signs of trench fever in addition. Assuming these signs to be trustworthy, they mean that among 100 cases of D.A.H. taken at random and serious enough to reach a heart centre, two out of three were due to trench fever alone, and eight out of nine were due to this infection, at least in part.

If this is true, or anything like true, it is a very serious indictment of trench fever as a source of invaliding. It is believed that such cases can be picked out when required by a systematic examination of the sensibility of the skin.

The existence of bilateral hyperalgesia of the skin in trench fever has already been pointed out by Major Marris, to whom the writer's thanks are due for his first introduction to that phenomenon. His thanks are also due to Lieutenant-Colonel J. S. Warrack, R.A.M.C., commanding an infectious compound, for his kindness in allowing the examination of cases of the acute fever, and in special degree to his colleague, Captain C. E. Pepper, R.A.M.C., for continuous help and suggestion.

In conclusion, it is obvious that the material examined is insufficient to admit of any final and dogmatic assertion as to the pathognomonic character of the hyperalgesic areas described in trench fever, but they are found so frequently, and the experiment is so striking, that the phenomenon seems to be worth bringing to the notice of those interested for more extended investigation.

INFLUENZA IN INDIA.—There has been a widespread epidemic of influenza throughout India, introduced, the medical officers of health agree, through shipping. The health officer of the Calcutta Corporation has issued a leaflet containing simple rules to be observed: (1) Avoid unnecessary exposure and fatigue; (2) do not travel in overcrowded tramcars; (3) do not visit overcrowded places of public resort; (4) do not neglect apparently trifling symptoms of ill-health; (5) if attacked, go to bed and stay there until your doctor allows you to get up; (6) the first case in a house should be isolated, the sputum (if any) disinfected, handkerchiefs, &c., boiled.

THE PATHOLOGICAL DIAGNOSIS IN GUNSHOT INJURIES OF PERIPHERAL NERVES.

BY JOHN S. B. STOPFORD, M.D. MANCH.,
LECTURER IN ANATOMY, UNIVERSITY OF MANCHESTER.

(Report to the Medical Research Committee.)

IT is rarely difficult to make an anatomical diagnosis in peripheral nerve injuries except in a few of the complex lesions of the brachial plexus, but in order to estimate the prognosis or advise the correct line of treatment—other than the routine postural and nutritional treatment of the paralysed or paretic muscles—it is necessary also to be able to diagnose as accurately as possible the pathological condition of the nerve at the site of the injury. This is always a difficult problem to solve with certainty, but observations made before and after operations, when it is practicable to make a fairly trustworthy examination of the nerve at the point of injury, have enabled us to recognise certain signs and symptoms as indicative of the various conditions. In some cases only a speculative opinion can be given, but the manifestations discussed in this paper are put forward with the intention of promoting a better recognition of the various complications and are the result of observations made on more than 2000 patients.

Nature of Injury.

The initial injury may be:—

(i.) So-called *concussion*, in which no nerve fibres are divided, but there is a temporary loss of conduction.
(ii.) *Partial division*, in which the missile either divides a variable number of the more peripheral fibres or, in the case of large nerves like the sciatic, passes through the trunk, severing the central fibres. In either instance the division is incomplete.
(iii.) *Complete anatomical division.*

(i.) In concussion a satisfactory recovery occurs usually within three or four months, unless compression by the neighbouring scar tissue supervenes.

(ii.) In partial division the extent of recovery will depend upon the number of fibres divided and the character and extent of the scar in the vicinity.

(*a*) When very few fibres have been lacerated a good functional result may be anticipated, provided the scar causes no complications.

(*b*) When a large number of fibres have been severed the ultimate recovery will be incomplete without surgical intervention. The recovery of function will depend also upon which fibres have been injured most seriously, since a considerable functional disability must follow an injury which involves chiefly motor fibres. The regenerating fibrils will form a neuromatous bulb, and on account of the close proximity of the scar there must be inevitably a constant risk of implication of the intact fibres by it. The perineural scar may cause compression and the intraneural fibrosis is most likely to give rise to irritation, both complications being frequently associated in such cases. In severe forms the perineural or intraneural scars, or both combined, finally may destroy completely all conduction in the undivided fibres, and the clinical condition then becomes that of complete division; this is particularly probable when the missile has traversed the centre of the nerve.

Compression necessarily disturbs the blood-supply of a nerve, and may in this way itself lead to symptoms of irritation.

Consequently, in partial division the recovery may be almost perfect, incomplete, or complicated by compression, irritation, or both.

(iii.) In complete anatomical division no recovery is to be expected without suture of the nerve, but it is important to remember that the regeneration at the extremity of the proximal end will produce an end bulb and the growing fibrils will ramify widely in the surrounding tissues. It has been shown already that complete loss of conduction may succeed concussion or partial division (being the result of strangulation by the perineural scar or conversion of the injured segment into a fibrotic cord), as well as complete anatomical division.

Scheme of Examination.

At the outset, whatever the initial injury may be, the loss of conduction is profound, and it is rarely possible at an

early date to estimate with any degree of accuracy the precise extent of the damage; nor is it practicable, for this reason and because of the possibility of compression or irritation subsequently, to give a prognosis at this time. The necessary delay in determining the pathological diagnosis is really of slight disadvantage, since the condition of the wound rarely permits any special treatment being adopted. During this time the affected muscles are constantly supported by suitable appliances, and their nutrition and the mobility of joints maintained as well as possible by massage, rhythmical electrical stimulation, and passive movements. Throughout this time the patient ought to be systematically examined at regular intervals in order to observe any motor, sensory, or trophic changes which may lead to the establishment of a correct pathological diagnosis.

A useful scheme of examination for routine work is the following:—

1. *History.*—Inquiry should be made as to the condition at the time of injury and the presence or absence of any special subjective symptoms. The treatment previously given and the history of recovery or relapse should also be noted. Attention must not only be paid to operations on nerves, but also to ligature of any of the main blood-vessels. The time of onset of the paralytic or sensory symptoms is also important, as in cases of pure compression it may be delayed until the wound heals.

2. *Mobility.*—It is necessary to test the range of passive movement at all the joints in the region of the disability; this will demonstrate the presence of muscular or fibrous contractures and arthritic adhesions, and thus not only prevents mechanical limitation of movement being mistaken for muscle weakness of nervous origin, but also manifests changes due to nerve irritation or ischæmia.

3. *Motor.*—The range and power of voluntary contraction of all the muscles of the affected limb must be examined, and the condition and tone of any paretic or paralysed groups noted. It is scarcely necessary to emphasise the care required in testing movements of certain individual muscles of the hand, such as the abductor brevis pollicis or the interossei. At this stage any electrical tests may be performed, which examination is also of service in helping to recognise functional loss of power, a complication not infrequently found in the presence of nerve irritation.[1]

4. *Sensory.*—An accurate knowledge of the subjective sensory troubles is of great diagnostic value, and therefore it is useful to make a careful inquiry into any form of pain or similar manifestation. After testing the objective sensory disturbances they should be charted for comparison of findings at subsequent examinations; to prevent error the examinations of cutaneous sensation should, as far as possible, be carried out under the same conditions, since variations in temperature may materially modify sensibility.

5. *Trophic.*—The localisation of any abnormal vaso-motor state and the appearance of the skin supplied by the affected nerve are of great service. The surface temperature of the skin is lowered in complete division and commonly raised in irritation. The presence of more obvious conditions, as "glossy" skin, ridging of the nails, arthritic changes, hyperidrosis, œdema, loss of hair, and trophic sores, are less likely to pass unobserved.

6. *Palpation of the nerve.*—This is a most useful procedure and must be done not only at the site of the injury, but also along the full course of the nerve distal to this point, and any subjective experience resulting from it noted. Great significance has been given to the diagnostic value of this examination, but it seems clear that considerable experience and judgment is required in order to interpret correctly the results.

Concussion.

In uncomplicated concussion recovery usually commences within two to four weeks in both sensory and motor fibres, the very earliest change being commonly found in a concomitant recession of the anæsthesia and analgesia proximally.

The muscles rarely show any advanced wasting, and it is uncommon to discover any extensive loss of deep sensibility; if this has temporarily disappeared, it generally returns at an early date. Consequently, very early indications of recovery with only slight atrophy of muscles and no loss, or rapid return, of deep sensibility may be considered as evidence of concussion. Unless some complication arises patients suffering from concussion show spontaneous, rapid, and complete recovery often before the wound has healed, at which time there is still a risk of compression occurring.

Compression.

This is the usual cause of delayed involvement of nerves or may complicate concussion or partial division, but its manifestations are only to be expected when the wound has healed and the scar contracts. Consequently, the onset of paralytic or sensory symptoms during convalescence, the sudden cessation of recovery, or a relapse would suggest its presence.

A prominent symptom often marking the onset is the appearance of pain of a neuralgic type along the course of the nerve, the pain being commonly induced by movement or stretching of the nerve trunk. Pain caused by a movement which stretches the nerve is very suggestive of perineural adhesions. A peculiar sensory dissociation, in which the analgesia to the prick of a pin is more extensive than the anæsthesia to the lightest application of a small camel hair-brush, has been described in a previous paper as a characteristic phenomenon in compression.[2]

There is a tendency for the compression to become progressively worse and, in the most severe types, it may proceed to strangulation of the nerve and complete loss of conduction.

Irritation.

This complication is found most frequently in cases of incomplete anatomical division and is often associated with compression.

In rare circumstances clinical manifestations of irritation are found, but at operation it is discovered that the missile has passed close to the nerve without lacerating any fibres, and the resultant scar has not implicated in any way the nerve. It seems probable, from the histological examination of excised portions of nerve in such cases, that minute hæmorrhages from ruptured vasa nervorum with their subsequent replacement by granulation tissue are responsible for the irritation. Therefore it seems possible that occasionally concussion, in which small intraneural hæmorrhages have occurred, may be complicated by symptoms of irritation.

Perineural adhesions alone, apparently by disturbing the blood-supply of the nerve, occasionally also cause mild symptoms of irritation.

The onset of irritation is usually early, within the first ten days when produced by the initial hæmorrhage, but it may be delayed until such time as the scar begins to invade the intact fibres. The clinical manifestations of irritation are numerous, but only a certain proportion are to be expected in any one case. The clearest manifestations are found in irritation of nerves containing a large proportion of sympathetic fibres, as the median, sciatic or its principal branches, and the ulnar.

Pain is the most constant and frequently the most predominant symptom, but it differs in character, situation, and in certain other ways from that found in compression. It is described as "burning," "pricking," or even "stinging" in character, is experienced in the sensory distribution of the affected nerve, and is influenced markedly by variations in temperature. Patients showing the dual complication of irritation and compression generally give quite a clear and distinct account of the two types of pain they experience, that indicating irritation differing completely from the neuralgia of compression.

The other signs are the trophic changes, the presence of which always denotes irritation or ischæmia from occlusion of one of the principal arteries. They vary in different cases both in extent and character, since they depend upon the site and seriousness of the laceration and source of irritation. When only a few fibres have been divided a petechial or herpetiform eruption in the sensory field of the nerve is sometimes observed, but a more frequent occurrence is hyperæmia of the skin, generally with definitely increased surface temperature, hyperidrosis, and œdema. In almost all there is hyperalgesia, often very intense, to the slightest pressure over part or the whole of the skin supplied by the nerve. Later the more serious manifestations occur, represented by trophic sores, "glossy" skin, "ridging" of the nails, loss of hair, localised osteoporosis, and fibrous contractures of muscles supplied by the injured nerve.

Palpation of the nerve shows it to be exquisitely tender, not only at the site of laceration but distally, and slight compression of its trunk below the injury (where it can often be felt to be swollen) causes severe pain, usually radiating along the course of the nerve. The results of palpation are particularly useful signs of irritation, although tenderness of the nerve trunk distally is not in itself reliable and must not be confused with a similar manifestation found in regeneration.[3] From personal experience the tenderness found in irritation tends to be much more acute and intense than that seen in cases of regeneration.

Partial Division.

This condition is found rarely uncomplicated by irritation or compression.

A point in the history which often proves of some help is the memory of an agonising pain, like a very severe electric shock, striking down the limb at the moment of being wounded. This does not occur commonly in concussion, but there may be such a history in complete anatomical division.

As in the other forms the symptoms at first are profound, and recovery does not commence until a later date than in concussion, generally from 8 to 12 weeks after the reception of the wound. The slighter the laceration, of course, the earlier improvement is likely to occur.

The first sign of recovery is usually seen in the sensory fibres, but if these have been damaged most severely the earliest change will be a return of tone in some of the muscles, followed at a later date by slight voluntary movement.

So far the only helpful points in the differential diagnosis between partial division and concussion have been the history at the moment of injury and the tendency for the more profound symptoms to persist and definite signs of recovery to be delayed in the former.

After about five or six weeks palpation of the nerve at the site of the injury offers further help. In partial division definite and localised tenderness will be discovered, unless no sensory fibres have been injured, and the pain generally radiates distally along the nerve on compression being applied by the finger in this region. This pain is the result of stimulation of the regenerating sensory fibrils which have invaded the surrounding scar and tissues, and is often referred to some part of the anæsthetic skin. When the nerve is fairly superficial the sensitive neuroma may be recognised frequently by palpation, but it must be remembered that a tender and palpable neuroma may be found in complete division.

In partial division the recovery tends to progress more slowly than in concussion. The functional result and extent of recovery in uncomplicated cases of partial division will depend upon the number and type of fibres severed. This can only be judged when all improvement has definitely ceased unless the nerve is explored surgically, a procedure which is clearly inadvisable as long as recovery is maintained and no complication occurs.

Complete Division.

In this lesion the signs of division from the first will remain profound, unless the nerve is sutured.

There is complete paralysis with marked atrophy of all the muscles supplied by the nerve below the injury, and full and persistent loss of conduction in the sensory and sympathetic fibres. The complete loss of tone in the paralysed muscles may be of some diagnostic value, since retention of some tone is frequently found in concussion and compression and occasionally in irritation and partial division.

The sensory dissociation is that of complete interruption —i.e., the anæsthesia to the lightest form of touch is more extensive than the analgesia to pin-prick, and the loss of deep sensibility is extensive in most cases. The sensory loss in compression, irritation, and partial division is apt to vary from time to time, but never in complete division if the examination is accurately performed.

The anæsthetic skin is dry, inelastic, and the surface desquamation delayed. The capillary circulation is sluggish, giving rise to hypothermia, and the area of skin corresponding to the loss of protopathic sensibility is of a deeper red colour than normal, with a cyanotic tinge, but this colour may be obscured by the accumulation of superficial scales. On palpation the dryness and loss of elasticity of the skin are shown in marked contrast with the normal.

The absence of true trophic lesions is of great service in distinguishing complete from incomplete division.

After the elapse of some weeks the bulb on the extremity of the proximal end may be felt, and compression of it cause pain referred to the distal part of the limb, but care must be taken not to interpret this in the absence of any sign of conduction in the motor, sensory, or sympathetic fibres as an indication of partial division.

Electrical Reactions.

No reference has been made previously to electrical reactions, since they do not appear to be of any great service in determining the pathological diagnosis. It has been quite a common experience to find recovery of voluntary power in muscles which fail to respond to faradic stimulation.

My investigations have had to be undertaken without the use of the condenser current, but it seems from the experiences of others to be of assistance in discovering the early recovery of conduction of motor fibres before the return of any voluntary movement.

A comparison of the response to faradic stimulation of the nerve above and below the site of the lesion is useful in estimating the severity of the injury, but retention of irritability in the distal part of its course with loss of conduction at the point of injury does not appear to be an infallible sign of concussion or compression. In simple concussion the faradic response is rarely lost in the muscles.

The surgeon must be familiar with cases which clinically manifest signs of irritation, but at operation the nerve is found to be quite free and no intraneural thickening can be palpated. Direct faradic stimulation of the nerve at the operation will show generally severe obstruction. In such cases where I have been able to examine microscopically excised portions of the nerve an intraneural fibrosis has been found, which, I venture to suggest, is secondary to hæmorrhages from rupture of the vasa nervorum by the divulsive force of the missile as it traverses the structures in the vicinity of the nerve.

Regeneration.

The evidences of regeneration in the various forms of injury have been briefly alluded to, but it is also of importance to be able to recognise correctly early indications of recovery after such operations as suture and neurolysis.

In the former Head, Rivers, and Sherren [4] found a return of cutaneous sensibility to pain commenced early after division and primary suture of a sensory nerve, but from observations in gunshot injuries of mixed nerves it appears that this does not occur at all constantly after *secondary* suture.

From personal observations it seems to be a test of perfect technique and coaptation of the two ends without distortion of the nerve bundles. In large nerve trunks it can be imagined such perfection is difficult to procure, and scarcely to be expected in secondary suture when a considerable portion of the nerve trunk has been excised.

It is found that after secondary suture in gunshot injuries the early signs of recovery appear to vary considerably. In small nerves, and when the ends have been brought into perfect apposition, recovery of protopathic sensibility first seems to be the rule, and with it regeneration of the sympathetic fibres.

An indication which is even easier to discover, and found frequently as early as the sixth week after secondary suture of a mixed nerve, is the subjective sensation of "stinging" in the sensory field of the nerve on palpation of the trunk a little distal to the site of suture.

Care must be taken not to confuse tenderness of the end bulb after an unsatisfactory operation, and when there is any doubt it is preferable to delay giving an opinion until sufficient time has elapsed to see if the stinging can be induced by digital compression of the nerve at a more distal point than at the previous examination. It is very frequently necessary to take this precaution, since in complete division the young fibrils growing out from the proximal end ramify very widely in the surrounding tissues.

Tinel [5] considers this one of the most useful signs of regeneration, but it must be realised that regeneration can occur without the presence of this phenomenon. I have noticed the absence of this sign most frequently after secondary suture of the musculo-spiral (a nerve largely composed of motor fibres), when the functional recovery has been good but there has been no improvement in sensation.

From a series of cases of regeneration without occurrence of this indication it seems fairly clear that its presence is due to slight irritation of the regenerating sensory fibres, and that it is undoubtedly evidence of active regeneration, but only gives definite information about the afferent fibres. The subjective manifestations, as radiating pains, which are fairly frequently complained of whilst regeneration is proceeding, are probably produced in a similar way as a result of compression of the growing fibrils by movement or contraction of adjacent muscles.

Another sign emphasised by Benisty [6] is the appearance of radiating diffuse pain on pinching the skin supplied by the regenerating nerve. This is also a manifestation of regeneration of afferent fibres, and, furthermore, does not appear to be of any great practical value, since its occurrence is irregular, and, as is to be anticipated, its appearance much later than the subjective symptoms produced by palpation of the nerve trunk.

It does not seem possible to formulate any rules about the further signs or rate of recovery after secondary suture, nor is it to be expected when it is realised that so very many factors influence the regeneration.

Not only do the extent of the excised piece of nerve and the perfection of the operative technique affect the recovery, but it has been found also that the various nerves behave in a different manner after suture. The usually highly satisfactory functional result following secondary suture of the musculo-spiral depends probably upon the larger proportion

of motor fibres and the consequent increased possibility of motor bundles in the proximal end coming into relation with degenerate motor bundles in the distal end.

The result of our experience so far seems to point to the fact that nerves can regenerate much more quickly than was anticipated if they are placed under the most favourable circumstances for the correct performance of this function. They are always willing, apparently, to regenerate, but the trouble is to prevent any obstruction to their growth into their normal physiological paths.

After neurolysis, in cases where there is no intraneural complication or serious division of fibres, there is usually a rapid improvement in both motor and sensory fibres, unless the constriction has been very severe, since in the worst forms it may lead to complete local destruction of the whole nerve. The recovery is often first manifested by the motor fibres; but complete recovery, on the other hand, of the sensory fibres is found commonly before function is perfect, the delay in recovery of function being most probably of muscle rather than nervous origin.

The Effect of Ligature of the Principal Arteries.

It is not intended to discuss the well-known ischæmic disabilities which may be mistaken for those of nervous origin, but only to refer to the modification of the clinical picture which the complications of arterial obstruction may produce in injuries of the peripheral nerves.

Ligature of one of the main vessels of the forearm or leg does not appear to have any obvious effect either on the symptomatology or prognosis, but occlusion at a higher level usually exerts some influence, although a fair proportion in which the brachial artery has been ligatured just proximal to the elbow have failed to show any modification of importance which could be ascribed to the arterial complication. This is probably because the patients are chiefly young subjects, free from any arterial disease, and the collateral circulation in this locality is so perfect.

Arterial obstruction in the proximal part of the limb tends to exaggerate the trophic disturbances, but careful examination will show that such symptoms as cyanosis and hypothermia involve the whole hand or foot and do not correspond to the distribution of any peripheral nerve. Trophic sores are more likely to occur, and this predominance of trophic manifestations in nerve injuries complicated by arterial lesions makes the symptoms of irritation often difficult to interpret. It is in these cases that tenderness of the nerve trunk is of special value as evidence of the presence of nerve irritation, since the trophic disturbances cannot be considered with certainty as nervous in origin. The difficulty is intensified in late cases of irritation when secondary vascular changes may supervene as a result of the persistent and long-continued irritation.[7]

Arthritic adhesions and fibrous contractures of the muscles are particularly frequent after ligature of the large arteries in the proximal part of the limbs, as the axillary or femoral, but their widespread distribution rather than localisation to the distribution of any nerve generally suggests their correct etiology.

As can be expected, arterial complications seriously affect the prognosis; occlusion of main vessels almost invariably delays recovery and renders the ultimate result less perfect.

Sources of Error.

The most striking illustrations of the points of importance in the differential diagnosis of the various lesions of the peripheral nerves after gunshot injuries may be seen in brachial plexus cases, where in the same arm signs of concussion, complete division, and irritation may all be manifested.

The signs and symptoms described in this paper have been tested during the past three years, and from this experience it seems possible to formulate an accurate pathological diagnosis in almost 90 per cent. of cases; but it must be fully understood that this cannot be done during the first few weeks after injury, when the manifestations are almost invariably profound.

Error has occurred most frequently from too much reliance being placed on the result of palpation of the nerve. On several occasions partial division has been diagnosed because the nerve trunk distal to the point of injury was tender, although all the other symptoms pointed to complete loss of conduction, and at operation complete anatomical division has been found. Consequently tenderness of the nerve below the lesion *alone* cannot be regarded as a reliable sign of partial division, although it is difficult to understand the phenomenon in complete division unless it is explained by the presence of a communication with an intact nerve below the point of injury.

Another risk of error arises from palpation of the end bulb in complete division, as the referred pain arising from manipulation of it is liable to be interpreted as evidence of incomplete division.

A third point of difficulty arises in cases of severe intraneural sclerosis, where the scar has first caused irritation and later complete obstruction to conduction. If the patient is seen first at the latter time certain signs of irritation may persist, although a thorough investigation will demonstrate that there is really a complete loss of conduction. Furthermore, it has been previously noted that trophic lesions may be maintained by endarteritis, the result of continued nerve irritation.

In conclusion, I desire to express my deepest thanks to the members of the surgical staff of the 2nd Western General Hospital for the assistance they have always so willingly given in ascertaining for me the precise conditions found at operation, and for providing me with excised portions of nerves to make histological examinations.

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REPORTS FROM THE PATHOLOGICAL LABORATORIES

OF NO. —— GENERAL HOSPITAL, ALEXANDRIA.

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Introductory Note.

THE following are a continuation of abridged reports on work done in the Pathological Laboratories of No. —— General Hospital, Alexandria, during the period 1916–17 on the subjects specified and by the respective authors named at the head of each report. Nos. I. and II. were published in THE LANCET of April 20th, 1918.

III.—MACROSCOPIC AND MICROSCOPIC METHODS OF DIAGNOSING AMŒBIC AND BACILLARY DYSENTERY.

By Captain THOMSON and Captain HIRST.

Every stool is sent entire to the laboratory for examination and not a small portion of it. For this purpose a special fly-proof room for the bed-pans is set apart. The examination of the stools macroscopically and microscopically is of great value as an indicator of the condition of the intestine. A clinician with considerable experience who has carefully coördinated his observations with the pathological findings will arrive in nearly every case at a correct diagnosis by this method alone, especially when he combines his experience with the clinical picture of the patient under his charge.

In acute bacillary dysentery we find very frequently a stool with clear mucus like white currant jelly stained with streaks of bright red blood. Often there is no fæcal matter. When examined microscopically the cell picture is composed of numerous pus cells and degenerate epithelial cells often rounded up and showing pyknosis of the nuclear chromatin. The large degenerate cells must not be mistaken for amœbæ.

The choleraic type of bacillary dysentery has quite a different appearance. The stool in these cases is very fluid and may be brown, straw-coloured, or greenish in tint and is filled with flakes of white mucous shreds. The cell picture is again characterised by the large number of pus cells and degenerate epithelial cells in the field of the microscope, and in these cases it is necessary to exclude cholera vibrios.

Another type of bacillary stool is characterised by the presence of small pieces of necrotic mucosa, giving the appearance of minced-up mucous membrane and like meat-

washings. This stool is a very common one in severe epidemics. It shows that considerable damage has occurred and that the mucous membrane is stripping off from the deeper layers of the gut wall.

We have a less common occurrence in acute bacillary dysentery—namely, the passage of casts of portions of the mucosa of the large intestine. We had three such cases here during the year 1916; and in some cases we have large casts of blood passed which simulate true casts of the intestine, but which are composed only of clotted blood and fibrine.

Amœbic dysentery when pure, without secondary infection of dysentery bacilli or atypical organisms, has a very characteristic macroscopic appearance. The mucus is more or less stained dark brown or chocolate colour—that is, the blood is broken down and not the bright red of acute bacillary dysentery. Examined under the microscope, such a stool shows a field very poor in cellular elements, and the red blood cells are mostly broken down. A very common feature of these amœbic stools is the presence of Charcot-Leyden crystals caused by the breaking down of the red cells by the action of the entamœbæ. Charcot-Leyden crystals, although not pathognomonic of amœbic dysentery, are, in our experience, very suggestive of the condition, and we have noted their frequency in cases of cyst carriers with no obvious blood in the stools.

Another characteristic of amœbic dysentery to the naked eye is what is called the "sago-grain" stool, caused by the mucus occurring in little clear masses or clumps mixed with dark stained chocolate-coloured material. The macroscopic diagnosis is definite if entamœbæ are present which show ingested red blood cells.

The above description more or less describes the common conditions met with in cases of amœbic and bacillary dysentery. In chronic cases of dysentery, both bacillary and amœbic, and during recovery from these conditions we find patients continue to pass mucus either in clumps or mixed up with a fluid fæcal stool.

Sometimes this is clear viscid mucus, frequently it is pure pus, and very often the mucus is white, opaque, and very viscid. It may occur as a clump or it may be noted as small flakes on the surface of a solid fæcal mass. Patients who seem otherwise well often have these conditions indicative of some past dysenteric attack, and the condition is popularly known as "colitis." Frequently the cell picture of these cases is comprised chiefly of columnar epithelial cells.

The question arises as to whether many cases of amœbic dysentery are missed by failing to find entamœbæ. We do not think a large percentage are, if the pathologist is experienced in the work, but certainly some cases are missed, especially in cases which are complicated by an acute bacillary dysentery where the amœbic condition is masked owing to the great outpouring of blood and muco-pus. After the bacillary condition has abated these cases may be discovered by a further microscopic examination. The rapid diagnosis of bacillary dysentery is of great importance so that the specific treatment can be administered at once. Willmore and Shearman (1915), working in this hospital, showed that the cell pictures of amœbic and bacillary dysentery were characteristic. A pure amœbic infection has very few cells in the field and pus cells are scarce. In the acute bacillary cases we have a field packed with pus cells, red cells, and degenerate epithelial cells and no entamœbæ present.

The report of this condition is sent at once to the physician in charge with a note that the cell picture is suggestive of bacillary dysentery, and if the case is urgent serum is administered at once, there being no necessity to wait 48 hours for the bacteriological report.

IV.—TYPES OF DYSENTERY BACILLI ISOLATED.

By the same Authors.

During the year 1916 a total of 123 strains of dysentery bacilli were isolated from 331 specimens; Shiga Kruse type 43, Flexner Y type 51, atypical 29, mixed amœbic 19. For the first six months of 1917 the corresponding figures are 51 strains, 406 specimens; 8 Shiga Kruse, 14 Flexner Y type, 29 atypical, and 2 mixed amœbic.

Nearly all the specimens plated for diagnosis during 1916 were acute type, blood and mucus stools. For various reasons a large proportion of the acute stools were not plated during the earlier part of 1916, the distinction between bacillary and amœbic dysentery being made on the basis of the microscopical examination and clinical picture of the case.

During the first half of 1917 a greatly increased number of the fæcal stools of convalescent dysentery patients have been examined. Thus only 67 out of the total were acute type stools, and 37 subacute, and 302 fæcal. Twenty-two strains were isolated from the blood and mucus acute type stools, 18 from the subacute, 11 from the fæcal type.

Since the present register of dysentery bacilli was started on Sept. 1st, 1916, 115 strains have been isolated from 104 cases by one of us (L. F. H.).

The same organisms have been isolated on six separate occasions from one case; in several instances on a second occasion during a relapse. In one case an atypical Shiga type organism was isolated during the first attack, and a typical Flexner bacillus eight weeks later. A typical agglutinating Shiga and a typical Flexner were isolated from one case on successive days from the same attack.

As a rule it was only practicable to put one of the provisional positive glucose tubes through all the tests; if more of these had been examined, doubtless more cases of mixed bacillary infection would have been discovered.

Table I. summarises the characters of the first 100 strains isolated from as many soldiers. Thus, there were 29 strains of typical *B. dysenteriæ* (Shiga) and 32 strains of *B. dysenteriæ* (Flexner) and 39 atypical strains. Representative strains of each of the types isolated have been kept alive by subculture for five months after being first replated to ensure purity; the fermentation reactions and agglutinability were then re-tested.

TABLE I.—*Showing the Characters of 100 Strains Isolated from the Same Number of Soldiers.*

Type No.	Total Nos. of each strain.	Principal biochemical characters									Remarks.	Species group.
		Motility.	Lactose.	Glucose.	Mannite.	Maltose.	Saccharose.	Dulcite.	Indol.	Shiga serum.		
1	29	—	—	⊥	—	—	—	—	±	+	Highly pathogenic.	Shiga.
2	6	—	—	⊥	—	—	—	—	±	—	Similar to above, but relatively inagglutinable.	
3	9	—	—	⊥	⊥	—	—	—	+ to ++	—	Pathogenic Hiss Y type.	Flexner.
4	23	—	—	⊥	⊥	⊥	—	—	+ to ++	—	Pathogenic Flexner type.	
5	8	—	—	⊥	⊥	—	—	—	+	—	Inagglutinable variety of Type 3?	
6	10	—	—	⊥	⊥	⊥	—	—	+ to ++	—	Ditto, Type 4?	
7	3	—	⊥	⊥	⊥	⊥	—	—	+	—	Pathogenic Ohno Type M.	
8	8	—	—	⊥	—	—	—	—	+++	—	Slightly pathogenic.	Morgan.
9	2	—	—	A.sl.g	—	—	—	—	+++	—	,, ,,	
10	2	+	—	⊥	—	—	—	—	+++	—	,, ,,	
11	—	+	—	A.G.	—	—	—	—	+++	—	Morgan No. 1.	

The sign ⊥ = Acid only. A.sl.g. = Acid and slight gas formation.
"Pathogenic" = Lethal to rabbits on intravenous or intraperitoneal injection of living organisms with lesions of the intestine.

Class I.—Shiga group.—The sugar reactions proved to be stable. There is some tendency to vary in the indol reaction, which is never marked and often absent. All but three of the Type 1 strain agglutinated rapidly and completely with the Shiga serum; these three agglutinated in 24 hours.

The Type 2 strains did not become agglutinable on subculture. Strain 99 was agglutinated by 1/50 of the patients' serum on fifteenth day of disease. Strain 98 was not so agglutinated; these latter strains were not agglutinated by the therapeutic serum in a higher dilution than 1/20.

Class II.—Flexner group.—Types 3 and 4 differ only in their action on maltose. They were agglutinated practically to the same titre by the Y serum. According to Hiss, the Y bacillus does not ferment maltose, while the true Flexner type does. Moreover, the production of indol is commonly stated to be greater in the Flexner species. Morgan, however, describes the Y bacillus as a maltose fermenter.

We have found, in common with several other observers, that the fermentation of maltose by organisms agglutinating

Flexner Y serum is variable. It is sometimes possible to select non-maltose fermenting and late maltose fermenters from different colonies of the same strain. The indol reaction is given by all strains to a variable extent, but usually more definitely than by Class I. strain. Moreover, we have found a few strains, such as No. 93, Goodenough, which have a distinct action on saccharose after prolonged incubation. The same remarks as regards maltose also apply to types 5 and 6.

The organisms in these latter types may be divided into two groups: those which become more or less agglutinable to the Y serum after repeated subculture *in vitro*, and those which remain inagglutinable. On the whole, the latter are more often found in acute cases than the former.

The case of a dysentery carrier, 2/AM. O'B., attached to Flying Corps, acting as mess cook, deserves to be recorded in detail. Early in March, 1917, a small outbreak of mild bacillary dysentery occurred in a certain camp near Alexandria; the above-mentioned individual fell under suspicion as a possible carrier of the infection. On March 9th, 1917, a specimen of fæces was forwarded to the Military Laboratory, Alexandria, and reported on as follows:—"Dysentery bacilli (atypical) isolated, Lamblia cysts present." He was then admitted to this hospital. He complained of no symptoms, seldom suffered from diarrhœa; a little mucus was occasionally seen, but more often the fæces were apparently normal.

B. dysenteriæ Type 5 was isolated on 20/3/17, 5/5/17, 10/5/17.

No dysentery bacilli isolated 25/4/17. On 12/5/17 he received 100 c.c. antidysenteric serum intravenously. *B. dysenteriæ* Type 5 was again isolated 27/5/17, 30/5/17, and 5/6/17. Provisionally positive colonies were nearly always numerous on the plate. Negative again 18/6/17.

Strain No. 72 (A.) and Strain 73 (C.) isolated 20/3/17 from two cases of mild bacillary dysentery from the same camp were precisely similar in their character to O'B.'s strains. On 4/6/17 O'B.'s serum gave a good agglutination in a dilution of 1 in 400 against one of his strains. Strains No. 72 and 73 were agglutinated to 1 in 200 and 1 in 400 respectively. *B. dysenteriæ* Flexner was feebly agglutinated 1/50 dilution.

The effect of Y serum on No. 88 (O'B.) was of particular interest. Cultures from four colonies were tested, one was agglutinated up to half titre of the serum, three others to 1 in 10 only. The colonies therefore vary considerably in their agglutinability to the specific serum, the average being low.

On the other hand, Strain 101 (O'B.), though otherwise identical with No. 88, was scarcely agglutinated at all by the Y serum, but was agglutinated to 1/100 by Lister therapeutic serum. Strain No. 101 was injected intravenously into the ear vein of a rabbit. Dose 1/8th agar slope culture in saline. The rabbit died during the eighteenth hour. The intestines were full of slightly blood-stained mucus and intensely congested. The organism was recovered without difficulty from the mucus contents of the intestine and found to be inagglutinable to Y serum.

In addition to being a persistent carrier of dysentery bacilli and a temporary carrier of *Lamblia intestinalis*, the man was also infected with the cysts of *E. histolytica*, which were found on 28/3/17 and 26/3/17. He was treated with 36 gr. of emetine bismuth iodide and subsequently gave six negatives to cysts of *E. histolytica*, the last being on 17/6/17.

The following is a typical example of a microscopic report on a stool while carrying dysentery bacilli only.

17/4/17.—Formed stool; a few specks of mucus on the surface. No cysts. Degenerated epithelial cells present.

The case of O'B. is a notable addition to the records of persistent carriers of dysentery bacilli.

The association between relative inagglutinability of the strains isolated and the clinical mildness of the case is of considerable interest. One of us met with a similar phenomenon during an outbreak of Asiatic cholera at Colombo. At one stage of the epidemic the cases became milder with a lower case mortality. The vibrios became morphologically less typical and less agglutinable with the specific serum used. During a brief recrudescence the organisms again became typical and the case mortality again rose. The Lister Institute therapeutic serum usually agglutinates the types 5 and 6, but in much lower dilution than types 4 and 5.

Similar organisms to type 7 have been isolated by Ohno in Japan and by Bahr in Fiji. The acidity was in each case distinct by the third day, and in the case of Strain No. 75 (Partington) in 24 hours. We understand that this type has also been isolated by Captain Mackie in Egypt.

Strain No. 75 was agglutinated by the patient's serum to 1/100, and also by the Lister Institute polyvalent serum in a dilution of 1/50.

The mannite-fermenting group of dysentery bacilli are to be regarded as somewhat variable members of a closely related species group. By employing a greater variety of carbohydrates and incubating for longer periods and by means of saturation and bacteriolytic tests it would doubtless be possible to separate our strains into further types. Ohno has described 15 types of dysentery bacilli on the basis of the fermentation reactions in lactose, saccharose, mannite, maltose, and dextrine, nine of which belong to the mannite-fermenting group. The work of Hiss, Morgan, Ohno, and others showed that there is a close relation between the fermentation reactions and the receptor mechanisms of these bacteria. It is doubtful, however, to what extent some of the minor differences, such as the late fermentation of maltose and saccharose, are sufficiently stable to be considered specific. Evidence of the instability of some of the fermentation reactions of this group is accumulating. The most constant reactions are those which appear earliest.

Lentz has pointed out that two factors are involved in the reaction produced by dysentery bacilli in broth containing carbohydrates, the acid formation from the splitting of carbohydrates and the alkali formation from the splitting of proteid, and the results are influenced by the constitution of the media used in these tests. We think that the distinction between Hiss Y bacillus and the ordinary Flexner type is largely artificial. It would have been interesting to test some of these strains with the serum of animals immunised to the El Tor bacillus of Willmore. We think it probable that on the basis of the early sugar reactions and cross immunisation experiments our mannite-fermenting strains could be split up into two or three fairly distinct species.

Class III.—Morgan group.—Strains similar to types 8, 9, 10 have been isolated by other bacteriologists in the same endemic area.

The amount of gas formed by different cultures of type 9 is variable; this type is probably closely related to type 8. They differ from the typical Morgan No. 1 bacillus in being non-motile and having apparently a greater pathogenicity to rabbits and guinea-pigs. All the strains in this group gave a marked indol reaction.

Typical Morgan No. 1 bacilli have frequently been isolated from dysenteric stools at different stages of the disease, but particularly during convalescence, and also from the stools of enteric convalescents. Tribondeau and Zichet considered Morgan's bacillus to be an important etiological factor in the dysentery outbreak on the Gallipoli Peninsula. On two occasions we have found the typical organism present in such large numbers in a blood and mucus stool as to suggest that it was the original infecting organism. It seems probable, however, that the closely allied organisms already mentioned play a more important part in the etiology of dysentery. Most of the organisms belonging to the Morgan group were isolated in September and October, 1916.

We look forward to the publication of the researches now in progress in another laboratory in Alexandria on the pathogenicity of the organisms in this group.

Anomalous Strains.

Strain No. 60 (P.), isolated 28/12/16 from a blood and mucus stool from an acute case, was anomalous in not conforming to any of the tabulated types. There were numerous colonies of this organism on the plate. Unfortunately, the culture was found to be dead on subculture three weeks after its first isolation. The following are the characters of the first subculture: non-motile bacillus, lactose acid only, glucose acid only, mannite no change, maltose acid only, saccharose no change, dulcite no change after three days at 37° C., indol reaction slightly positive. No agglutination in 1/10 titre of either Shiga or Y serum.

Table II. shows the kind of stools from which the various organisms were isolated:—

TABLE II.

Type No.	Acute stool.	Sub-acute.	Fæcal	Total No.	Type No.	Acute stool.	Sub-acute.	Fæcal	Total No.
1	28	1	—	29	5 & 6 ...	8	6	4	18
2	1	5	—	6	7	1	2	—	3
3 & 4 ...	23	6	3	32	8, 9, & 10	7	4	1	12

The stools are classified as before. It will be noted that the agglutinating Shiga type is more constantly associated with the acute type of blood and mucus stool containing cellular exudate than the corresponding Flexner type. The single strain found in a subacute type of stool was one of the three which did not agglutinate well.

As suggested by these figures, the non-agglutinating Flexner and Shiga types are those most commonly isolated from mild cases of bacillary dysentery. This accords with the experience of the physicians in charge of the cases. The probability is that the actual proportion of non-agglutinating atypicals is greater than would appear from these figures, since the chances of isolating them from the subacute and fæcal type of stool are less. Captain Fisher states that

on the whole good results were obtained with the polyvalent serum in the treatment of cases in which only atypical strains were isolated. A large proportion of the types 2, 5, and 6 infections did not require serum treatment. Nevertheless, in view of the low agglutinability of some of the atypical strains recovered from acute cases to the therapeutic serum it would seem that the serum is not sufficiently polyvalent.

Nearly all the cases of bacillary dysentery came from the same endemic area—namely, camps in the vicinity of the hospital. There is some evidence of a seasonal variation in the different types of bacilli isolated. The small outbreak in March, 1917, already mentioned, bred true to type—i.e., all the cases were infected with the same type of organism, presumably through the agency of a carrier. Nevertheless, as a general rule, typical Shigas, typical Flexners, and various atypical organisms could be isolated from cases from the same camp at all seasons, though in different proportions. This is probably to be accounted for by the simultaneous spread of the different types through the agency of flies feeding on a variety of fæcal matter deposited by natives in the neighbourhood of the camp.

In Japan, in the Philippines, in the Fiji Islands, and other localities a similar diversity of species has been described. On the other hand, most local epidemics in Germany and in English asylums are attributed to some particular species of dysentery bacillus, and stress is laid on human carriers as a means of spreading the virus.

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V.—AMŒBIC DYSENTERY.

By Captain THOMSON.

Acute Amœbic Dysentery.

During the year 1916 a total of 666 specimens of fæces from separate cases contained blood or mucus, or both. Of these 97 cases were found to contain free living *E. histolytica* diagnosed chiefly by the presence of ingested red blood cells.

Out of the total acute cases of dysentery examined in the laboratory, 14·5 per cent. proved to be amœbic. Of these, 19 were diagnosed bacteriologically and microscopically to be mixed infections—that is, both amœbic and bacillary. Nine more cases were diagnosed as a double infection on clinical grounds, making a total of 28 mixed cases. I think it very probable that several cases of mixed infection were missed during the acute attacks of bacillary dysentery, especially when the amœbic infection was slight.

Only three deaths occurred in which an amœbic infection was active. One of these had the complication of enteric fever; another had an acute bacillary infection, and one died from a perforated amœbic ulcer about 10 inches above the anus. Of these deaths, therefore, only one could be attributed to the action of the amœbæ alone—that is, the death-rate in pure amœbic cases in this hospital during the year was approximately 1 per cent. amongst amœbic cases and only 0·15 per cent. of the total cases of dysentery. No deaths occurred from amœbic abscess of the liver, and only one case of amœbic abscess was treated surgically.

This low death-rate in amœbic dysentery can be attributed to two things: (1) That amœbic dysentery is often not very virulent; (2) the specific treatment we possess in emetine and ipecacuanha.

During the Gallipoli campaign, before emetine was sent to the base and before the drug was administered early, most extensive lesions of the large intestines were often seen by us in the post-mortem room, which proved in sections of the gut to be amœbic. These were often complicated by secondary infections, causing destruction of the whole mucosa right down to the muscular layer and in many cases right down to the peritoneum, and perforations were not uncommon. The observations made during the original outbreak of dysentery on the Gallipoli Peninsula prove conclusively that amœbic dysentery was an important factor in causing many fatal cases, and the necessity of prompt treatment with emetine in all suspected cases was advocated and carried out. The death-rate fell in a remarkable manner as soon as emetine was introduced into the base hospitals and hospital ships.

The explanation of the various results obtained by treatment is to be found by the study of the pathology of the intestine during dysentery. In mixed cases of dysentery—that is, both amœbic and bacillary—we find that the bacillary condition causes an acute congestion of the whole capillary system of the large intestine, extensive submucous hæmorrhages occur, and thus the circulation to the gut is cut off. In these cases it is quite impossible for any emetine injected hypodermically to reach the amœbæ buried in the submucosa. It is first necessary to cure the bacillary condition and to restore the circulation in the intestinal mucosa. Again, in more chronic cases of active amœbic dysentery—that is, in cases persistent for some time with the passage of free entamœbæ in the stools, we often have a considerable amount of fibrous tissue formation, and, consequently, we have the amœbæ shut off from the circulation. In these cases it may be impossible or difficult to reach the amœbæ either by circulation or by the mouth. We know these pathological changes in the intestine exist in varying degrees depending upon the acuteness or chronicity of the condition.

Certainly the best results in treating acute amœbic dysentery are obtained at the first onset of the acute attack. Administer emetine hypodermically and orally and so attack the amœbæ before they are shut off either from the circulation or the lumen of the gut by fibrous tissue formation or damage to the capillary blood-supply.

If the first course of treatment fails we must, after an interval, recommence treatment, and in our experience very few cases will fail to respond to the action of emetine when given hypodermically and by the mouth.

Chronic Amœbic Dysentery Diagnosed by the Presence of the Cysts of Entamœba histolytica.

Out of a total of 1785 cases examined the pathogenic cysts of *E. histolytica* were found by me in 2·4 per cent. Wenyon and O'Connor (1916), in Alexandria, found cysts in 3·2 per cent. of hospital cases examined, and in 5·3 per cent. of healthy British troops in Egypt.

These observers also found that 13·7 per cent. of native prisoners in Hadra were carriers of amœbic dysentery. The cysts of *E. histolytica* are characterised by the presence of four nuclei, and, as shown by James, Penfold, Woodcock, Wenyon and O'Connor (1917), and Dobell and Jepps (1917), they varied much in size.

Dobell and Jepps give the diameter as varying between 7μ and 20μ. The paper by Dobell and Jepps is a most useful contribution to the diagnosis of the three common intestinal entamœbæ in man.

I have found most commonly in my cases here sizes between 10μ and 15μ in diameter. Some of these cases give no history of ever having had acute dysentery, and many never even complained of diarrhœa. All cases had spent several months in Egypt, and several gave distinct histories of dysentery and the passage of blood and mucus. Others came from Salonika, Mesopotamia, India, or had been through the Gallipoli campaign. In the series of 42 cases received here we find that none had been treated with emetine, but several had received injections of serum and been treated as acute bacillary dysentery. It seems to me quite certain that when a patient is a carrier of the cysts of *E. histolytica* there must be some ulcerative process in the gut. Wenyon and O'Connor (1917) are of the same opinion. In the post-mortem room during the last two years I have noticed the presence of amœbic ulcers of the large intestines where no dysentery was suspected, and in many of the cases examined by me where the stool was found apparently normal and where numerous pathogenic cysts were present I have found microscopically Charcot-Leyden crystals, a certain indication of the presence of broken-down blood corpuscles. We have, as it were, in all cases of cyst carriers of the pathogenic entamœbæ an occult condition of ulceration which does not make itself always obvious microscopically.

A cyst carrier may continue healthy and well for years, but nevertheless he is a danger to himself and the community, especially in badly sanitated areas.

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FRACTURES OF THE FEMUR:

A PRACTICAL NOTE ON THE CALLIPER AS AN INSTRUMENT OF EXTENSION.

BY P. L. WATKIN WILLIAMS, D.S.O., F.R.C.S. EDIN.,
TEMPORARY CAPTAIN, R.A.M.C.

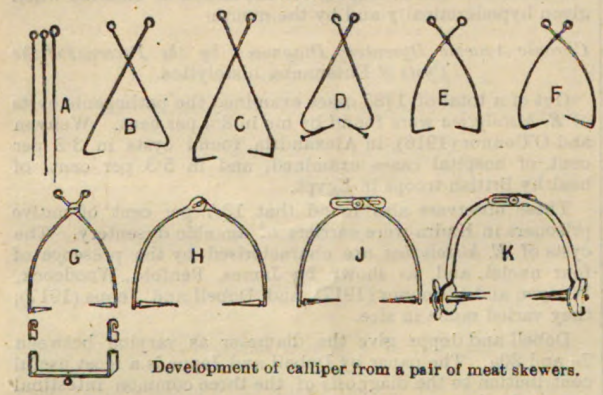
THE treatment of fractures of the femur has received considerable attention of late. A large number of mechanical appliances have been devised, the majority of which may be swept aside as ingenious toys, too elaborate and expensive for everyday use. Moreover, the best results can be obtained with very simple apparatus, properly applied.

Extension and Immobilisation.

Extension and immobilisation are fixed principles that nobody disputes, but there is considerable difference of opinion as to how extension is to be made and maintained, and how much immobilisation includes. All methods of extension come under two heads: the so-called "fixed" extension, and extension by counter-weight.

The Thomas splint is used in large numbers both in France and at home, but in a variety of ways, and many of them are certainly not acting on the Thomas principle—which, of course, is that the ring is pressed against the ischial tuberosity and the leg tied to the other end of the splint as forcibly as can be done, this being the true fixed extension.

FIG. I.



Development of calliper from a pair of meat skewers.

In many cases shown as examples of this method the bed is raised at the foot, the splint tied to a post at end of bed, and the ring is found an inch or two away from the pelvis; extension is therefore really being made by the body weight pulling away from the fixed limb, practically the Hodgen principle. The objection to this method is that the patient can ease the pull, if it is uncomfortable, by working himself along the bed.

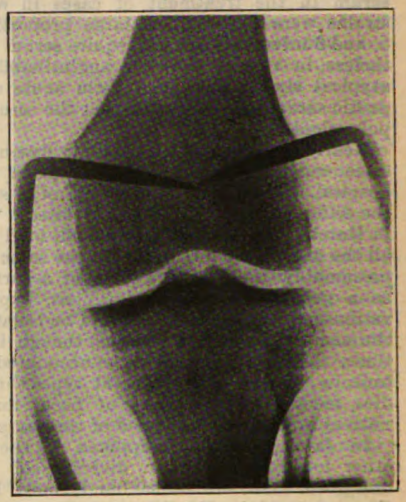
Another way of using the Thomas splint is to suspend the limb in it, using it merely as a cradle and fixing the limb extension to an independent post, or making extension by pulley and counter-weight, the bed foot being raised in the usual way. An objection to this method is that the whole limb is used for extension purposes, and therefore the knee is kept continuously in one position.

This brings up the question as to how much immobilisation includes. The older text-books lay it down as a rule that when possible the joints above and below the fracture should be included in the fixation. This practice is still being largely adhered to and has the disadvantage that convalescence is prolonged by the time necessary to restore mobility to the knee-joint.

I described in THE LANCET of Feb. 23rd, 1918, a splint which permits of passive movement of the knee-joint while maintaining extension of the thigh, practically a Hodgen with a second frame for the leg, hinged to the thigh frame at the knee level. The same leg-piece can be hinged into a Thomas if preferred, and this method has given very satisfactory results.

Where possible, then, the mechanical treatment of a fractured thigh should include fixation of the thigh with freedom of the knee and leg. This leads to a consideration of the best way of obtaining a hold of the thigh for purposes of fixation and extension. Essentially there are but two methods: in the one the pull is taken from the limb surface by some adhesive applied to the skin; in the other a direct hold is obtained on the bone by some instrument.

FIG. II.



Unnecessary penetration of points of calliper before modification.

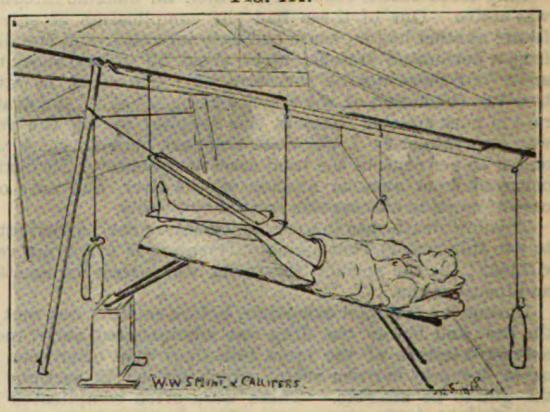
There can be no question that the latter is the more efficient, and comparing the number of cases I have seen of skin infection, abscess, deep sloughing, and occasionally gangrene following the use of strapping and glue, with the number of cases with sepsis following the use of instrumental extension, I have no hesitation at all in saying that the instrument is infinitely safer—and if further argument is needed patients who have been subjected to both invariably decide against the adhesives.

Account of Use of Calliper.

One of the most recent instruments is that devised by Major Besley, of the U.S. Army, and called by him the "ice-tongs" or calliper. For simplicity of application and minimum injury to bone it seems superior to other instruments, while giving absolute precision of control over the fracture. I have used this instrument for some considerable time, and have introduced some modifications which have met with Major Besley's approval, and therefore I hope they may be worth describing.

The development of the Besley calliper from a pair of meat skewers to the instrument known by that name is shown in the top row of Fig. I. The points are inserted a short distance into the condyles of the femur and the pull taken from the rings at the other extremity. It is obvious that the heavier the pull the more the points would be driven into the bone, not infrequently to the extent shown in Fig. II.—a quite unnecessary injury to the bone; and therefore the first modification was the substitution of a screw-joint for the simple rivet (Fig. I. G).

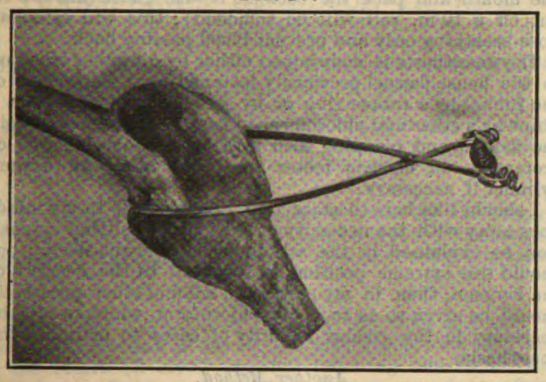
FIG. III.



Splint and callipers in use, with extension on Hodgen principle.

Both the calliper and extension cord attached are in the way if free movement of the knee-joint is desired; the pull was therefore shifted to the pins and taken by a rigid metal frame long enough to extend beyond the foot, which permits of the foot passing up inside it (Fig. III.). The short arms with ring ends are therefore unnecessary (Fig. I. B).

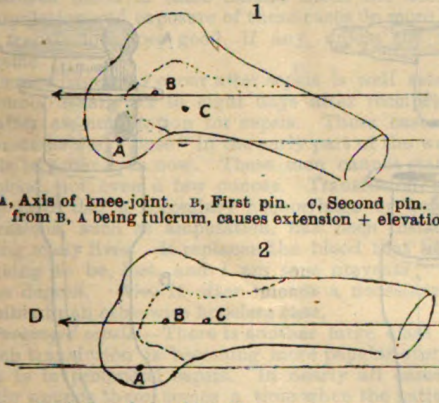
FIG. IV.



Knee-joint distended with paraffin to show available surface for callipers. (Specimen and photograph by Major Besley.)

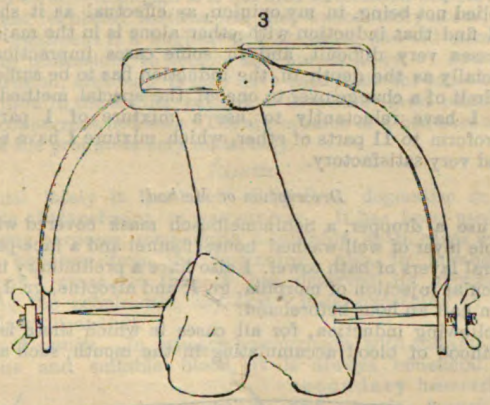
The body of the calliper can then lie on either the thigh or leg, but if moved from one position to the other causes pain, which is due to the fact that the two pins are hardly ever in one straight line, as shown in the Fig. I. G; at any other position of width they are, of course, at an angle as in the top row figures, and therefore, when moved on their axis, cause pressure on the bone. To obviate this the hinge-joint was expanded laterally (Fig. I. J), so that at any width the pins are in one line.

FIG. V.



A, Axis of knee-joint. B, First pin. C, Second pin. Pull from B, A being fulcrum, causes extension + elevation.

B and C being clamped together A ceases to be a fulcrum. Pull from C through B = extension only.



By elevation of pulling rod in direction D, B becomes fulcrum and hyper-elevation is corrected.

Fig. III. shows this instrument in position, with the metal extension frame and the modified Hodgen splint, which differs from that shown in the previous article in THE LANCET to the extent that the thigh frame is lengthened to correspond to the other, and, for the same reason, to allow the foot to pass through to full extension of the knee. As shown in the figure, a counter-weight is arranged to balance the weight of the leg in such a position that the patient can control it and so produce passive movement of the knee at will.

This arrangement is comfortable for the patient and permits him a reasonable amount of movement without disturbance of the fracture, gives ready access to wounds, and can be placed in any degree of abduction required. I have heard of callipers remaining *in situ* for seven and eight weeks, but in my experience three to five weeks is sufficient in the average case. After that time, when some active movement is not only permissible but desirable, a simple weight extension attached to foot or leg, with no splint at all, is the best arrangement, the patient being taught to put the different muscles into action against the pull of the weight.

Fractures of Lower Third of Femur.

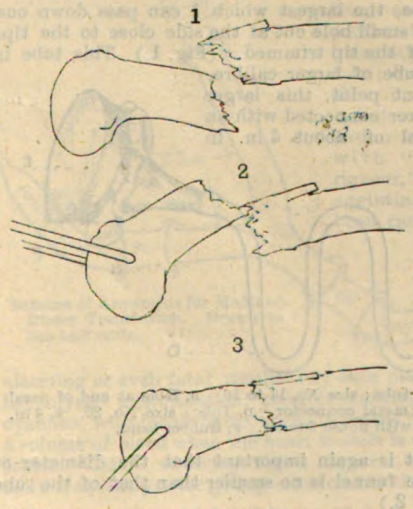
There is one other point of interest in the use of the calliper, which was not apparent when it was originally devised, and that is the treatment of lower third fractures. The method of application is simplicity itself, the only point of importance being avoidance of the synovial membrane.

Fig. IV. is a photograph of a specimen prepared by Major Besley to show the area of bone available and its relation to the joint; and Fig. V. shows the relation of the available area to the axis of the joint, which is such that no matter what spot is chosen for the insertion of the calliper point a lever action is produced, with the knee axis as fulcrum, the result being that with a short lower fragment a certain and unavoidable amount of elevation is produced, apart from the extension. As in nearly every case the lower fragment is depressed, this is beneficial, but the action will continue indefinitely and produce hyper-elevation unless checked by the reduction of the amount of pull or alteration in its direction. Another alternative is to arrange a pull on the leg by strapping or foot-piece, and lessen the pull on the thigh, balancing the one against the other. This, of course, at once interferes with the freedom of the knee. The diagrammatic outlines of skiagrams in Fig. VI. are a sample of this frequent over-correction.

In order to obviate the necessity for readjustment I have devised a calliper with two points on each side instead of one (Fig. I. K). Both, of course, are inserted into the bone, but at first the pull is taken from one only, that nearest the knee; the ordinary lever action operates and the fragment is elevated. When alignment is judged correct the screw nut is tightened on each side, and then the pull is taken from both pins, the lever action is arrested, or—more correctly—altered, as the first pin becomes the fulcrum, and further pull results in maintaining extension only. Fig. V. illustrates this perhaps more clearly than words can describe it. This last pattern has not been given sufficient trial to warrant its being offered as more than a suggestion.

The single-point sliding-joint calliper with metal extension frame is made by Messrs. Down Bros. and has been accepted by the War Office, and made for me, so presumably it can be obtained in the usual way by others who may wish to use it. I am greatly indebted to Major Munro, R.E., and to Captain Hill, R.E., for their skill and interest in the making of these appliances and other surgical requisites, and particularly so considering the limited apparatus and labour at their disposal in France. My acknowledgments and thanks are due to Major Besley for allowing me to sketch his instruments and to publish this description of them and for accepting so cordially the small modifications I have suggested.

FIG. VI.



1. Original displacement. 2. Extension + hyper-elevation. 3. Corrected alignment.

ETHER ANÆSTHESIA FOR FACE AND JAW SURGERY.

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AFTER six months' experience at the Queen's Hospital for Face and Jaw Injuries, during which time I have administered 400 anæsthetics for minor and preparatory operations and 100 for actual plastic operations, I should like to supplement a most able article published in THE LANCET by my colleague, Lieutenant R. Wade.[1]

In that article Lieutenant Wade dealt most fully with various techniques for various operations, including intratracheal, intubation, colonic ether, and a special sitting-up position; but whereas he is satisfied with the free use of chloroform in combination with ether, I personally feel convinced that, just as in general surgery, chloroform should as far as possible be eliminated in favour of ether.

Consequently, I have been at pains to work out different methods of sustaining an ether anæsthesia to meet the various operations required. Owing to the ether at present supplied not being, in my opinion, as effectual as it should be, I find that induction with ether alone is in the majority of cases very difficult, and in some cases impracticable, especially as the depth of the induction has to be sufficient to admit of a change over to one of the special methods, so that I have reluctantly to use a mixture of 1 part of chloroform to 11 parts of ether, which mixture I have so far found very satisfactory.

Description of Method.

I use a dropper, a Schimmelbusch mask covered with a double layer of well-washed house flannel and a face-pad of several layers of bath towel. I also have a preliminary intramuscular injection of morphia, gr. ¼, and atropine, gr. 1/100, given half an hour beforehand.

Following induction, for all cases in which there is any likelihood of blood accumulating in the mouth, such as lip

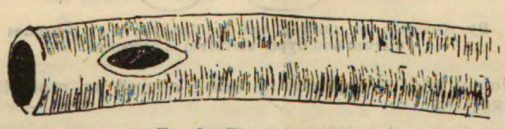

FIG. 1.—The nasal tube.

plastics, epithelial inlays inside the mouth, antral and submental drainage, and extensive extractions of teeth, I use a single nasal tube, the largest which I can pass down one nostril, having a small hole cut at the side close to the tip, and the edges of the tip trimmed. (Fig. 1.) This tube is connected to a tube of larger calibre, a most important point, this larger tube being further connected with an enamelled funnel of about 4 in. in

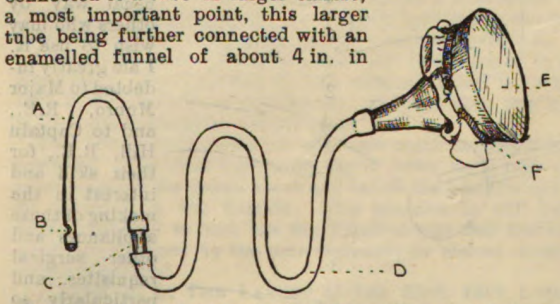

FIG. 2.—A, Nasal tube; size No. 14 to 16. B, Hole at end of nasal tube; C, Large metal connector. D, Tube; size No. 20. E, 4 in. funnel covered with house-flannel. F, Rubber band.

diameter, and it is again important that the diameter of the spout of the funnel is no smaller than that of the tube attached. (Fig. 2.)

By holding the funnel to the ear and adjusting the nasal tube one finds the point, which is somewhere just above the epiglottis, at which the breathing is comfortable. Then open the mouth and pack the back of it with gauze (about 2 ft. cut off a 10 in. roll will be sufficient); this will establish nose-breathing only and prevent blood passing back.

The anæsthesia is maintained either by dropping ether on to the house flannel previously fastened over the mouth of the funnel by a rubber ring or by passing the tube from a Shipway's ether and chloroform apparatus through a hole in the flannel and pumping with a Fletcher's foot bellows, or preferably an electric motor pump, or using an oxygen cylinder if necessary.

I should like here to state that this method, to my mind, does away with the necessity of the extreme sitting-up position, as explained in the article by Lieutenant Wade; but should this extreme position be essential to the comfort of the surgeon, then, in my opinion, a colonic ether anæsthetic should be given so as to avoid chloroform, which would be necessary in the greater majority of cases to maintain the anæsthesia.

Another Method.

A method in such cases as plastics on the nose, eye, or cheek, or in fact where there is no likelihood of blood entering the mouth—and among these cases may also be included both septal and antral cases where a post-nasal plug is used—is one where a Hewitt's airway tube as

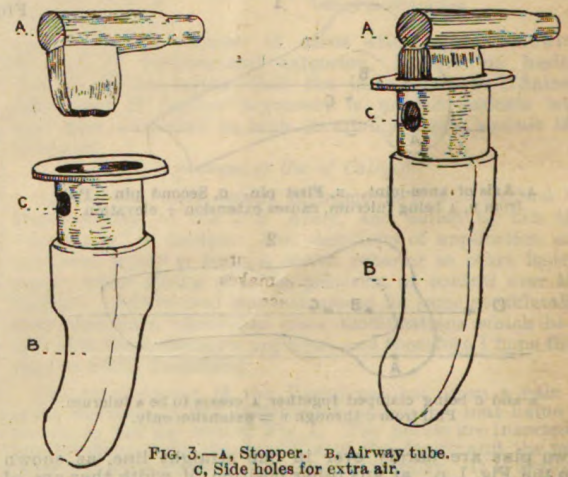

FIG. 3.—A, Stopper. B, Airway tube. C, Side holes for extra air.

modified by Phillips is used. I use this tube because it is at present the only one which I can get supplied, but not necessarily from preference. This tube has a hole through each side of the metal portion, and I have had a hollow stopper made to fit the mouth of the airway tube in connexion with a horizontal tube, actually an empty rifle cartridge case, the free end of the stopper being graduated so as to leave the two side-holes patent to act as respiratory vents, and still keep a large ether way. (Fig. 3.)

The horizontal tube can be turned either to the right or left as required, and is attached by tubing either directly to the Shipway's apparatus or to the enamelled funnel as described above. I frequently find that when attached directly with the Shipway's apparatus an automatic inhalation of ether is set up sufficient to keep the patient comfortably anæsthetised without any pumping.

I do not wish to suggest that these methods take the place of intratracheal ether, but will be found useful substitutes, especially when the injury prevents a good opening of the jaws.

With regard to intratracheal, intubation, and colonic ether anæsthesia, I cannot say more than has been said in Lieutenant Wade's article, except that in colonic ether we are finding that the results are just as good without using hyoscine in the hypodermic injection.

[1] THE LANCET, June 8th, 1918, p. 794.

LITERARY INTELLIGENCE.—New editions of the following books are announced by Messrs. J. and A. Churchill: "Surgery in War," by Lieutenant-Colonel A. J. Hull, R.A.M.C., second edition; "A Text-book of Pharmacology and Therapeutics," by Professor A. R. Cushny, F.R.S., seventh edition; "Diseases of the Eye," by J. Herbert Parsons, F.R.C.S., third edition.

TRANSFUSION OF BLOOD IN WAR SURGERY:

SOME INDICATIONS AND RESULTS, AND DESCRIPTION OF NEW MODIFIED DIRECT METHOD.

BY S. R. HARRISON, M.R.C.S. ENG., L.R.C.P. LOND.,
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THE indications for transfusion of blood in war surgery are: (1) anæmia, caused by (*a*) loss of blood, (*b*) prolonged sepsis; (2) retarded healing of wounds, including compound fractures.

Anæmia.

Severe loss of blood may occur at the time a soldier is wounded or within a day or two afterwards, and then due to the return of blood pressure removing blood clot, &c. Transfusion of these primary hæmorrhage cases is beneficial immediately and permanently, so long as the blood of the donor is suitable and the "wound" shock not too great. Some transfusion enthusiasts claim a great deal for it in surgical shock; still, when we consider what we know of the pathology of shock, we must not expect too much of transfused blood in these cases. Often the accompanying manipulation and exposure of these cases do more harm than the transfusion does good, if any, unless the anæmia is extreme.

Hæmorrhage may occur after sepsis is well established in a wound, usually six to eight days after receipt of wound, or after an amputation for sepsis. These cases were very common at the "Base" in the early part of the war, and are liable to occur even now. These men cannot stand the loss of blood, not even a few ounces. Transfusion, either after they have had a secondary hæmorrhage or before severe operations, such as amputation, has been instrumental in saving many lives. It replaces the blood that has been, or is going to be, lost, and I am sure prevents "shock" in some degree. Also it often makes a necessary operation possible in an otherwise hopeless case.

Prolonged sepsis.—There is another large class of case in which transfusion is becoming more popular every day, and that is in prolonged sepsis. In nearly all cases of severe septic wounds there comes a time when the patient's resistance becomes exhausted. His wounds have an "indolent" appearance, and healing is slow or absent; he has loss of appetite, and has no "kick" left in him. These cases are always profoundly anæmic. The coagulability of the blood is diminished, there is œdema of the back and legs, and often pus in the urine.

There are many types of this picture I have tried to describe, from the case of a slowly healing stump to the case of pyæmia. From my own observation over many months I find that they are all improved by a suitable transfusion, the severe cases temporarily, the mild cases permanently. Until lately transfusion has only been used in almost hopeless cases, or rather not employed until they were almost hopeless. I believe that the injected blood is directly stimulating to the tissues, so that I advise it to be used early in the case, before the body has lost its power of reaction.

There are now being recorded many cases of "prolonged sepsis" which clinically appear to be septicæmic, and which become well either with or without transfusion. My own observation goes to show that all these cases improve by transfusion so long as the donor's blood is properly examined in conjunction with that of the recipient. It is therefore probable that the donor's blood contains antibodies which may affect the life of the micro-organism probably present in the recipient's blood. It is conceivable that this process might be carried out more effectively by a preliminary vaccination of the donor with autogenous vaccine prepared from the recipient, if the organism can be recovered and the septicæmic recipient does not succumb in the interval necessary for such antibodies to be produced in the donor.

In primary hæmorrhage the most satisfactory amount of blood to use appears to be from 750 to 800 c.cm. given at one transfusion. In septic cases smaller amounts are indicated, 300 to 500 c.cm. repeated in 7 to 10 days, using a fresh donor each time. Donors under the age of 25 seem to stand the withdrawal of blood very well, and after a few hours feel quite fit again.

Retarded Healing of Wounds.

"Indolent" wounds.—These so-called "indolent" wounds have usually large raw surfaces, with no, or very anæmic, granulations upon them, and they show no sign of healing, the skin edges often being blue and lustreless. In the early part of the case there has been much discharge, and there has of necessity been a heavy drain upon the patient's fluid blood. There is no reaction in the wound. There may be no increase of temperature, but as a rule the pulse-rate is still rather high. Stimulating dressings do no good; some, such as saline, often cause troublesome hæmorrhagic oozing, which has a deleterious effect upon the patient. Non-healing stumps may be mentioned as one of the most common types in this category. Repeated blood transfusion of, say, 400 c.cm. at ten-day intervals, is most beneficial.

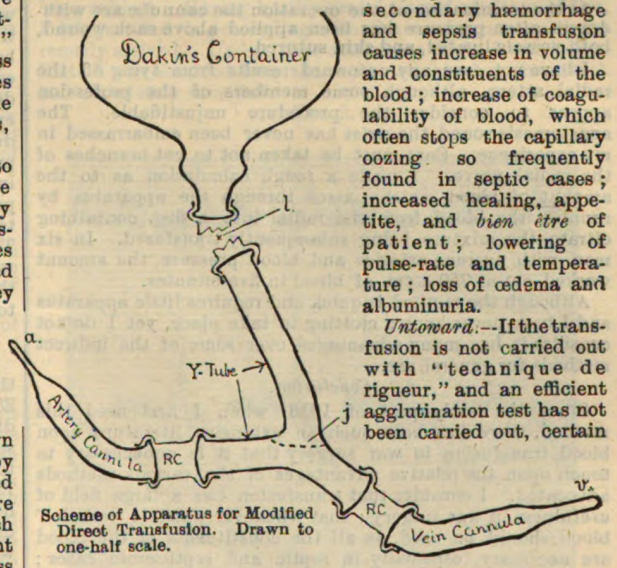
Compound fractures.—The same remarks as have been made about "indolent" wounds are applicable to septic compound fractures, especially those of the femur. There is no doubt that in long-standing cases, where the suppurative process continues in a "watery" manner and there is persistent non-union and no attempt on the part of the patient to react to the infection or throw out new bone, repeated small transfusions increase the production of osteoblasts and alter the appearance of fragments under the X ray which previously may have been considered "dead."

Bed-sores.—Although it is not nice to mention bed-sores in the best regulated institutions, they undoubtedly occur, and their treatment is a bugbear to both young and old members of the profession, to doctors and nurses alike. I find that transfusion, although it may have been done for some other condition in the soldier patient, is invariably most beneficial to a concurrent bed-sore. The appearance of a bed-sore often alters the prognosis very materially.

Results.

Until lately it has been difficult to dogmatise on the results of transfusion in war surgery. It has been used for so many purposes, some quite unsuitable, as in cases which were hopeless from the beginning; also, in numberless "shock" cases, so that it has deserved its reputation among the people who say that "it is something to do" and leave it at that.

Good results.—In primary hæmorrhage, with suitable conditions and suitable blood, it is always beneficial. In secondary hæmorrhage and sepsis transfusion causes increase in volume and constituents of the blood; increase of coagulability of blood, which often stops the capillary oozing so frequently found in septic cases; increased healing, appetite, and *bien être* of patient; lowering of pulse-rate and temperature; loss of œdema and albuminuria.



Scheme of Apparatus for Modified Direct Transfusion. Drawn to one-half scale.

Untoward.—If the transfusion is not carried out with "technique de rigueur," and an efficient agglutination test has not been carried out, certain alarming or even fatal results may take place. Immediate: hæmolysis, agglutination, possibly causing sudden death; cyanosis, with feeble pulse, possibly caused by giving too large a volume of blood when the heart muscle is degenerated from sepsis. Later: sweating, rigors, pyrexia, apparently found more frequently after giving citrated blood; hæmaturia.

Modified Direct Method.

The rationale of this method is to convey blood from an artery of the donor to a vein of the recipient and allow the operator to observe the flow, so that he knows immediately if the flow should cease or if any clotting is taking place.

The apparatus is very simply "home made." It consists of a Y-tube (see figure), two limbs of which are shortened, and two glass cannulæ. These cannulæ are connected to the short limbs of the Y-tube by sterilised rubber tubing (R C); the third limb is connected (*l*) with a reservoir of saline 0·8 per cent. or sodium citrate 3·8 per cent. by tubing about 5 feet long, which has a clip on it. All rubber connexions are conveniently tied with silk. The length of the instrument—that is, the distance the blood must flow through the tube, is about 6 inches. The diameters are: of tip of artery cannula (*a*) 1 mm. internal and 2 mm. external; of vein cannula (*v*) 2 mm. internal and 3 mm. external; of Y-tube cannula 6 mm.

The Y-tube and cannulæ are waxed after sterilisation and joined up in position with rubber tubing which has been duly sterilised. The long limb of the Y-tube is now connected to the reservoir of sodium citrate solution and the apparatus is ready for use.

The operation is as follows:—

The donor's left radial artery is usually taken (unless he is left-handed), the distance between artery and the selected vein in recipient is roughly measured off with instrument, and the two arms secured in position with adhesive. Two operators are necessary: one to prepare the artery and one to prepare the vein.

The skin over the proposed wound is sterilised with 1-20 carbolic, which also acts as an anæsthetic. The radial artery 1½ inches above wrist is dissected out through an inch incision, tied off distally with fine silk, a second loop of which is passed under the artery and used later to tie in the cannula. The artery is now opened with a Graefe's knife from above downwards and outwards, leaving a V-shaped tongue. Pressure in the meantime is applied above the wound to prevent loss of blood.

The vein is prepared in the same way. The clip on the tubing leading to the reservoir is now opened, and the apparatus filled with citrate. The artery cannula is now tied into artery and blood allowed to flow until it reaches the tip of vein cannula, when pressure is again applied to artery. The vein cannula is then tied into vein and all pressure taken off artery. The blood can now easily be seen flowing through the Y-tube at the junction of the short and long limbs where the clean solution of citrate comes in contact with the blood (*j* in figure). This can be more easily demonstrated by occasionally opening the clip on the tube to reservoir, which is suspended about 3 feet above the patient, when the clear solution is seen passing quickly into the vein cannula. This is even more pronounced if pressure is applied to the artery.

At the termination of the operation the cannulæ are withdrawn after pressure has been applied above each wound, both vessels ligated, and skin sutured.

I have not seen any untoward results from tying off the radial artery, although some members of the profession appear to consider the procedure unjustifiable. The anastomosis round the wrist has never been embarrassed in my experience. Care must be taken not to cut branches of the radial nerve. I made a rough calculation as to the amount of blood which passes through the apparatus by running the blood from the radial into a dish containing citrate, the mixture being subsequently transfused. In six men, with average arteries and blood pressure, the amount worked out at 750 c.cm. of blood in five minutes.

Although the method is quick and requires little apparatus and I have never known clotting to take place, yet I do not consider it has many advantages over some of the indirect methods for general use.

Conclusion.

Since the early part of 1916, when I first used this method, there has been such an extensive literature upon blood transfusion in war surgery that it is unnecessary to touch upon the relative advantages of the various methods advocated. I consider that transfusion has a large field of usefulness in war surgery; that whenever possible "whole" blood should be used, as all the constituents of the blood are necessary, especially in septic and septicæmic cases; that a preliminary agglutination test should always be carried out, except when the groups of donor and recipient are known; and that the "Dakin container" indirect method is the most simple and efficient method for general use, as the apparatus is easily made or obtainable, the required amount of blood can be given at one filling, and little assistance is required, also whole warm, unadulterated blood, with little chance of infection, is quickly transferred from one patient to another. Of course, the method selected must necessarily vary according to circumstances of location and available apparatus.

Reference.—O. H. Robertson, Captain, M.O.R.C., U.S.A., British Medical Journal, June 22nd, 1918.

ABNORMAL CONDITIONS OF ENAMEL IN CASES OF MALNUTRITION.

BY J. LAWSON DICK, M.D. EDIN., F.R.C.S. ENG.,
ASSISTANT SCHOOL MEDICAL OFFICER, LONDON COUNTY COUNCIL.

APART from caries there are many abnormalities to be found in the enamel of the teeth in cases of malnutrition. If 100 good-class children are compared with 100 poorly-fed, ill-nourished children, even a casual inspection will show that the teeth of the poorly-fed children are much more defective than those of the better-fed ones.

The study of defects in the enamel is a matter of much interest and importance, for there is, as it were, a permanent record in many cases of the state of the child's nutrition at various periods of life. The calcification of the enamel begins about the fifth month of intra-uterine life, and the following diagrams give the rate of progress of calcification at various periods for both the temporary and the permanent sets.

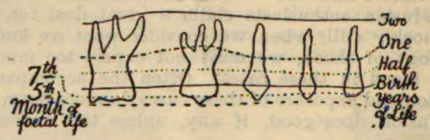


FIG. 1.

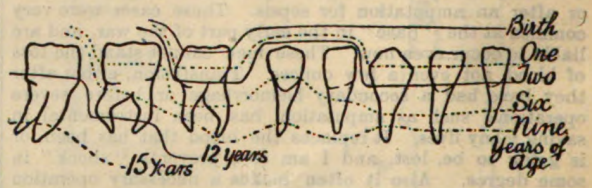


FIG. 2.

It is extremely rare to find the cutting edge of the incisors and canines of the milk teeth with imperfect enamel, and it will be seen that this enamel is laid down or calcified during the last four months of intra-uterine life. On the other hand, it is quite common to find the enamel of the cutting edge of the same teeth of the permanent set markedly defective. This enamel is laid down in the first year of extra-uterine life. In other words, in almost all cases during intra-uterine life the calcification of the enamel proceeds normally, but immediately after birth factors step in which interfere with the proper growth of the enamel, producing defects which are permanent and which are likely to weaken the defences of the teeth and to lead to decay. The agents which determine the tendency to decay are those which affect the soft enamel organ in the earliest history of the tooth and not those which affect the enamel after the tooth has been erupted.

Results of Investigation.

403 children of 11 years of age and over were taken from the ordinary London County Council schools, but of these 281 were children in schools where the nutrition was distinctly below the average. No attempt was made to select children of poor nutrition beyond that they belonged to a poor school and lived under slum conditions in the East-End of London in a poor and overcrowded neighbourhood. As a control 122 children were taken from good-class schools in North London, where the social conditions were fairly good and where the general state of nutrition was good. The following were the figures:—

(A) 403 children. (B) 281 where nutrition was decidedly poor.
(C) 122 children of good nutrition.

	(A)	(B)	(C)
Enamel normal ...	273 cases = 67·5%	... 167 = 60%	... 106 = 87%
,, defective ...	130 ,, = 32·5%	... 114 = 40%	... 16 = 13%

Carious conditions have not been dealt with in these figures. The conditions of the enamel met with in these cases may be summarised as follows:—

1. *Typical hypoplasia.*—As already noted,[1] in these cases the enamel of the teeth is markedly defective, so that the

[1] The Teeth in Rickets, Proceedings Royal Soc. Medicine, 1916, ix., 83-89.

dentine is but thinly and unequally covered. The cutting edges may present sharp points, giving a very characteristic appearance. The defect usually extends from the cutting edge, and may, in severe cases, involve the whole crown. The teeth affected are the central and lateral incisors, the tips of the canines, and the crowns of the first molars of the permanent dentition. Usually the depth of the defect is greater in the enamel of the central incisors than of the lateral incisors, and the enamel as a rule affected is the enamel laid down in the first two years of the child's life. This condition is almost pathognomonic of rickets.

2. *Honeycombed teeth.*—This condition is much the same as the first, except that the deficiency in the enamel leads to the formation of small depressed pits scattered over the surface of the teeth, giving a very characteristic appearance.

3. *Horizontal bands of thickened enamel and transverse grooves in the enamel*, indicating acute illnesses of a more or less prolonged nature. Short acute illnesses seem less likely to produce this condition than prolonged debilitating conditions such as measles, especially when followed by whooping-cough.

4. *Chalky appearance of the enamel*, varying from white patches or transverse bands on the surface of the enamel to a general opacity affecting its whole surface. This is a very well-marked defect, and the contrast which this condition gives with the clear semi-transparency of healthy enamel is one of the chief things that strike the observer in the teeth of poorly nourished children. As will be seen, it is the commonest defect found in malnutrition.

5. *Brown lines of Retzius* or brown staining of the enamel is a common and well-marked defect found in cases of malnutrition. This defect may be found as a brown line running as a rule across the incisors, and it may be the canines or it may be a brown patch of varying size and intensity of colouring, though it is usually a rusty brown. Very commonly it is associated with marked opacity of the enamel, and it seems to indicate a somewhat severe degree of disturbance of the nutrition.

Placing the frequency of occurrence in the poor-class and the better-class children side by side, the following is the result given in percentages:—

	In 281 poor-class children.	In 122 good-class children.
Opaque chalky enamel	28·5%	9%
Brown line of Retzius	13·0%	1 case.
Hypoplasia	8·5%	5%
Honeycombed teeth	2·5%	0

As already shown, out of 281 poor children, 114, or 40 per cent., had defective enamel, as compared with 13 per cent. amongst the better-class children. Taking the 114 cases with defective enamel among the poorer-class children there was found—

Chalky enamel	80 = 70%	Typical hypoplasia ...	24 = 21%
Brown lines of Retzius	38 = 33%	Honeycombed teeth...	7 = 6%

It is of great importance to note the teeth most commonly affected. In the children where the enamel was opaque and chalky the teeth were affected in the following order of frequency.

Central incisors...	78%	Premolars	20%
Lateral incisors...	55%	First molars	10%
Canines	30%	Second molars	5%

These figures are accurate except in the case of the first and second molars. The first molars were frequently badly decayed or the tooth had been extracted. The second molars in many of these cases had not yet been erupted.

In 38 cases when the teeth showed the brown lines of Retzius—

Central incisors affected in	36=95%	Canines affected in	5=13%
Lateral ,, ,,	11=29%	First molars, 1 case.	

It is important to note that in hypoplasia and in cases where the chalky patches and the brown lines of Retzius were found the teeth which suffered chiefly were, first, the central incisors; secondly, the lateral incisors; and, thirdly, the canines in this order of frequency. Reference to the diagram will show that the calcification of the enamel of the crowns of these teeth goes on during the first two years of the child's life. So that these defects are due to errors of nutrition affecting the child at this early period when the rate of growth, and notably that of the brain, is relatively enormous. Rickety conditions are especially operative at this period. Hypoplasia, as we have seen, affects the incisors, canines, and first molars. Much more rarely the premolars and the second molars are affected by hypoplastic changes. White patches in the enamel, one of the commonest signs of malnutrition, are, however, fairly commonly found in the premolars and second molars, which must be due to conditions operating on the child between the second and the sixth year.

ANGINA PECTORIS:

CHANGES IN ELECTROCARDIOGRAM DURING PAROXYSM.

BY GUY BOUSFIELD, M.B., B.S. LOND.,
LIEUTENANT, R.A.F.

THE accompanying curves were taken from a patient who had aortic disease. There was an old history of syphilis, scarlet fever, and several attacks of rheumatism. The typical diastolic murmur and water-hammer pulse were present.

As I was about to photograph the first lead the patient had an attack of angina pectoris, to seizures of which he had been subject. Having hastily sent for amyl nitrite capsules, I felt justified in proceeding with the cardiogram until the remedy arrived. Under these conditions Plate 1 was taken. Plate 2 was obtained from the same patient when the attack had completely subsided.

FIG. 1.

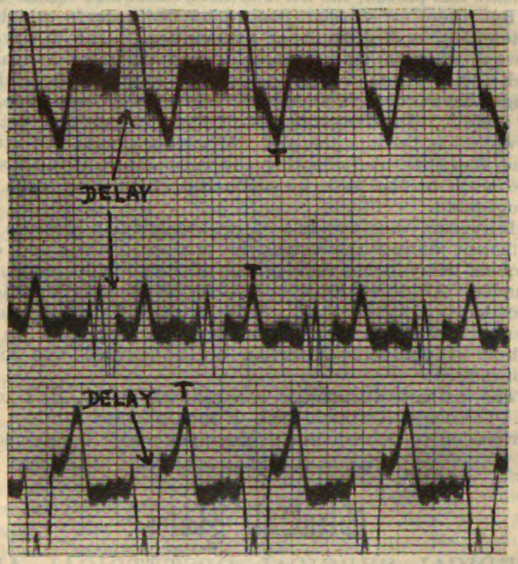
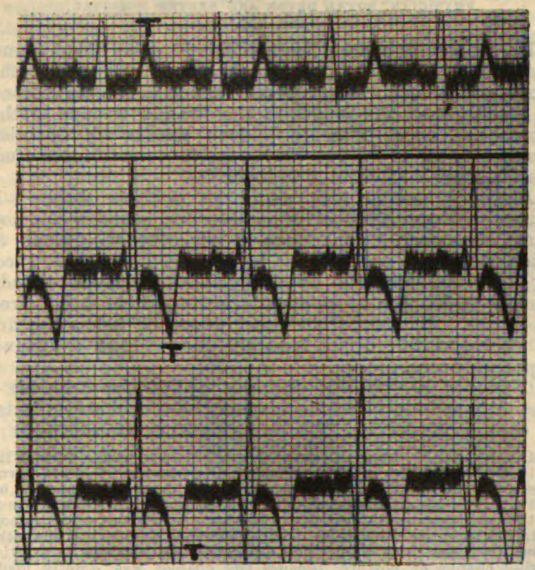


FIG. 2.



Curves in Plate 1 are quite typical of those obtained in severe cases of aortic disease, showing marked delay in the transmission of the nervous impulse through the right branch of the auriculo-ventricular bundle. It is quite clear,

however, that some factor other than the aortic lesion was concerned in the production of this delay; this is shown by the fact that when the anginal attack had subsided no delay in the nervous transmission occurred. (See Plate 2.)

Severe aortic disease is known to be associated with high intraventricular pressure. One of the theories of the causation of angina is that the attack is due to vaso-motor spasm, and the resulting increase of peripheral resistance raises the general blood pressure, and consequently the intraventricular pressure. The above curve would appear to confirm this in a measure, for the patient was not thoroughly "at home" in the cardiograph room, and fear of the unknown was probably sufficient to produce the rise of blood pressure which precipitated the attack. Clearly, as the second plate shows, the aortic lesion alone was not responsible for the delay in the bundle, for here, when the seizure had passed, the nervous disturbance also vanished.

But there is another feature of the records which is interesting and difficult of explanation. The T wave is always erect in lead 2 of a cardiogram from a healthy individual. Here, during an attack of angina pectoris which might have proved fatal, wave T was *erect*. Compare lead 2 of Plate 2. The dangerous attack had now subsided, yet the T wave has become *inverted*. Whatever caused the attack was, therefore, also affecting the musculature at the base of the aorta or the path by which the stimulating wave was propagated.

It appears that the rise of intraventricular pressure was sufficient during the attack to produce distress and consequent delay in the right branch of the auriculo-ventricular bundle. All three leads in Plate 1 demonstrate this delay excellently. Again, the disturbance was sufficient to cause a profound effect on the musculature at the aortic base, to the extent of producing inversion of the wave T due to its contraction.

The patient was under the care of Dr. C. R. Box in St. Thomas's Hospital, and I am indebted to him for permission to publish the photographs which I obtained.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

DISTANTLY AUDIBLE HEART SOUNDS.

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BY "distantly audible heart sounds" I mean heart sounds audible at a distance from the chest wall without a stethoscope, and, for practical purposes, I would define the distance as greater than the length of the straight wooden stethoscope—i.e., about 7 inches. Such sounds are doubtless familiar to all of us, but they seem to deserve more study than has yet been devoted to them.

Distantly audible first sound in Graves's disease.—In Graves's disease a distantly audible first sound is common, much commoner, I think, than in any other condition. So often have I met with it that now, when I notice it, I look for other indications of hyperthyroidism. Graves related a case in which the heart sounds were audible 4 feet from the chest. In one of the cases described below the first sound was audible 5 feet from the chest. Such a distance is probably rare.

Change of posture and distantly audible heart sounds.—Distantly audible heart sounds may be remarkably affected by change of posture. The following illustrate this:—

Mrs. A., aged 31, a typical case of Graves's disease, with a pulse of 120, and a cardiac dullness reaching 6 inches leftwards from the mid-sternal line in the erect position (corresponding with the limit of the h.a.b.), had a very pronounced first sound as well as a slight systolic murmur. In the erect posture the first sound was audible without a stethoscope 19 inches from the chest wall; in the recumbent posture it was audible 5 feet from the chest wall. The difference was not due to exertion during change of posture, because the change was quietly made, and when the erect position was resumed the distance of audibility again decreased. My friend Dr. J. Raglan Thomas confirmed these measurements.

Mr. B., aged 28, with a heart dullness almost normal in area in the erect position, a short presystolic apical murmur and a basal aortic diastolic, had a very marked apical first sound. This first sound was audible without a stethoscope 14 inches from the chest wall in the erect position. In the recumbent position it could be heard 30 inches from the chest wall.

These changes in distantly audible heart sounds, so obvious and with limits of audibility so easily measured, furnish a valuable (because incontestable) addition to what has been so repeatedly reported in respect of the influence of bodily posture on cardiac physical signs. They furnish further proof, if such be needed, of the contention that no description of cardiac physical signs is scientifically accurate which omits a statement of the bodily posture at the time of observation. Heart sounds are rather out of fashion just now and, a little while ago, the shade of Laennec might have been excused for some discouragement. However, as aortic regurgitation and mitral stenosis have happily been rediscovered, it may be worth while continuing to describe heart sounds.

It is good to notice that descriptions of cardiac conditions are beginning to appear in which the posture of observation is stated. Perhaps the observers, like Laennec and Graves, have used the more accurate straight wooden stethoscope.

A CASE OF PROLONGED ARTIFICIAL FEEDING.

BY J. BATTY TUKE, M.D., F.R.C.P. EDIN.,
NEW SAUGHTON HALL, POLTON, MIDLOTHIAN.

THE following case of artificial feeding is interesting on account of the duration of treatment.

A woman, aged 57, single, was admitted on August 24th, 1908. History: For five years has been suffering from delusions of a religious nature and hallucinations of hearing—e.g., imagines that she is the Bride of Christ, and gets direct messages from Him, telling her to perform certain actions which she is bound to obey. In consequence of one of these messages she set fire to the house she was living in before being brought here. Up till August 29th, 1909, she took her food fairly well, though somewhat erratically, one day taking nothing but solids, the next nothing but fluids; on this day, however, she received a message from Christ commanding her not to take food or drink of any kind, and up to present date (September, 1918) not even a drop of water has voluntarily passed her lips. For the past nine years she has been fed regularly three times a day by the mouth with a feeding-tube, being perfectly quiescent during the operation. When the artificial feeding was first commenced she weighed 6 st.; this rose in two months to 6 st. 7 lb., and since then it has never varied more than a pound or two up or down. Her bodily health is, and always has been, absolutely good; she has never had a day's illness, has been out regularly, and employs her time in the house reading, writing, and doing useful and fancy sewing.

To all appearances the patient may, if she has not already done so, create a record for the duration of continuous artificial feeding.

A CASE OF ACUTE ASCENDING PARALYSIS.

BY W. WADDELL, M.B., CH.B. EDIN.

IN the following case the past history was unimportant, with the exception of an attack of measles at the age of nine.

The patient was a woman, aged 28. At 3 P.M., on April 18th, she began to feel pains in the back and head and tingling in both legs. When seen at 8 P.M. on the same day there was definite weakness in both legs; the left leg, the patient stated, became weak first. The power of standing was lost. Knee-jerks were absent. The patient was perspiring freely. The following morning, at 10 A.M., there was complete paralysis of both legs, with relaxation of the muscles. At 3 P.M. on the 19th there was paralysis of the muscles of the pelvis, loins, abdomen, and weakness in the muscles of the thorax and those of right forearm and hand. There was tenderness of muscles, a firm touch could be perceived anywhere, but perception of painful impressions and of heat and cold was delayed. Cutaneous reflex action was lost. There was no wasting of muscles, and the electrical reactions were unimpaired. Temperature 98·2° F. Pulse 78.

There was mental dullness, and later in the day absolute paralysis of the muscles of the thorax, both arms, and diaphragm; the neck muscles had also begun to suffer. Speech became indistinct, and the patient soon passed into a state of stupor and died at 5 A.M. on the 20th.

The muscles, nerves, and spinal cord appeared on naked-eye examination to be free from disease. There were degenerative changes in the cells of the anterior cornua, with slight vascular engorgement.

Umtata, Cape Province, South Africa.

THE Devon County Council have arranged for the provision of a home for mentally defective boys at Exmouth.

THE Council of Bristol University is offering to the general public during the coming winter free courses of instruction in English literature, chemistry, and geology.

Reviews and Notices of Books.

Thyroid and Thymus. By ANDRÉ CROTTI, M.D., F.A.C.S., LL.D. With 96 illustrations and 33 plates in colours. Philadelphia and New York: Lea and Febiger. 1918. Pp. 567. Price $10.

To the publishers of this large work we offer our congratulations. The book is a beautiful specimen of the typographic art, the paper and binding are of the best, and the execution and reproduction of the coloured illustrations, which are numerous, call for special praise. It is, indeed, an édition de luxe, and few authors have had the good fortune to have their writings presented to the reading public in such an attractive way. The author states that the work is the result of 17 years' experience in the field of goitre pathology in Switzerland and the United States, and expresses his indebtedness to Professor Henry Stilling, of Lausanne, to whom he owes much encouragement and self-confidence, and to Professor Theodor Kocher, who has given him inspiration and example. He also states that, in addition to personal experience in the study of the thyroid and thymus glands, he has gathered all that he considers of value from the enormous amount of French, Italian, German, and English literature on the subject, and that he has endeavoured in his recital of sources and authorities to give credit where credit is due.

From the title-page we learn that the author was formerly professor of clinical surgery and associate professor of anatomy at Ohio State University College of Medicine, and surgeon to Grant and Children's Hospitals, Columbus, Ohio. We may conclude that his personal experience has been more surgical than medical, and that what he has to say about the surgical aspect of diseases of the thyroid and thymus will be the more valuable part of the book. About one-fifth of the book is devoted to the consideration of operative methods and technique, and most of the illustrations and coloured plates are connected with this part of the subject. Indeed, the medical part of the book, although occupying four-fifths of its pages, appears to have been written chiefly to lead up to the subject of surgical treatment. It is difficult to understand what the author means when he says that he has endeavoured in his recital of names and authorities to give credit where credit is due. The book, indeed, bristles with names, but references to published writings are conspicuous by their absence. The absence of references, of a bibliography, and of an index of names is one of the greatest defects of the book. When an author is quoted no clue is given as to the work from which the quotation is made. What is worse, we find whole passages literally translated from Professor Ewald's well-known monograph incorporated in the text without any acknowledgment at all. When names are given they are not always correct; thus, we find Perry for Parry, Madden for Hadden, Hutchinson for Hutchison, Schöefer for Schäfer, Buscham for Buschan, Fomeris for Forneris, &c.

The introductory chapters on anatomy, physiology, and biological chemistry of the thyroid and pathology of thyroid tumours are, on the whole, adequate. It is incorrectly stated, however, that "normally the human thyroid gland contains 1 to 9 grams of thyreoglobulin," corresponding to 5 to 45 mg. of iodine. The actual amount is from 2 to 8 mg. "Everyone knows," says the author, "Halstead's classical experiment: If a portion of the thyroid is removed, the remaining portion of the gland reacts by secondary hypertrophy." In a treatise published in 1918, the fact should have been mentioned that in 1914 Halstead published a paper entitled "Reconsideration of the Question of Experimental Hypertrophy of the Thyroid Gland," stating that his former experiments had been fallacious. Hunnicott in the same year published a paper demonstrating the absence of hyperplasia of the remainder of the thyroid in dogs after piecemeal removal of this gland. In spite of this the author, not only here but elsewhere in the book, refers to Halstead's old experiment, as if it were still an accepted fact and draws conclusions from it on that supposition.

The chapter on inflammations of the thyroid is an interesting one. We may remark that it was at the commencement of the nineteenth century, not in the eighteenth as the author states, that descriptions of thyroiditis were first given by Carron, Walther, and others. In the description of woody thyroiditis we notice a good many unnecessary repetitions, and there is a tendency to repetition throughout the book. Here we read: "It was Riedel who in 1896 first described a form of thyroiditis which he called 'eisenharte strumitis' or 'iron-hard strumitis.'" "On account of the extremely hard consistence of the tumour Riedel called it 'eisenharte strumitis.'" "This form of thyroiditis called by Riedel 'eisenharte strumitis' or iron-hard strumitis." "The tumour is absolutely hard like iron or wood, hence its name." The term does not call for such insistence.

The so-called parasitic thyroiditis of Chagas is described. In this disease the enlargement of the thyroid does not appear to be the main part of the illness. We think its relation to chronic goitre to be very doubtful. A naïve remark is made regarding hydatid cyst of the thyroid: "Clinically the diagnosis of hydatid cyst is seldom made, as the only symptom pathognomonic of its presence—namely, the 'hydatid fremitus,' has never been perceived."

The author has given a good account of the anatomico-pathological relations of goitre to the surrounding structures. Chapter VI. and the succeeding chapters on the various forms of goitre and their clinical symptoms are well written; in this section of the book the author is at his best. Here we come across a curious remark: "A great many goitres in their early stage give to the neck a soft roundness called 'swan-neck.'" The subject of myxœdema is started in the middle of a chapter on the clinical aspect of malignant goitres, and is continued along with that of cretinism in the three following chapters. Whether the author has himself seen little or nothing of myxœdema and cretinism we are unable to say, but he gives what seems to us a very poor and inadequate description of these most interesting diseases. Although there are 96 illustrations in the book there is not a typical picture given either of myxœdema or cretinism. True, there is an illustration on p. 199 labelled "Spontaneous adult hypothyroidism," but it shows nothing in the least characteristic of myxœdema, and might be more appropriately labelled "Portrait of a lady." The illustration on p. 204 labelled "Spontaneous infantile hypothyroidism," as far as we can see, shows nothing but obesity. The author is sometimes unconsciously humorous, as when he says: "The hands and feet are thick and clumsy; the fingers have the shape of small round sausages; hence the name 'spade hands' of Gull." A chapter on thyroid insufficiency serves to illustrate the danger of seeing the condition in almost every person. The author gives as symptoms in children lack of appetite and constipation, but admits subsequently that it would be an error to claim that every constipation is due to thyroid insufficiency! There is next a long and interesting chapter on the etiology of endemic goitre and cretinism, which is supplied by the author's wife. The antiquated and third-hand information, however, regarding the prevalence of goitre in America on p. 225 is not what one expects to find in an up-to-date treatise published in the United States. In the chapter on the medical treatment of goitre it is stated that Coindet first used iodine in 1829. Coindet's work appeared in 1820 and he began the use of iodine in 1819. The author says: "We may say that the medical treatment of simple goitre is contained in this one word iodin." These are exactly the words of Ewald: "Die medikamentöse Behandlung der Struma lässt sich in ein Wort zusammenfassen: Jod." The thyroid treatment of myxœdema is an interesting chapter in the history of therapeutics, but all the author has to say about its evolution is that "after a long period of experiments and trials it is now universally admitted that the ingestion method is the easiest and most effective treatment in thyroid insufficiency."

The section of the book dealing with the medical aspect of exophthalmic goitre occupies 127 pages, but although so much space is covered there is no account given of the morbid anatomy of the disease except as it affects the thyroid. The relation of enlargement of the thymus to the disease, however, is mentioned on p. 392. The description of the symptoms of this extremely interesting disease shows little evidence of personal clinical knowledge on the part of the author. With regard to tremor, the author says: "According to Sattler, who went over the literature of the subject very carefully, tremor is present in 9 per cent. of all the cases of Basedow's disease." No comment is made on this

strange statement, although it has been already stated that tremor is one of the cardinal features of the disease. In the account of the nervous and mental symptoms we read: "They may enter into the most paroxystic fits of rage; some live in a state of perpetual anger. They quarrel with their most intimate friends. Their love for their own relatives becomes less and less. A great number of these patients are divorced or separated women, and some of them are simply abandoned by their husbands." Further on we read: "Not so infrequently the exophthalmic goitre will terminate by an acute delirium. It takes several nurses to hold him in bed. He talks incoherently about his occupation or profession. If he is a farmer he may be talking about pitching hay; if he is a lawyer about defending a suit; and if a housekeeper about some feature of housekeeping." We have never heard even of cases like these, and we are informed by probably the best known specialist in this country that, as far as he knew, none of his patients suffering from exophthalmic goitre had been divorced or separated.

There is a chapter on "the etiology of Graves disease," the conclusion of which is that "Graves disease is a form of toxic thyroiditis," and then we come to the important question of treatment and whether it is to be medical or surgical. Into this question Professor Crotti enters at some length. He is all for operation. The two points for consideration, it seems to us, are: (1) Is it safe, and (2) does it cure. We ourselves are coming to the conclusion that operations can be safely done under local anæsthesia and expert surgical technique. We find that patients are benefited in various degrees, but that the degree of benefit obtained depends on the amount of gland left being just enough and not too much. The long lists of cures which are again and again put forward by some surgeons are of little value. Only time will show how far patients are capable of being cured by operation.

The remainder of the book is concerned mainly with surgical technique. Professor Crotti favours resection in preference to excision or enucleation, and calls it the method of choice. He seems to think that excision, the complete removal of one lobe, has been more or less abandoned as exposing too easily to injury the inferior laryngeal nerves and parathyroids, and that for the same reason enucleation or intracapsular excision should be discarded. The author seems to us to have too great a fear of the consequences of damaging the parathyroids. He says gravely: "Not very long ago saw one of our foremost surgeons, when performing this intracapsular excision, come in contact with a parathyroid, crush it with a hemostat, and become aware of it only when his attention was called to it by one of his assistants." The sequel of this catastrophe is not mentioned, and we should be indeed surprised if anything untoward happened. With regard to ligature of the thyroid arteries as a method of treatment of Graves's disease, we should have thought most surgeons had by this time realised its futility. It had its vogue, but its vogue is passed. If an operation is done at all, it should be removal of thyroid tissue. Time is simply wasted by performing ligature operations. As for sympathectomy, that is surely only of historical interest in relation to diseases of the thyroid. The author advocates, and we think rightly, the use of local anæsthesia in operating on cases of thyrotoxic goitres, but we do not think the cause of local anæsthesia will be forwarded by his reference to "the yells, cries, and sometimes the insults which the patient pours out on the surgeon who is endeavouring to do his best," which, he adds, "are very trying to the nervous system of the operator." Professor Crotti's experiences have been peculiar, and we can only conclude that local anæsthesia has been very imperfectly carried out in such cases. This conclusion is confirmed when we read the description of the author's method for producing local anæsthesia. He advises the use of a 2 c.cm. syringe with a fine needle for injection! The chapter on local anæsthesia is strangely behind present-day technique. It usually requires about 200 c.cm. of solution to produce adequate local anæsthesia in a thyroid operation. How with a 2 c.cm. syringe to introduce this amount of fluid subcutaneously may be left to the reader's imagination.

The last chapters of the book deal with the thymus gland, and only occupy 23 pages out of 558. There is not, indeed, a great deal to be said about thymus diseases, and what is said is sufficient as regards present-day knowledge. There is one remarkable statement made on p. 555 to which we must draw attention. The author there says that during the past few years he has been removing the thymus in every goitre case that has come his way. In every case, he says, as soon as thyroidectomy is terminated he systematically explores the mediastinum, and whenever thymus is found it is removed! We should like to have learnt more about these operations and their results. How many such operations have been performed and how much thymus is removed?

The book is written in a breezy style, but some of the expressions used by the author sound strange to the English reader, such as "the disease evoluates"; "paroxystic fits"; "a fright will not feaze this one"; "the baby will refuse to nurse"; "a gangue." The index at the end of the book is inadequate. In spite of imperfections the book is of considerable value, and if revised and supplemented by references and bibliography, as we hope it may be in a second edition, its value would be much enhanced. It is with this idea in view that we give space for so detailed a review.

Clinical Gynæcology. By JAMES C. WOOD, A.M., M.D., F.A.C.S. Philadelphia: Boericke and Tafel. 1917. Pp. xxxviii.–236. Price $2.00.

THIS monograph is based upon a series of clinical lectures delivered by Dr. Wood to the students of the Cleveland-Pulte Medical College, and deals with the application of homœopathic principles to gynæcological practice. The plea is set out for a better understanding of Hahnemann's system in the hope that it may be found to bridge the chasm between the regular, homœopathic and eclectic schools of medical thought in America. Quaint claims are made by the author: for instance, Hahnemann is hailed as the forerunner of Pasteur, of Basedow, and of Jung. Widal's agglutination test is called to witness to the efficacy of *baptisia* as a specific for enteric, and Wright's opsonins to support the place of sulphur as a specific for *Staphylococcus aureus* infections and of phosphorus for tuberculous disease. The book regarded as a treatise on clinical gynæcology is generously catholic in its outlook; barely 8 of the 15 chapters are devoted to purely gynæcological topics, and in these Dr. Wood does not hesitate to describe such conditions in the male as acute intestinal obstruction, pyloric stenosis, and a visceroptotic stomach. The remaining chapters are devoted to gastric ulcer, gastro-intestinal auto-intoxication, and mucous entero-colitis; reflex and toxic epilepsy; and exophthalmic goitre. It is recorded that a patient in the acute stage of the last-named ailment underwent the following operations: curettage, freeing of adhesions of the clitoris, dilatation of the rectum and removal of rectal papillæ, ovariotomy, and, finally, ventro-suspension. Dr. Wood bases this surgical therapy upon the hypothesis of exophthalmic goitre as a "reflex neurosis," and remarks, "we live in an age of multiple operations."

Dr. Wood has much to say which is interesting, but the light-hearted way in which he dilates the uterus and rectum and performs small and large operations in the genital sphere for almost all the cases he describes will, we fear, create very erroneous impressions in the minds of his students. As a text-book his work has no claim to serious consideration.

Modern Methods in the Diagnosis and Treatment of Phthisis, with Special Reference to Tuberculin. By JAMES T. MACMANUS, M.B., B.Ch. N.U.I. London: John Bale, Sons, and Danielsson. 1918. Pp. 64. Price 2*s.* 6*d.*

WITHIN the limit which he has assigned himself Dr. Macmanus has put together a very readable account of the methods at present in use for the diagnosis of tuberculous disease of the lung, drawing largely on the work of others, but stating their results fairly and adding comments from his own experience. This part of his book may be read with profit by all engaged in special work. Modern methods of treatment for the author begin and end with tuberculin, and here again the author states temperately his own experience and that of others. But since hygienic treatment is dismissed in a sentence, the expectation raised by the title is not fully satisfied. The reader will find tiresome the mis-spelling of many proper names.

THE LANCET.

LONDON: SATURDAY, OCTOBER 5, 1918.

Preventive Measures against Lice-borne Diseases.

IN an instructive lecture at the Royal Society of Medicine on the Prevention and Arrest of Lice-borne Diseases, which was published recently in THE LANCET,[1] Colonel W. HUNTER referred in some detail to facts and figures which he had obtained regarding the epidemics of typhus and relapsing fever which ravaged Serbia in the early part of 1915. No part of the lecture will be read with greater interest than that in which the rapid decline of those formidable outbreaks is described, and associated with the introduction on a large and systematic scale of simple measures for the destruction of lice, together with the prevention of movements of troops which would lead to their re-infection from the civil population. With the success which attended these measures the British medical mission sent out under Colonel HUNTER'S direction must always be gratefully associated. It was particularly to the credit of the mission that its energies were not dissipated in mere local palliative measures, but were concentrated on enforcing the recognition and general application of first principles of prevention, such as Colonel HUNTER has emphasised. It is well to recall these epidemics at the present time, as they illustrated in a most forceful and disastrous fashion the danger to important military operations which may result from the uncontrolled spread of typhus and relapsing fever, particularly when the troops exposed to infection are mixed with a civil population suffering from destitution and malnutrition, thus affording the most favourable soil for the dissemination of these diseases. At the present stage of the war, when we consider the conditions reported from Russia, from the Balkans, and even in parts of the Central Empires themselves, and remember that the winter has yet to come, recurrences of typhus or relapsing fever on the Serbian scale seem far from improbable, and they may well occur in circumstances which bring the Allied forces into the closest contact with the infection.

The almost negligible extent to which British forces have so far been affected by these diseases, at any period of the war and on any front, is as remarkable as it has been satisfactory, and may be attributed to a collection of causes. It has seldom happened that our fighting forces have been operating in areas stricken with epidemic typhus. Individual cases or groups of cases, when they occurred, have been very effectively dealt with by isolation, segregation of contacts, and thorough local louse destruction—or disinfestation, if we adopt the word which is now often used to distinguish those measures of disinfection which are sufficient for destroying parasites. The infection of these diseases has thus not been allowed the chance of spreading far afield, although the forces concerned may have included large numbers of soldiers infested by lice. As the experience of trench fever has shown how extensively lice-borne disease can be spread, even with the precautions taken on the Western front, it might be argued that the escape of the British forces can be attributed solely to the measures taken to prevent access of the specific infections. This, however, is unlikely, and other contributory factors must be remembered. The great epidemics of typhus and relapsing fever have frequently been closely associated with famine, and the view has often been expressed that a well-fed British soldier has normally a high degree of natural immunity against these diseases. This view deserves consideration, though there is some evidence in a contrary sense; for example, the heavy incidence of typhus on the attendants in Russian prisoners' camps in 1915.[2] The effect of the great efforts which have been made to keep down lousiness in the Army as a whole has, however, unquestionably been one of the main causes of safety. The record of all the British Armies in this matter, including particularly those on the West, has been one of steady improvement and progress, to which the unsparing labours of all ranks of the specialist sanitary service, as well as of experts at home, have notably contributed.

All kinds of devices are now used in combating lousiness, including the method of disinfecting clothing, blankets, and kits with current steam, on the proved efficacy of which Colonel HUNTER lays so much stress, both in regard to clothing in bulk, as treated in Egypt by the railway disinfecting vans, and clothing in small lots, as dealt with in Serbia by the barrel disinfector. Other effective methods are provided by special huts and dug-outs into which circulating hot air is introduced, while the experience of many shows how much can be done with no other materials than a hot iron, petrol, soap, and a wire brush. The nature and details of these different methods are now well known, at least in the Army, where they are described in various official circulars, and demonstrated to all officers going through courses of sanitary instruction. In louse destruction it is well always to keep in mind that the difficulties do not lie in the destruction of lice and their eggs, which can be accomplished with relative ease and needs no higher temperature than 55° C., but with the organisation of the methods of cleansing and disinfestation. The latter must be applied at the same time to all the group of men concerned and all their belongings, their re-infestation must be prevented, and the process must be systematically repeated. These requirements, simple as they appear, are most difficult to fulfil in actual conditions of a campaign, and the medical officer who is to secure their fulfilment should keep in mind the enthusiasm and persistence which Colonel HUNTER and his fellow workers infused into the methods which they pressed in the Eastern areas in the earlier years of the war, and which were so largely responsible for their success.

[1] THE LANCET, Sept. 14th (p. 347) and Sept. 21st (p. 377).

[2] Cf. THE LANCET, April 24th, 1915, p. 887.

The Conditions of the Royal Air Force Medical Service.

THE conditions of the Royal Air Force Medical Service, which were published in THE LANCET, will have been read with satisfaction by the medical profession, for they represent an improvement from the scientific point of view upon any terms which have hitherto been offered to the medical profession when engaged on naval, military, civil, or administrative work. These conditions doubtless were not arrived at without considerable effort, and those who bore the brunt of the struggle deserve the thanks of their professional brethren. They have made it possible for the Royal Air Force to possess a medical service which should be an effective safeguard against many of the dangers inherent in aviation, whether as an athletic achievement or a fighting activity, and they have done this by securing free play in greater measure to scientific ideals.

The partition of the medical work of the Royal Air Force into two main branches, one having the care of the effective personnel and the other of the non-effective, makes proper room for the allocation of the medical officers to occupations for which they are fitted. The care of the effective personnel will be undertaken by officers whose work has lain on the hygienic and preventive side of medicine, while it is here also that the psychologist will have his fruitful field of activity, for the selection of the flying officer takes into consideration much more than the physiological attributes of the candidate, as Captain T. S. RIPPON and the late Lieutenant E. G. MANUEL showed in their report to our columns.[1] For while it is absolutely necessary that there should be no doubt whatever concerning the respiratory and circulatory systems of the flying officer, and while his special senses, particularly the visual reflex, play an important part in his success, the flying temperament will be an asset of incommensurable value, and one whose ascertainment will fall to a great extent upon the officers of the Royal Air Force Medical Service working in the division of the effective personnel. It may be that this temperament cannot be detected with certainty until after selection and trial, but it must be looked for. The care of the non-effective personnel is the second great division of the work of the Royal Air Force Medical Service. This curative side provides room in the service for experts in the surgical treatment of the eye, throat, nose, ear, and plastic surgery, for neurologists, and practitioners in every province of remedial therapeutics. It is, we trust, the intention of the authorities to place each of these main divisions of the Royal Air Force Medical Service under a director having administrative control of his division and direct access to the Director-General of the Force—for this is how, we hope, the Medical Administrator will be styled, in consonance with the title employed in the sister services.

Special attention may well be called to the fact that throughout the service a second principle prevails, almost equally important for scientific efficiency with the principle of fitting the employed with suitable employment—and that is promotion by merit. The third general condition of medical service in the Royal Air Force runs:—

> Subject to the exigencies of the Service, a medical officer will be selected for, and eventually allocated to, work in the subdivision for which his ability best suits him. Since, however, the success of any special work in the Air Force will depend upon a sound knowledge of the conditions of life of the effective personnel, medical officers will not be earmarked for one of the special subdivisions of the Medical Service until selected for the higher or Grade A pay, vide Appendix II.

And the fifteenth general condition runs:—

> Promotion to ranks above that of Captain in the R.A.F. Medical Service will be by selection to fill vacancies in the establishment.

Medical men should realise that the officers in the service will, in accordance with these paragraphs, be entrusted with subdivisions of medicine or surgery where they have shown special knowledge, while the system of charge-pay in vogue in the medical services of the Navy and Army has been replaced in the medical service of the Royal Air Force by a system of special merit pay. When an officer has shown specially good work he is rewarded by selection for Grade A pay, and he will draw this pay for a probationary year, and then, being confirmed in Grade A, will continue to draw it, however employed, until he obtains promotion to a higher rank. Then he has to make good again, and by the recurring incentives the powers of concentration are developed and energies regularly stimulated.

[1] THE LANCET, Sept. 28th, p. 411.

Filling up the Ranks.

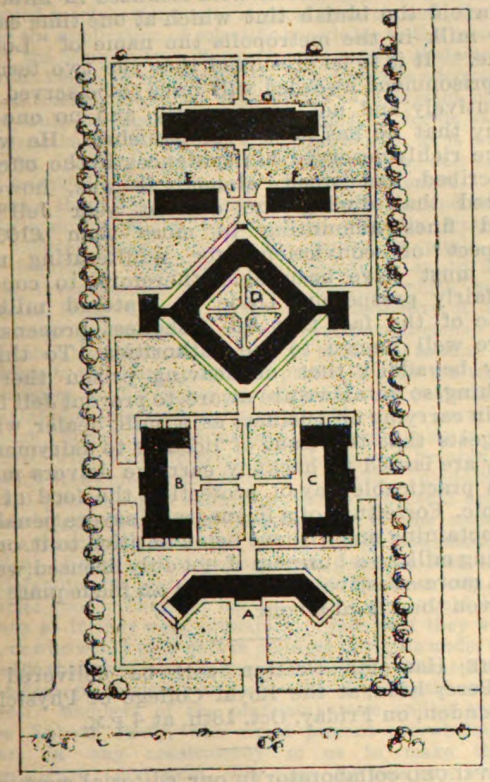
THE winter session opened on Tuesday last at the hospital medical schools in London, although only at a few did the exigencies of war permit of the usual formal address and celebration. Speaking at the Middlesex Hospital Dr. C. H. BROWNING dwelt upon the great future of medicine as an applied science. At King's College Sir WATSON CHEYNE emphasised the complementary aspect of the human element in medical practice. There is, in truth, room for minds of many bents among those who take the oath of HIPPOCRATES. Returns of the new entries at the medical schools have not yet all come in, but enough to show what is probably a record number for the year which has begun. Many of the classes for ancillary studies at University College have more than doubled in size, and Miss ALDRICH-BLAKE welcomed a hundred new women students at the London School of Medicine for Women. It is little wonder that the present moment should attract both men and women into the healing profession. However soon the war may be over, the problem of the restoration of the disabled combatant is already sufficient to occupy the best medical hands and brains for at least twenty years ahead, while the record of service in the field for the fourth year of war, which we print on another page, contains an inspiring account of self-sacrificing effort in many lands. Honours have been conferred upon many of the survivors, but the ranks have been sadly depleted, one large school alone recording nearly a hundred past students killed in action since the beginning of the war. Large as the entry of students may be, it will not be more than sufficient to fill up the ranks.

Annotations.

"Ne quid nimis."

A MODEL HEALTH CENTRE.

AT the meeting of medical men at Steinway Hall on Oct. 1st, which we report in another column, Dr. Addison, Minister of Reconstruction, said that the general scheme for the unification of public health activities is now being considered by the War Cabinet. Here he gave his medical audience no further hint as to the tenour of the impending Ministry of Health Bill, although at the Pharmaceutical Society on the following day he spoke of the growth of a series of specialist and technical services around medicine and pharmacy which may before long present different problems, both of training and personnel. Sir Bertrand Dawson has now reprinted[1] his Cavendish lectures, and the pamphlet will serve a useful purpose in concentrating attention on what must be the essential parts of any scheme hoping to introduce harmony into the medical services of the country. At the same time Sir Bertrand Dawson goes into interesting detail in describing a model health centre, its arrangement and purpose, giving a large scale plan elaborated by Major Biddulph-Pinchard, R.A.F. This plan, of which we reproduce here the key, represents a health centre



serving a town of about 30,000 inhabitants, drawn from an imaginary aeroplane 300 feet above the ground. The distance from the edge of the town to the entrance of the health centre is supposed to be about a quarter of a mile. The plan embodies the conception that the furtherance as well as the restoration of health needs provision by the health authorities, and that both are the responsible concern of the medical profession. The details are as follows:—

Clinic A provides accommodation for ten doctors, with waiting rooms, an examination and operating room, radiographic institute, laboratory, dispensary, rooms for keeping records of cases, and a common room where the doctors could meet in friendly consultation. Behind this curative clinic are the preventive clinics, B and C. Here would be located services for maternity care, infant welfare, school hygiene, dentistry, and any others which the special needs of the town might require. Behind this is a diamond-shaped hutted hospital, D, with two annexes. The wards vary in size and are allotted to different purposes; the verandahs attached to them make provision for open air treatment. One of the annexes provides accommodation for an operating theatre with its subsidiary equipment. E is allotted to hydrotherapy and F to massage, passive exercises, and electrical treatments. G is a fully equipped gymnasium for physical culture and for developmental and remedial exercises.

All the buildings are to be constructed on the hutted plan, Sir Bertrand Dawson holding that the progress of knowledge and the changing needs of the community make it important to avoid the permanency of bricks and mortar. A playing ground forms an important part of the author's scheme. Here exercises and games designed to secure physical fitness and beauty and to remedy defects would be directed by skilled instructors. Here, too, he would provide for our national games under conditions of true sportsmanship and detached from undesirable overgrowths. The playing grounds are not to be places in which to loll about in idleness, but rather for pleasurable and ordered occupation, where body and mind are taught to work together in the happiness of concentrated effort. In cities Sir Bertrand Dawson would place the clinics alone in convenient numbers within the town, removing hospital and its adjacent services with the playing grounds to the outskirts. He would discard the practice of building complete hospitals within towns. His scheme, which before the war would have appeared merely visionary, is certainly capable of practical realisation if it commends itself generally to the medical profession.

[1] The Nation's Welfare: the Future of the Medical Profession. Cassell and Co., Ltd. Price 6d.

THE MIGRATION OF METALLIC BODIES IN THE CIRCULATORY CURRENT.

A NUMBER of cases have now been recorded of migration of projectiles in the circulatory current. Bullets have been carried from the left side of the heart into the aorta and then lodged in a large artery, such as the axillary or femoral, arresting the circulation and producing gangrene of the limb. In the venous system the problem of migration is not so simple; the projectile may migrate either with or against the blood current. A case has been recorded in which a bullet entered the right ventricle and gained the origin of the iliac vein, and one in which a shrapnel bullet, first situated in the right auricle, was found an hour later in the triangle of Scarpa, the patient having raised himself; and then, after a few minutes in the dorsal decubitus position, it was found on a level with the sacro-iliac synchondrosis. Usually, however, the migration is in the direction of the blood current. Thus, in a wounded soldier radiologic examination showed a projectile first in the iliac region, then in the right auricle. At a meeting of the Académie de Médecine of Paris, M. Ch. Achard and M. Léon Binet reported a number of experiments which they had made on the migration of metallic bodies in the circulation of dogs. Grains of lead introduced into large arteries rapidly gained the periphery, even when the limb was

elevated and the movement therefore opposed by gravity. In veins, on the other hand, gravity exercised an important influence. Four grains of lead and four of rice were introduced separately into the femoral vein of a dog in the horizontal position and driven onwards by an injection of saline solution. When the animal was killed 15 minutes later the grains of rice were found in the right lung and the grains of lead in the abdomen, engaged in the termination of the hepatic vein. Into the left femoral vein of a dog lying on a table inclined at an angle of 35° with the head above, 2 grains of rice and 2 of lead were introduced. One grain of rice was found in the right lung and the other in the right heart; the 2 grains of lead were found in the pelvic veins on the left side of the bladder. Thus in the veins light foreign bodies are carried with the current and against gravity, heavy bodies the reverse. But there are other factors in migration—the volume, form, and contour of the body. The optimum condition for movement is realised by a smooth sphere, which reduces friction to a minimum. On the other hand, a rough surface resists movement. The moral is that the position of a foreign body should be verified at the time of operation and the patient placed in a position in which gravity opposes further movement.

SKIN DISEASES PRODUCED BY LUBRICANTS.

WE have received from the Department of Scientific and Industrial Research a copy of a Memorandum on "Cutting Lubricants and Cooling Liquids and on Skin Diseases Produced by Lubricants." It is explained that cutting lubricants and cooling liquids are oils or emulsions used in connexion with the cutting of metal. In selecting the correct grade of cutting lubricants it would appear to be necessary to consider several important factors, such as (1) cutting speed and depth of cut; (2) the material under manufacture; (3) the system of application of the lubricant or emulsion; and (4) the production of skin diseases. Particulars as to the suitability of various oils and emulsions and their adaptability on the various metal materials used are given under the first three heads and are of technical importance. Passing over these, we deal with the medical aspects of this occupation. Generally speaking, it appears from the description given by Dr. J. C. Bridge, Inspector of Factories, Home Office, that oil rashes are of two kinds—the first is due to plugging of the small glands at the root of the hairs on the arms and legs of the workers, the second to mechanical injury to the skin produced by metallic particles suspended in the cutting lubricant. In the first case, if many hairs are affected the arm or leg presents an appearance of a crop of raised red spots (papules) with a black spot as a centre, or if the inflammation has gone as far as suppuration (abscess formation) a yellow head. In the second case minute particles suspended in the cutting lubricant may produce injury to the skin. This occurs chiefly on the hands, where two skin surfaces are rubbed together, as, for example, between the fingers. Injury to the skin may also be produced on any part of the hands and arms by wiping with a cloth or rag while the hands or arms are coated with a film of fluid in which metallic particles are suspended. A septic infection may result. Simple precautionary measures are suggested, such as a free use of hot water, soap, and the scrubbing brush, and dusting the arms before commencing work with a powder containing equal parts of starch and zinc oxide. Constant removal of metal particles is necessary to avoid injury to the skin. The oils should not contain free fatty acid. In the case of cutting oils which get thinner on heating the metal particles will sink completely out. The addition of disinfectants or antiseptics to the oils does not appear to give satisfactory results, although a previous heating of the oil not only sterilises it but increases its antiseptic and germicidal action. As to treatment, the simple application of a mild antiseptic gives good results. It is curious that certain individuals appear to be particularly susceptible to the action of lubricants, and are therefore best kept from contact with the oil.

IMPRISONMENT FOR MILK ADULTERATION.

AT Folkestone recently a dairyman named Percy Jell was sentenced to undergo two terms of three months' imprisonment with hard labour for adulterating milk. A pint of milk sold by him to an inspector had been found to contain 43 per cent. of added water, and two days after this sale took place he had been seen pouring half a gallon of yellowish water into a two-gallon can which was then filled with milk from a churn. The yellow colour referred to was, no doubt, used in order to give to the compound sold the tint which the general public associate with richness in milk, and to avoid the bluish tint which at one time earned for milk in the metropolis the name of "London blue." It is to be presumed that the two terms of imprisonment awarded will have to be served consecutively and not concurrently, and no one will deny that he has been over punished. He would have richly deserved his sentences if the offences described had stood alone. It was, however, stated that during the current year Jell had paid fines amounting to more than £100 in respect of convictions for adulterating milk. He must have been able, therefore, to conduct a fairly prosperous trade in watered milk in spite of the fact that his dishonest propensities were well known to the authorities. To this it may be added that on leaving prison there is nothing, so far as we are aware, to prevent Jell from again carrying on business as a milk-dealer, which suggests that the issue of licences to dairymen as they are issued to hackney carriage drivers might be a practicable way of protecting the food of the people. Forfeiture of a licence with severe penalties for obtaining one without being entitled to it, or for selling milk as a business if not duly licensed, would be a more effective penalty than an inadequate fine or even than hard labour.

THE Harveian Oration will be delivered by Dr. Percy Kidd, at the Royal College of Physicians of London, on Friday, Oct. 18th, at 4 P.M.

A VALUED collaborator in our editorial work over a range of not less than 50 years, Mr. Robert Brudenell Carter, consulting ophthalmic surgeon to St. George's Hospital, London, has this week attained his ninetieth birthday.

WE regret to announce the death of Dr. Alfred Hume Griffith, the value of whose work as superintendent of the Epileptic Colony at Lingfield has earned wide recognition.

MEDICAL MEN IN PARLIAMENT.

A MEETING of the medical profession was held in Steinway Hall, London, on Oct. 1st, having for its object the securing of a more adequate representation of the medical profession in Parliament. The meeting was summoned informally and was well attended, all parts of Steinway Hall being crowded.

Sir HENRY MORRIS, who presided, opened the proceedings by emphasising the fact that after the war the medical profession would share in the great changes that would occur in all society. The organisers of the meeting, he said, had no desire to oppose any union, association, or committee, working along similar lines, and no intention of impeding any individual doctor who wished to become a Member of Parliament. The real object of the meeting, if the medical voice was considered to be needful in Parliament, was the choice of an executive upon whom the onus would be put of selecting suitable members of the medical profession who were willing to stand as Parliamentary candidates. Regarding this country as having originated all the great discoveries in public health and sanitation, he said that it was an anomaly that the medical profession should have no more influential voice in the legislature than at present it possessed. The idea of those responsible for the meeting was to elect an executive committee, independently of any section or fund, such committee to seek out and select suitable members of the profession who would be willing to stand for Parliament and to see that such men were representative of the profession as a whole. It would be important to have the candidates in readiness. The subjects on which such Members could give valuable help were very numerous, but he directed special attention to medical research and education and the application of scientific knowledge to the betterment of the community. Research must receive State aid; it could no longer be self-supporting if it was to be adequate. He asked whether the House of Commons as at present constituted could be regarded as an assembly to decide such questions as he had referred to, composed chiefly, as it was, of lawyers, landlords, mine-owners, ship-owners, and successful business men, with only a few educationists. As an instance, there were the questions as to whether, and if so how, laboratories might be bound up with the Universities, medical schools, special and general hospitals, or health insurance committees, and questions as to the scientific investigations, regular and special, which were undertaken from time to time on the authority of the various Government Departments or Royal Commissions. It was high time that the profession should take steps to show its importance to the State and to the public through the voice of competent and reliable members of the profession. A candidate for this representation should possess learning, knowledge, humanity, and probity; he ought also to be acquainted with some form of official life, and be able to express his views clearly and forcibly in public. In addition he should possess expert knowledge, so that he could apply his knowledge of medicine and surgery to the various problems connected with the public health and medical education. He should impress people with the fact that while defending his profession he intended to act strictly for the public good. They did not want men who would hug delusions as if they were principles, or fads as if they were ideals, or who would take part in political intrigues under the impression that they were democratic reforms. Numerically the medical profession was very weak for electioneering purposes. Members of the profession were unlike those of the Labour Party, who could present overwhelming numbers in any constituency so as to make their election secure; nor were they like lawyers, to whom speaking at political meetings was a good training for their profession. Medical men were feeble folk, coneys who made their houses in the rock of private practice; they were the confidants and friends of private families, who were likely to mistrust a doctor who concerned himself with the matters of communal welfare. Hitherto the profession had had no political standing in this country, and that state of things could not last. There should be means of getting the best brains of the profession without electioneering, such as by direct representation, as in the case of the Universities, or through the various medical corporations.

Dr. CHRISTOPHER ADDISON, Minister of Reconstruction, then moved the first resolution in the following terms:—

That in the interest of the national health it is essential that the considered views of the medical profession should be voiced by representative medical men in the House of Commons.

He said that after the war, with the upheavals, displacements, reactions, and burdens of loss and debt, there must be a vital need that the best service should be supplied to the State by all persons, or civilisation would be in jeopardy. A brief consideration of the facts of our national and social life would, he thought, reveal a wealth of opportunity for advice, direction, and help from all medical men of the right type and training in matters affecting the health of the people, such as the conditions of labour, the methods of production, and the processes of invention and research; in all these classes of public affairs men possessing medical knowledge should be invaluable. Pointing out that no medical man could be a politician in respect of disease, he did not consider that this meant that, as a citizen, he should not take the keenest interest in political affairs, and he reminded the audience that a medical man in Parliament would be there as a representative of his constituency, that is of the people, and not as a medical man. In Parliament any Member who tried to promote the best public interest could, he assured them, safely place professional interests second in his mind and escape the depressing career of the professional axe-grinder. Premising that the House of Commons "is a most tolerant and kindly place, putting sincerity and earnestness of purpose, if coupled with common sense, in the forefront of its regard," he said that medical help would be more and more required in the counsels of the nation, while he held that the claims for representation in Parliament by medical men were supported by medical activities during the war, as shown by the combating of new and vile methods of warfare introduced by the Germans, the rapid improvement in the methods of surgery, the developments for the training and employment of the wounded, and the institution of scientific research in manifold directions. Especially he called attention to the great success of medicine in the preventive field, whereby, for example, typhoid fever had been nearly abolished, a fever which, in a war of hideous magnitude lasting for so long a period, might well have cost the country a million lives. Quoting the Prime Minister, he said we could not run an A1 Class nation on a C3 Class population, which was only to insist that all questions affecting the home, workshop, school, personal habits, food, air, and exercise require the profound attention of Parliament, and therefore the help of medical men. He alluded to the report of the Health of Munition Workers Committee, a body set up by Mr. Lloyd George and himself when they were collaborators at the Ministry of Munitions, and showed that as far as it went this report contained valuable guidance. In February, 1914, to a company of medical men, he had referred to these things, and pointed out that as a first step it was necessary to bring together the assortment of different departmental responsibilities in health matters and to secure that the thinking out and development of a systematic health policy commensurate with the most urgent national needs should be made the duty and responsibility of a definite body of men, until when the country would be the victim of sporadic, disjointed, and often conflicting effort. Throughout the progress of the war, he said, it had become more and more apparent that delay was dangerous, so that during 1917, at the request of Mr. Montagu and the late Lord Rhondda, whose clear mind in this as in other things at once gripped essentials, he had presided over a small committee which presented a report on what was regarded as the absolute minimum of such a scheme—a scheme for a Health Ministry. During the past few months as Minister of Reconstruction he had discussed details with representative bodies of different kinds, including representatives of a joint committee provided by the Colleges of Surgeons and Physicians and the Society of Medical Officers of Health, as well as with a committee of the British Medical Association. Now, he informed his hearers, the proposals had been examined as a whole and with great care by the Home Affairs Committee, and had been passed by them to the War Cabinet for consideration. The Ministry of Health would not itself be a health service. It would be its duty to secure the development and administration throughout the country of adequate health services. He concluded by pointing out

that the C 3 Class, and all implied by that term, could not be dealt with as matters of water-supply, drainage, prevention of infective disease, or adulteration of food, and that the medical profession had a great duty and an unexampled opportunity before it. The claims of the community for the considered experience and help of medical men were, he said, manifest.

Dr. ARTHUR LATHAM, in seconding the motion, asked whether medical men realised that they were the trustees of the national health, and that no one could take their place. If they were prepared to accept the responsibilities and duties of that proud office, they must be prepared to learn from the mistakes of the past. In the past the profession had not made its voice heard because it had no political power, and the latter was lacking because the profession was not united. It was especially important that the knowledge and experience of the general practitioner should be represented.

Mr. E. B. TURNER emphasised the resolution from his large experience in addressing meetings throughout the country in regard to venereal disease.

Sir W. WATSON CHEYNE remarked that there would not be enough medical men in the House to impress it by numbers; it must be by exactly informed judicial utterances. Above all was it necessary that there should not be divided counsels, as any good effect would thereby be destroyed. He hoped that there would be a little medical gathering of Members of Parliament and that they would agree on lines of policy in matters which concerned the profession.

Colonel KYNASTON spoke of his work in the Army Medical Service and the great need there was for enlightenment on medical and public health matters in the constituencies. The scheme now sought to be launched should be on a democratic basis.

The resolution was agreed to.

Mr. E. F. WHITE moved :—

That a Representative Committee be appointed for the purpose of: (i.) Nominating medical men as being suitable to voice the opinion of the profession in the House of Commons on matters affecting the national health; (ii.) taking such steps as may be possible to further the election of those nominated to the House of Commons; and that this committee report to a subsequent general meeting of the profession.

Mr. LOCKHART MUMMERY seconded.

Colonel KYNASTON proposed, and it was duly seconded, an amendment as follows :—

That a Representative Committee be appointed for the purpose of taking such steps as may be possible to further the election of medical men to the House of Commons.

Dr. BRACKENBURY pointed out the great need for unity in this matter, and referred to a committee which had already been in existence six months with the same object.

In a discussion which followed.

Colonel W. R. SMITH objected to the motion, and said he would be satisfied if it were put without Section 1.

Colonel Kynaston's amendment was, by leave, withdrawn in favour of Colonel Smith's.

Mr. N. BISHOP HARMAN protested against this attempt to step in when 23,000 members of the British Medical Association had instructed their duly accredited representatives, who had been working at the matter during the last six months.

The amendment was agreed to, and was passed as a substantive motion.

Sir THOMAS HORDER moved :—

That the Representative Committee consist of: (i.) a representative of each of the following ten organisations or corporations—(1) Royal College of Physicians, (2) Royal College of Surgeons, (3) Royal Society of Medicine, (4) British Medical Association, (5) Incorporated Society of Medical Officers of Health, (6) Medical Society of London, (7) Medical Political Union, (8) Medical Women's Federation, (9) Poor-Law Medical Officers' Association, (10) State Medical Service Association; (ii.) three representatives of the Medical Press—namely, the Editor of *The Lancet*, the Editor of the *British Medical Journal*, the Editor of the *Medical World*; (iii.) unofficial members.

Dr. E. H. M. STANCOMB (Southampton) seconded. The result was a decision to appoint the Committee and to add the Royal Institute of Public Health and the R.A.M.C.

Considerable discussion ensued on a proviso on the voting paper supplied to the meeting that "persons who do not hand in voting papers will be counted as having voted for the list (of unofficial members) as printed." Dr. CHAPPLE, M.P., regarded such a provision as monstrous.

The CHAIRMAN having agreed to withdraw this, ballot papers were collected, and a vote of thanks to the Chairman and Dr. Addison concluded a long meeting.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Health of Belfast: Serious Condition.

IN the *Belfast Northern Whig* some most alarming figures have been recently published as regards the health of the city of Belfast. In 1917 there were 932 deaths from pulmonary phthisis, as against 830 in 1916 and 813 in 1915. Notwithstanding the fact that a new scheme for dealing with tuberculosis (specially praised by the Irish Local Government Board) has been in vogue for the past two years, costing £35,000 a year, it appears that from Dec. 20th, 1917, to August 20th, 1918, the number of deaths registered in Belfast as caused by pulmonary phthisis was 783, as against 711 in the same period of 1916–17, which is an increase of 72, or 10·1 per cent., and the phthisis rate for 1918 was actually 2·4 per 1000, which is higher than for any year since 1907. Bad as these tuberculosis figures are, what is to be said for the infantile mortality rate, which is generally admitted to be the test of effective public health measures? In 1917 the rate rose to 130 per 1000 births, an increase of 17 per 1000 as compared with the preceding year. The actual number of deaths of children under 1 year in 1917 was 1130. Now, in the eight months (between Dec. 20th, 1917, and August 20th, 1918) the deaths of children under 1 year numbered 936, as against 808 in the same period of the previous year, an increase of 128, or 15·8 per cent. In the first six months of the period (for some reason not specified no figures were published for the last two months) the deaths of children of 1 year and under 5 years were 599, as against 378 in the corresponding period of last year. And taking the six months—Dec. 20th, 1917, to June, 1918—there died of children under 5 years old in the city 1313, out of a total death-rate of 3999. Thus roughly one-third of the entire city death-roll in that period consisted of children under 5 years old! This state of affairs was before the influenza epidemic of this year reached its climax. In the five weeks, June 18th to July 25th, no fewer than 1232 persons died (influenza period), but, as showing that influenza was not a factor in the infantile mortality, only 133 children under 1 year died in these five weeks, whereas in the same period in April–May, they totalled 172, and in February–March, 140. What is a most serious circumstance is that during that period of six months specified there were only 4666 births as against 3999 deaths—that is, a natural increase of only 665. During the past eight months (mid-December to mid-August) the total deaths in Belfast were 5695 as against 4993 in the corresponding period of the previous year, and the total births 6346 as against 6097 in the corresponding period. In other words, the deaths increased by 702 (14 per cent.) and the births by 249 (3·9 per cent.), a most unfortunate state of affairs, as regards the natural increase of Belfast's population. The new child welfare scheme (which has neither ante-natal nor post-natal clinics, creches nor milk depôts) came into vogue in October, 1917; but so far as diminishing infantile mortality is concerned, it has really done nothing, though—like the tuberculosis scheme—it is costing a great deal of money. Owing to its present limited field of organisation, little can be hoped from it. The following figures are most significant as regards Belfast :—

	Total deaths.		Under 1 year.		1 year and under 5.	
	1918.	1917.	1918.	1917.	1918.	1917.
Dec.–Jan.	720	779	122	99	83	42
Feb.	594	829	99	175	92	93
March	654	751	140	144	111	79
April	940	821	172	133	166	71
May	607	551	97	84	102	55
June	484	442	84	64	45	38
July	1232	476	133	56	No return.	
July–Aug.	464	344	89	53	No return.	
	5695	4993	936	808	599	378

Salaries of Dispensary Doctors.

At a meeting of the Banbridge guardians, held on Sept. 9th, it was decided that a war bonus of £25 a year be granted to each medical officer, to date from Jan. 1st, 1918, a motion for a graded scale of payment, commencing with £130 and ending with £200 a year, being lost. The Omagh dispensary doctors decided on Sept. 11th that notice be given the guardians that from the 21st the doctors will be reluctantly compelled to cease all kinds of dispensary work

owing to no attempt having been made to meet their demands. On the day named the guardians met and appointed their chairman to confer with a member of the Medical Committee and Mr. E. F. Stephenson, of the Local Government Board, with a view of arriving at a settlement. The doctors were invited to continue work until the guardians had had an opportunity of discussing the finding of this conference.

Sept. 30th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Canadian Voluntary War Contributions.

OF the various war organisations working in Canada and overseas the most extensive are the Canadian Patriotic Fund for dependents of soldiers, the Canadian Red Cross Society, and the Military Branch of the Y.M.C.A. The first-named has raised about $40,000,000 (£8,218,600) throughout the Dominion; and Manitoba, working alone, nearly $4,000,000. The Canadian Red Cross in money and gifts has received about $19,000,000; the British Red Cross Society, to Dec. 31st, 1917, $6,100,000; Belgian relief, over $3,000,000; Military Branch, Y.M.C.A., about $4,600,000; gifts from Dominion and Provincial Governments to Imperial Government, about $5,500,000; and miscellaneous equipment and maintenance of hospitals overseas, field comforts, Polish and Serbian and French Relief Funds, about $8,000,000—making a grand total of over $90,000,000 (£18,491,850), which will still be added to by several millions for the mercantile marine.

Canadian Pensions.

In October, 1917, the Canadian Government brought into effect a scale of pensions which is believed to compare favourably with any of the Allies: Total disability, $600; widows, $480; parents, $480; children, $96; orphan children, $192; special allowance for helplessness, not to exceed $300—number of classes of disability, 20; and gratuity. To the end of May, 1918, the number of soldiers' disabilities have totalled 23,415, and the amount of annual liabilities, $3,687,145.61; soldiers' dependents, 24,213, and the annual liability, $5,600,326.00. The estimated liability for the year ending March 31st, 1919, is $15,000,000 (£3,081,975). Pensions in Canada are now being awarded at the rate of 125 per day, and 22 physicians, most of them having seen overseas service, are employed by the Pension Board at Ottawa. The salary for these was at the rate of $200 per month, but recently raised to $250 per month.

Casualties in the Canadian Expeditionary Force.

Up to June 30th, 1918, the official statement of the Canadian Government of the Canadian casualties gives the total number as 159,084, divided as follows: killed in action, 27,040; died of wounds, 9280; wounded, 113,007; died of disease, 2257; prisoners of war, 2774; presumed dead, 4342; missing, 384. Of the wounded and sick, between 30,000 and 40,000 have been returned to France for further service; about 50,000 have been returned to Canada wounded, medically unfit, or unavailable for various reasons. Some 200 Canadian officers have been lent to the United States for instructional purposes. About 2000 women have enlisted in Canada for services as nurses in the C.E.F. Seventy-three surgeon-probationers have been recruited in Canada for service with the Royal Navy.

Resolutions Passed at Hamilton Medical Meeting.

The following resolutions were passed at the Canadian Medical Week at Hamilton recently:—

1. That the various Provincial Medical Councils of Canada be respectfully requested to institute compulsory examinations in ophthalmology, including refraction work, and in oto-laryngology, if such are not already in force.
2. That the medical faculties of the universities in Canada be respectfully requested to confer, and, as far as possible, coöperate with a view to modifying the present curriculum so as to secure an arrangement of the subjects of study which will tend to ensure a more symmetrical training of the prospective practitioner for his life work.
3. That the various provincial medical councils be respectfully requested to make physical therapy, based on a more thorough course in physics, an essential feature of the medical curriculum, and a practical examination necessary in this subdepartment of therapeutics.
4. That the members of the Canadian Medical Association view with favour the publication of the medical history of the Halifax disaster by Professor D. Fraser Harris, of Halifax, and wish to state that in their opinion such a publication is most desirable.

The Khaki University of Canada.

Under the name of the Khaki University of Canada an educational plan has been inaugurated with the Canadian Forces overseas. It provides educational advantages in the form of lectures, study groups, &c., for soldiers who wish to use their spare time for practical study for after-war vocations. This Khaki University is recognised by Canadian universities, and the teaching is done by voluntary instructors—officers, chaplains, &c., who had previously had training in teaching. Sir Robert Falconer, President of the University of Toronto, is at present overseas, doing his bit as a teacher. There are said to be 93 libraries established in England and France, and that 8006 men have been registered, divided as to subjects as follows: commercial subjects, 2351; agricultural subjects, 1363; engineering, 1503; general educational subjects, 2789. Figures are not yet available as to classes in France.

Toronto, Sept. 21st.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions, completing the list up to Monday, Sept. 23rd, should have been acknowledged in our previous issue:—

	£	s.	d.		£	s.	d.
Sir A. Pearce Gould ...	5	0	0	Major W. M. A. Fletcher	1	1	0
Messrs. Bower and Sons	2	2	0	Dr. F. G. Clemow	5	0	0
Capt. A. Benjamin ...	1	1	0	Dr. S. H. Bown	1	1	0
Dr. Norman Fairfax ...	1	1	0	Dr. H. Leader	2	2	0
Dr. A. W. Cassie	1	1	0	Mr. A. Williams, M.P.S.	1	1	0

Monthly Subscriptions.

The following monthly subscriptions have been received for September:—

	£	s.	d.		£	s.	d.
Sir A. Pearce Gould ...	5	5	0	Dr. G. Grey Turner ...	1	1	0
Mr. E. Spencer Evans ...	0	10	0	Dr. W. S. Hart	1	0	0
Dr. Alfred Cox	1	1	0	Dr. Vincent Tighe	0	10	0
Dr. A. B. Stevens	1	0	0	Lt. J. B. C. Brockwell,			
Dr. E. C. Morland	0	10	6	R.A.M.C.	0	10	0
Dr. K. J. Dougall	0	10	0	Dr. A. W. Forrest	1	0	0
Sir T. Barlow	0	10	0	Dr. W. Luffman	0	10	0
Dr. R. Legat	0	10	6	Dr. A. Graham	1	1	0
Dr. A. E. Naish	0	10	0	Dr. A. Hawkyard	0	10	0
Dr. Hyla Greeves	0	10	0	Surg. P. G. S. Davis,			
Dr. W. E. Good	0	10	0	R.N.	0	10	0
Major E. R. Fothergill,				Dr. H. Caiger	0	10	6
R.A.M.C.	0	10	0	Capt. H. L. P. Hultert,			
Dr. J. O. Musson	0	10	0	R.A.M.C.	1	0	0
Dr. W. Stewart	0	10	0	Dr. H. Whitehouse ...	0	10	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

URBAN VITAL STATISTICS.

(Week ended Sept. 28th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 11·4, against 11·3 and 11·7 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 12·2, or 0·4 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 4·9 in Ealing, 5·0 in Cambridge, and 5·2 in Darlington, to 19·0 in Dudley, 19·5 in Great Yarmouth, and 20·5 in Hastings. The principal epidemic diseases caused 307 deaths, which corresponded to an annual rate of 1·0 per 1000, and included 220 from infantile diarrhœa, 40 from diphtheria, 20 from whooping-cough, 12 from measles, 8 from scarlet fever, and 7 from enteric fever. The deaths from diarrhœa, which had declined from 435 to 299 in the four preceding weeks, further fell to 220, and included 67 in London, 24 in Liverpool, 10 in Sheffield, and 8 each in Birmingham and Middlesbrough. The 939 cases of scarlet fever and 1060 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 100 and 35 above the respective numbers remaining at the end of the previous week. Of the total deaths in the 96 towns 139 resulted from violence. The causes of 33 deaths were uncertified, and included 7 each in Birmingham and Liverpool, and 4 in Manchester.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 14·3, against 10·6 and 11·6 per 1000 in the two preceding weeks. The 398 deaths in Glasgow corresponded to an annual rate of 18·6 per 1000, and included 12 from infantile diarrhœa, 7 from diphtheria, 5 from whooping-cough, and 2 from measles. The 76 deaths in Edinburgh were equal to a rate of 11·9 per 1000, and included 2 from diphtheria and 2 from infantile diarrhœa.

Irish Towns.—The 153 deaths in Dublin corresponded to an annual rate of 20·0, or 3·1 per 1000 above that recorded in the previous week, and included 6 from infantile diarrhœa, 2 from whooping-cough, and 1 from enteric fever. The 77 deaths in Belfast were equal to a rate of 10·2 per 1000, and included 3 from infantile diarrhœa and 1 from enteric fever.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Killed.

Lieut.-Col. R. T. Collins, D.S.O., R.A.M.C., was a student at Guy's Hospital, London, and qualified in 1902. Shortly afterwards he joined the R.A.M.C. The award of the D.S.O. was recorded in THE LANCET of Jan. 12th, 1918, p. 78.

Capt. C. R. Howard, R.A.M.C., attached King's African Rifles, was educated at Cambridge University and at Guy's Hospital, London, and qualified in 1902. At the time of joining up he was in practice at Frome, Somerset, where he was M.O.H. to the rural district council, assistant school medical officer to the County Education Committee, and honorary surgeon to the Victoria Hospital.

Capt. C. H. Fischel, R.A.M.C., attached Leicester Regiment, qualified in London in 1914, and joined the R.A.M.C. in the early part of the following year.

Major H. B. German, M.C., R.A.M.C., was a student at Guy's Hospital, and qualified in 1904. For some years he served in the Royal Navy, and was awarded a medal for services in connexion with the Calabrian earthquake. Later he practised at Waltham Abbey, Essex, and joined the R.A.M.C. soon after the outbreak of war.

Died of Wounds.

Major J. Hughston, R.A.M.C.

Previously Reported Wounded, now Reported Died of Wounds.

Capt. L. E. W. Roberts, Australian A.M.C.

Died.

Lieut. L. S. Ramien, I.M.S., was educated at Madras University, and qualified in London in 1916, joining the I.M.S. shortly afterwards.

Capt. T. F. Graham, Canadian A.M.C. (See Obituary of the War.)

Wounded.

Capt. G. R. Phillips, R.A.M.C., attached Sherwood Foresters.
Surg. R. K. Shaw, R.N.
Lieut.-Col. K. W. MacKenzie, D.S.O., M.C., R.A.M.C.
Capt. J. McCusker, Australian A.M.C.
Capt. K. McLean, Australian A.M.C.
Capt. J. H. Campain, R.A.M.C., attached Wilts Regiment.
Lieut. G. E. Birkett, R.A.M.C., attached Glos. Regiment.
Major W. Russell, M.C., R.A.M.C.
Major E. S. Sowerby, M.C., R.A.M.C.
Capt. K. McA. Ross, R.A.M.C., attached Highland L.I.
Capt. W. K. Flook, Australian A.M.C.

Seriously Injured.

Acting Staff Surg. E. L. Atkinson, D.S.O., R.N.

Missing.

Capt. J. Buchanan, R.A.M.C., attd. Roy. Warwickshire Regt.

THE HONOURS LIST.

The following awards to medical officers are gazetted. All are members of the R.A.M.C. except where otherwise stated :—

Distinguished Service Order.

Major (temp. Lieut.-Col.) ALBERT RICHARD HENCHLEY.—For conspicuous gallantry and devotion to duty during an enemy attack. In two days he succeeded in evacuating some 1500 patients. He got away his personnel and lorries under shell and machine-gun fire, and proceeded to a hospital elsewhere from which he evacuated 300 wounded by ambulance trains. His unit was the last to leave the town. His coolness and resource were the means of saving a large number of wounded from falling into the hands of the enemy.

Bar to the Military Cross.

Capt. (acting Major) ROGER ERRINGTON, M.C.—For conspicuous gallantry and devotion to duty during an enemy attack. He remained in his dressing station under machine-gun fire until it was evacuated. He then took another dressing station and again under machine-gun fire evacuated all patients. It was entirely due to his coolness and devotion to duty that these wounded did not fall into the hands of the enemy.

Temp. Capt. PAUL MACDONALD LITTLE, M.C.—For conspicuous gallantry and devotion to duty in attending to wounded in the front line under heavy shell, machine-gun, and rifle fire. His example of coolness and devotion to duty caused a large number of wounded to be successfully evacuated from the front line.

Temp. Capt. ALAN COWAN MANN, M.C.—For conspicuous gallantry and devotion to duty during an enemy attack. Hearing that a number of wounded had been left in a dressing station, he organised bearer parties and led them through heavy shell fire to the dressing station and evacuated all the wounded. Through his devotion to duty many wounded were cleared who would otherwise have been abandoned.

Capt. (acting Major) ROBERT TAYLOR, M.C.—For conspicuous gallantry and devotion to duty while in command of an advanced dressing station. He worked with untiring energy, attending to and supervising the loading on to cars of all cases. The dressing station was hit several times, and eventually came under machine-gun fire, but he succeeded in clearing all wounded. He showed fine determination and devotion to duty.

Military Cross.

Capt. ALFRED LANG BODLEY.—For conspicuous gallantry and devotion to duty. When a dug-out was heavily shelled and blown in he rescued a man from the most dangerous place where three men lay buried, and attended to the men affected, assisting to get them away. In one case he tried for hours to save a man who had lost consciousness, and during this time lost consciousness himself, but continued his work on recovering. His personal example of courage was of the utmost assistance.

Capt. JAMES IVER MCIVER CHIRNSIDE, Australian A.M.C.—For conspicuous gallantry and devotion to duty while attending to wounded men under heavy shell and machine-gun fire. During the retirement of the rearguard squadron he attended to the wounded while the enemy were firing at a distance of 300 yards. He showed great devotion to duty.

Temp. Capt. WILLIAM COOPER.—For conspicuous gallantry and devotion to duty during an enemy attack. He was unremitting in his attentions to wounded under fire, and stayed behind in a village with a small salvage party attending to a number of wounded and gassed officers and men who came in. He behaved splendidly.

Temp. Capt. GUY DE HOGHTON DAWSON.—For conspicuous gallantry and devotion to duty. During an arduous period of retirement, lasting for some days, he worked with unflagging energy in attending to the wounded under heavy fire, evacuating them successfully, on one occasion when the enemy were within 40 yards of the R.A.P. His example helped and encouraged all those under his command.

Capt. CHRISTOPHER MATHESON FINLAYSON, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. During a raid on the enemy's positions he worked at the advanced aid-post with the greatest gallantry and unselfish courage. Later he withdrew to the fixed rear aid-post and performed valuable duties.

Capt. (acting Major) ROBERT ALFRED GREENWOOD.—For conspicuous gallantry and devotion to duty in evacuating the wounded. When a bridge was blocked and partly submerged by a fallen tree he supervised the clearing and helped to carry the wounded across under heavy shell fire on both banks. Though severely shaken by a shell bursting and partially burying him, he carried on until all the wounded were safely across the canal.

Temp Capt. NORMAN MCALISTER GREGG.—For conspicuous gallantry and devotion to duty during a raid. He untiringly attended to the wounded under heavy enemy fire until the last man was cleared, and showed great coolness and devotion to duty. He worked persistently throughout the raid in the open, and searched for any wounded that might have been overlooked. He behaved splendidly.

Capt. HENRY TAYLOR LAMB.—For conspicuous gallantry and devotion to duty when an outpost company were suffering numerous casualties from enemy bombardment. He proceeded to the locality at once, and under heavy shelling got all the wounded moved to shelter, remaining with the company until the bombardment ceased. During a trying time he showed splendid devotion to duty.

Temp. Capt. WILLIAM LUMSDEN.—For conspicuous gallantry and devotion to duty. While in charge of bearers carrying wounded over an exposed hill-side swept by shell and machine-gun fire he saw a bearer fall. He at once ran to him and dressed his wounds, after which he remained with him until dusk, the man being unable to walk. He then assisted him across country to a place of safety. His conduct was splendid.

Capt. JOHN ERIC MCGLASHAN, Australian A.M.C.—For conspicuous gallantry and devotion to duty in charge of the evacuation of wounded during an attack. He visited his various posts under heavy shell and machine-gun fire and was largely responsible for the successful evacuation of the wounded.

Capt. (acting Major) KENNETH ARLY PORTERFIELD RYND MURRAY.—For conspicuous gallantry and devotion to duty in charge of an advanced dressing station during an enemy attack. He worked continuously for two days, often under heavy shell fire, and evacuated over 200 cases. Owing to the constant change of position he had great difficulty in keeping touch with the medical officers of the regiments he was clearing, and only succeeded in doing so by visiting them all personally on several occasions. His courage and magnificent devotion to duty set a fine example to all his men.

Temp. Lieut. THOMAS GORDON PLAYFORD.—For conspicuous gallantry and devotion to duty. Assisted by an orderly, he dressed the wounds of several officers on the roadside under heavy shell fire. Later, he established a dressing station in a village which was rapidly being enveloped by the enemy, and succeeded in clearing all his casualties before it was evacuated.

Lieut. (acting Major) RAYMOND STOWERS.—For conspicuous gallantry and devotion to duty in command of an advanced dressing station subjected for hours to heavy shelling. He got all cases away in a most expeditious manner. Subsequently, on the near approach of the enemy, he got his personnel and cars away and opened a temporary dressing station elsewhere, and continued to evacuate wounded till ordered to retire. He showed fine devotion to duty.

Capt. HUGH COMPSON TRUMBLE, Australian A.M.C.—For conspicuous gallantry and devotion to duty. Under heavy enemy barrage he pushed forward some 600 yards with his medical personnel to a ledge, where by his capable organisation he successfully evacuated quantities of wounded. He worked for three days and nights, and his quiet courage had an excellent effect on wounded and stretcher-bearers alike.

Capt. CECIL MCLAREN WEST.—For conspicuous gallantry and devotion to duty. On three occasions he went through heavy shell fire to attend casualties in batteries which were under fire, the roads all the time being heavily shelled with high explosives, shrapnel, and gas shells.

Capt. (acting Major) MAURICE ULICK WILSON.—For conspicuous gallantry and devotion to duty during an attack. He continually attended wounded at the advanced dressing station, which was constantly under artillery fire (four shells dropped within a few yards of the operating table). The work was continued without cessation, so that 247 cases were evacuated in 38 hours. He showed fine devotion to duty under very difficult circumstances.

OBITUARY OF THE WAR.

KINGSMILL WILLIAMS JONES, M.D., D.P.H. DUB.,

DISTINGUISHED SERVICE ORDER,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain K. W. Jones, who was killed in action in Flanders on August 2nd, aged 43 years, was son of the late Percival Jones of Dublin. He was educated at Wesley College and Trinity College, Dublin, where he obtained a mathematical scholarship. He graduated B.A. in 1898, M.B., B.Ch., B.A.O. in 1901, M.A., M.D., and D.P.H. in 1903. After holding some resident appointments he started in private practice in Manchester, where he rapidly created a successful position for himself. Captain Jones was a keen Territorial, and proceeded with his unit, the 18th Field Ambulance, to France in September, 1914, and shortly afterwards became attached as M.O. to the 1st Buffs, with which battalion he was serving at the time of his death. In August, 1915, Captain Jones was wounded at Hooge, and for his gallantry and devotion to duty under fire on that occasion was awarded the D.S.O. In September, 1916, he was very severely wounded at the battle of the Somme, but returned to France again in February, 1917. He rejoined the 1st Buffs in January, 1918, and was badly gassed in May, but returned to his regiment and was killed in action on August 2nd. He refused promotion on more than one occasion in order to remain with his regiment. A colleague who was in intimate association with Captain Jones for many years writes of him :—"In his relationships both with his patients and his medical colleagues he was justly regarded with the highest esteem for professional ability, high standards, and unfailing sympathy with those in trouble. To his friends the sense of loss is very real, for he was a charitable, humorous, and hospitable man, and a 'gentleman unafraid.'"

WILLIAM MARGETSON HEALD, M.R.C.S. ENG.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant W. M. Heald, who died at the Red Cross Hospital, Rouen, on Sept. 8th, aged 24, from wounds received in his aid-post on the Somme on August 22nd, was the only son of the Rev. C. W. Heald, of Chale Rectory, Isle of Wight. He was educated at Marlborough and gained an exhibition at St. John's College, Cambridge, where he graduated B.A. in 1916. He took his M.R.C.S. and L.R.C.P. from St. Bartholomew's Hospital, London, in January, 1918, and held the appointment of junior house physician there till April 7th, when he received his commission in the R.A.M.C. After ten days at Blackpool he sailed for France, where he was attached to a Field Ambulance until a few weeks before his death, when he was appointed M.O. to the Lancashire Fusiliers. His commanding officer writes of Lieutenant Heald as an officer keen and reliable in his work, whose death will be a great loss to his regiment.

WILLIAM MORRIS LANSDALE, M.B., B.S. LOND.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. M. Lansdale, who was killed in action in France on August 26th, at the age of 27, was the eldest son of Dr. William Lansdale, of Grove Park, Lee, Kent. He was, as a schoolboy, an accomplished gymnast and swimmer. He entered Guy's Hospital in October, 1909, winning the entrance scholarship in Arts. In 1911 he gained the first proficiency prize and the Wooldridge Memorial prize in Physiology; in 1914 he won the Beaney prize in Pathology, and in the session 1913–14 he was the prize essayist of the Physical Society of Guy's Hospital. He was also one of the presidents of that society. He graduated M.B. and B.S. at the University of London in November, 1914, and at once joined the R.A.M.C. with the rank of lieutenant. A year later he was promoted to the rank of captain, and shortly after became M.O. in charge of the 107th Field Ambulance, with which he went to France in January, 1916. Later on he was for a short time attached as M.O. to a brigade of the R.F.A., and for the last year and a half was M.O. in charge 5th Royal Bucks Regiment. He was killed instantaneously by a shell shortly after telling some of his stretcher-bearers to take cover. The colonel of his regiment writes feelingly of the regard in which he was held by officers and men. A schoolfellow and colleague of Captain Lansdale notes the unassuming modesty with which he carried high academic distinction, and which added charm to his personality.

Captain THOMAS FLECK GRAHAM, C.A.M.C., who died suddenly of cardiac failure on Sept. 20th, at the age of 35 years, was son of Alexander Graham, of Brantford, Ontario. He was born at Guelph, Ont., graduated in medicine at the University of Toronto in 1914, and joined the C.A.M.C. in July, 1916. He served in the Hastings and Seaford districts until April of this year, when he went to France, attached to No. 3 Stationary Hospital. His special abilities led to his employment in resuscitation and wounds of chest cases, and the success he had with blood transfusion, which plays so important a part in the treatment of these cases, was a striking tribute to his skill.

Captain JAMES COTTON FORSYTH, C.A.M.C., who died of wounds at sea on Sept. 8th, aged 47 years, was a native of Mount Bridges. He graduated in medicine at the Western University, London, Ontario, in 1894, joined the C.A.M.C. in April, 1916, and after serving in England for a year was attached to No. 1 Canadian General Hospital in France. He was invalided to England in June, 1918, and died on the voyage back to Canada.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Lieut.-Col. R. T. Collins, D.S.O., R.A.M.C., killed in action, only son of Dr. E. W. Collins, late of Sydenham, Kent.

Second Lieut. R. L. Norton, Norfolk Regt., killed in action, only son of Dr. J. Norton, of Queen Anne's-gate, London, S.W.

H. Jakins, Queen's Westminster Rifles, died as prisoner of war in Germany, only son of Dr. P. Jakins, of Harley-street, London, W.

Lieut. C. G. Thomson, Somerset Light Infantry, killed in action, only son of Dr. E. B. Thomson, of Plymouth.

Capt. (acting Adjt.) H. G. Powers, M.C., Gurkhas, killed in action, only son of Dr. C. H. Powers, of Westend, Southampton.

Capt. R. H. Knight, Wiltshire Regiment, killed in action, younger son of Dr. A. A. H. Knight, of Lancaster.

THE WAR RECORD OF THE LONDON MEDICAL SCHOOLS: THE FOURTH YEAR OF WAR.

Our inquiry into the war record of the larger metropolitan medical schools has been continued throughout the fourth year of war. Figures for the second and third years were given in THE LANCET of Sept. 23rd, 1916, p. 579, and Sept. 22nd, 1917, p. 479, respectively. The supplementary figures which we now give must be taken as including all those of whom accurate information is available, but it is evidently impossible to keep the record entirely up to date. We may state again here that the deans of all the schools desire to be kept closely informed of the records of their men who are serving in the Navy and Army, and, we must now add, the Royal Air Force. Those schools which have furnished us with returns are given in alphabetical order:—

St. Bartholomew's.—From August 24th, 1917, to August 22nd, 1918, 100 joined the Army and 27 the Navy, making a total of 1918 for the four years. There were: Killed in action, 13; died from wounds, 5; died, 4; wounded, 38; gassed, 1; missing, 2; prisoners of war, 10; repatriated from Germany, 3; interned in Holland from Germany, 1; Mentioned in Despatches, 147. Distinctions: K.C.B., 2; K.C.M.G., 2; K.B.E., 1; C.B.E., 1; C.B., 4; C.M.G., 8; C.I.E., 2; O.B.E., 6; M.B.E., 1; D.S.O., 20; Military Cross, 39; Bar to Military Cross, 1. Promotion for Distinguished Services, 14; Knight of Grace of St. John of Jerusalem, 2; Associate of St. John of Jerusalem, 1; Order of St. Stanislas (3rd Class, with Swords), 1; Order of Kara George (4th Class, with Swords), 1; Cavalier of the Order of the Crown of Italy, 1; Order of Star of Roumania, 4th Class, 1; Order of St. Sava of Serbia (3rd Class), 1, (4th Class), 3; Serbian Red Cross Decoration, 1; Croix de Guerre avec Etoile d'Or, 1; Croix de Guerre, 2; Order of St. Anne, 3rd Class, 1; Albert Medal for saving life, 2; Bronze Medal for saving life at sea, 1; Order of the Nile, 3rd Class, 1; T.D. decoration, 2.

Charing Cross.—The number of past and present students on service, including members of the staff, as far as can be ascertained, is 306. Of these 9 have died on service. The following honours have been gained: K.C.B., 1; K.B.E., 1; Knight, 2; C.B., 2; C.M.G., 3; D.S.O., 5; M.C., 14. Order of St. Sava of Serbia: 2nd Class, 1; 4th Class, 2.

St. George's.—Of more than 400 men who are serving or have served in the present war, 7 have been killed in action, 1 has died of wounds, and 9 have died on active service. Two have been taken prisoner of war, one of whom, Major H. E. Priestley, C.M.G., has been since released. The following honours have been gained: K.C.B., 1; K.C.M.G., 2; C.B., 8; C.M.G., 8; D.S.O., 12; M.C., 18, and two Bars; D.S.C., 1; Order of St. Sava, 4; Croix de Guerre, 2.

King's College.—The completed figures are: Joined, 315; died, 19. Honours: K.C.B., 3; K.C.M.G., 4; K.C.V.O., 1; C.B., 6; C.M.G., 7; Military Cross, 15; Bar to D.S.O., 2; D.S.O., 15; Mentioned in Despatches, 51; Esquire of Order of St. John of Jerusalem, 1; Legion of Honour (Grand Officier), 1; Commandeur de l'Ordre de Léopold, 2; Croix de Guerre (Belgian), 1; Order of the Sacred Treasure (Japanese), 1; Order of St. Sava (Serbian), 1.

London Hospital Medical College.—The completed figures are: Joined, 1470; killed, 96. Honours: G.C.V.O., 1; K.C.B., 1; K.C.V.O., 2; K.B.E., 3; D.B.E., 1; Knighthood, 1; C.B., 5; C.M.G., 9; C.B.E., 3; Companions of Honour, 3; D.S.O., 32; D.S.C., 4; 2nd Bar to Military Cross, 2; Bar to Military Cross, 4; Military Cross, 112: Military Medal, 2; Order of St. John of Jerusalem, 4; Hon. Associates of the Order of St. John of Jerusalem, 2; Légion d'Honneur, Croix de Chevalier, 2; Croix de Guerre, 1; Order of Crown of Italy, 1; Order of St. Anne (3rd Class, with Swords), 2; St. George's Medal, 1; Order of St. Vladimir, 1; Chev. de l'Ordre de Léopold et Croix de Guerre, 1, and L'Ordre de la Couronne, 2 (both conferred by King of Belgians); Order of the White Eagle, 1; Order of St. Sava, 5th Class (conferred by King of Serbia), 1; Jutland Bank Battle Despatch: Commended, 1; recommended, 3; Mentioned in Despatches, 45.

London (Royal Free Hospital) School of Medicine for Women.—Honours have been conferred on former students during the past year as follow: C.B.E., 5; O.B.E., 1; M.B.E., 3; Cross of the Legion of Honour, 1.

St. Mary's.—The completed figures are: Joined, 600; died, 38; wounded, 37; prisoners or missing, 16 (of whom 5 have been repatriated). Honours: C.B., 6; C.M.G., 7; M.C., 26; D.S.O., 19; C.V.O., 2; O.B.E., 2; Order of the White Eagle, 4th Class (with Swords), Serbian, 2; Ordre de la Couronne (conferred by the King of the Belgians), 1; Légion d'Honneur (Croix de Guerre) (conferred by the President of the French Republic), 1; Order of St. Sava, 5th Class (Serbian), 1; Order of the Nile (conferred by the Sultan of Egypt), 1; Silver Medal for Valour (Italian), 1; Mentioned in Despatches, 128.

Middlesex.—The completed figures are: Joined, upwards of 500; died, 30. Honours (known): 46.

St. Thomas's.—The completed list up to Sept. 28th is as follows: Joined, 1115; died, 57. Honours: V.C., 1; G.C.M.G., 1; K.C.B., 1; K.C.M.G., 3; C.B., 5; C.M.G., 15; D.S.O., 25; D.S.C., 1; M.C., 49 and 4 Bars to M.C.; C.I.E., 3. Mentioned in Despatches and for valuable service: 158 men, 224 times. The Foreign Honours include: French, 12; Serbian, 7; Belgian, 3; Egyptian, 6; the Order of the Hospital of St. John of Jerusalem, 5. And 12 have been among the promotions in, and appointments to, the Order of the British Empire for services rendered in connexion with the war.

University College Hospital.—Since the commencement of the war the number of past and present students who have joined the Navy and Army is 702, and the number of deaths have been 29. The following distinctions have been gained: K.C.M.G., 1; C.M.G., 16; C.B., 4; D.S.O. (Bar 1), 17; V.C. (Clasp), 1; Legion of Honour (Croix de Commandeur), 1; Croix de Guerre, 3; Military Cross (Bar 3, Second Bar 1), 31; Mentioned in Despatches (20 twice, 5 three times), 129; Order of the White Eagle, 4th Class, with Swords (Russian), 1; Order of St. Stanislas, 2nd Class, with Swords (Russian), 1; Order of St. Stanislas, 3rd Class, with Swords (Russian), 1; Order of St. Sava, 3rd Class (Serbian), 1.

NEW HOSPITAL FOR SHELL SHOCK CASES.—A new hospital for discharged neurasthenic sailors and soldiers has been opened at Bray Court, Maidenhead. The management of the institution has been placed by the Ministry of Pensions in the hands of the National Hospital for the Paralysed and Epileptic, Queen-square, London, W.C., which is the largest and oldest hospital for the treatment of the many diseases of the nervous system. At present accommodation for the treatment of 50 patients has been provided. Within the large building, outbuildings, and extensive grounds there is ample room for arrangements for re-education and teaching of suitable trades.

SCOTTISH WOMEN'S HOSPITALS FOR HOME AND FOREIGN SERVICE.—The London units, under the London Society of the National Union of Women's Suffrage Societies, are appealing for funds to meet the increased drain on the resources in Macedonia, which continues, although the fighting is now happily at an end. Medical and surgical stores need constant renewal. Contributions should be sent to Lady Cowdray or Miss T. Gosse at 66, Victoria-street, S.W. 1.—Dr. Elinor Rendel has gone out to Macedonia as junior surgeon to the Elsie Inglis unit of the Scottish Women's Hospitals. This unit was the only field hospital attached to the Jugo-Slav Division during the Franco-Serbian offensive. The hospital camp was, when the last news came through, at Dragomantsi, north of Vodena, and a month ago a new station, served by motor ambulances, was established still nearer to the front. Miss Rendel has already seen active service. She was still a student at the London School of Medicine when she went out to Russia in August, 1916, with Dr. Elsie Inglis. As dresser and X ray assistant she worked on the Russo-Roumanian front, and gained a great deal of campaigning experience before she returned to complete her studies.

THE LATE DR. JAMES HAMILTON.—James Hamilton died on Sept. 24th at his residence, Chapel Hill House, Huddersfield. He was the youngest son of the late Rev. William Hamilton, of Omagh, co. Tyrone, and a brother-in-law of Mr. James Ross, Senior Inspector of National Schools, Shantallow, Londonderry. He studied at Queen's College, Galway, the Carmichael Medical School, Dublin, and Glasgow, graduating M.D., B.Ch., B.A.O. of the Royal University in 1889. For some time he practised in Leeds, where his professional skill and kindly qualities gained him the respect of patients and colleagues.

SIMPLE FIRE PRECAUTIONS FOR THE COMING WINTER.—The British Fire Prevention Committee issues its timely reminder of the principal safeguards against fire in the form of a small poster (No. 32), which will be sent gratuitously to anyone who applies to the committee in writing, enclosing an addressed and stamped envelope. In many households the head of the family is now serving with the colours or away on war work, and the matter of fire precautions in the household is therefore left in less experienced hands. Heating and lighting arrangements are now being overhauled in many establishments with the view of economy for the coming winter, and the safeguards on which the committee lays stress can be attended to at the same time. The address of the British Fire Prevention Committee is 8, Waterloo-place, London, S.W. 1.

Correspondence.

"Audi alteram partem."

HYPNOSIS IN HYSTERIA.

To the Editor of THE LANCET.

SIR,—Both Major W. Brown and Captain J. R. O'Brien raise an interesting point in discussing the rôle of hypnosis in hysterical people, the former when he states that "only hysterical patients can be hypnotised," and the latter when he takes exception to this on the ground that "80 per cent. of all mankind can be hypnotised." The essential point to be realised is, that the factor in hysteria that lends itself to hypnotism is suggestibility, and this factor is present in all mankind, though in varying degrees. Given a defective environment during upbringing—defective as far as the environment in which the child when grown up will have to live and work—then there is liable to be a lack of emotional control and an associated high degree of suggestibility which in the course of time is likely to give rise to obtrusive hysterical symptoms. In the educated adult who has been correctly orientated there is a considerable degree of emotional control, and suggestibility, though present, is of low intensity. But it is present, and in that such a man is emotional and is suggestible at all he has the factors of hysteria present. In other words, all human beings are hysterical to a certain extent, in that they are human. But in only a few people, comparatively speaking, do the emotions through lack of control, and suggestibility through its intensity, manifest symptoms in a manner necessitating medical treatment, and in such people no new factors are being encountered, but factors which, present in all, are intense in some only. So that it is not that only hysterical patients can be hypnotised so much as that hysterical patients are *easily* hypnotised; people who have not manifested hysterical symptoms, being less suggestible, are less easily hypnotised. But, as Captain O'Brien's statistics go to show, the great majority of men can be hypnotised in some way or another.

If Major Brown had said "only hysterical *people* can be hypnotised" there would have been no incompatibility between his statement and Captain O'Brien's; the majority of mankind, though having all the factors of hysteria, go through their lives without showing obtrusive symptoms, and so without their coming under medical treatment.

The value of hypnotism in hysterical patients is, in my opinion, open to doubt, for in such cases there is a degree of suggestibility that has proved itself to be morbid, and in playing on this suggestibility there is a possible risk of increasing its intensity; by so doing the patient, though relieved of his symptoms, may be left more hysterical at the end of treatment than at its inception. The rational method is surely not the empirical method of suggestion from without, which in addition to the above objection has the further drawback of the liability to relapse, but the resolution of the symptoms through the patient's own consciousness, a very much harder method but one which is more liable to be permanent as far as those particular symptoms are concerned.

In his letter in THE LANCET of Sept. 28th Major Brown admits the risk of making a hysterical patient more hysterical as a result of hypnosis, and the methods of hypnotism that he himself employs are undoubtedly directed towards a lessening of this risk. But still the essential fact is unaltered; in any case that has been hypnotised the suggestibility previously possessed by the patient, and active in the genesis of his hysterical symptoms, has been picked out and utilised by this method, and however carefully the operator may have brought the patient out of the hypnotic state the very fact that the morbid dissociation has been resynthesised at all indicates a reactivation of this already morbid degree of suggestibility, and is therefore to be deprecated. It is noticeable that the modifications used by Major Brown in the process of hypnosis are directed to the end of an appeal to the patient's own consciousness and a lessening of the purely hypnotic suggestion. The more successfully this is carried out the more satisfactory will be the result, until the ideal will be attained and the hypnotic element completely eliminated.—I am, Sir, yours faithfully,

DONALD E. CORE,
Captain, R.A.M.C. (T.F.).

Manchester, Oct. 1st, 1918.

THE PROPHYLAXIS OF VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—Long discussion following Sir Bryan Donkin's letters early last year showed that there are now a number of medical men who have the courage to advocate the abandonment of the neglect of this the most potent weapon against the spread of venereal diseases; but it is not clear that any very active steps have yet been taken by the medical profession in this direction. Unless the present golden opportunity is utilised of making these simple antiseptic methods generally known, the end of the war is certain to cause venereal diseases to be more widespread than ever, as after many previous wars. On the other hand, if all the Army could be instructed regarding the prophylaxis against venereal diseases this life- and health-saving knowledge will become widely diffused among the general population on demobilisation, and a great reduction, instead of an increase, of the scourge will be effected.

Really the case for adopting these prophylactic measures may be briefly summarised in the following propositions: 1. Venereal diseases are causing a most serious loss of manpower at a crisis in our national history, as shown by the statement of the Under Secretary for War that no less than 54,884 soldiers were admitted to hospital for these diseases in 1917 alone, while many innocent women and children will certainly be infected after the war. 2. The use of Metchnikoff's 30 per cent. calomel ointment before and after exposure to infection and of a 1 in 2000 solution of permanganate of potash for washing after exposure have been proved to greatly reduce venereal infection by the experience of the United States Navy and that recorded by Dr. G. Archdall Reid in THE LANCET of Nov. 3rd, 1917. The recent figures of Rigg relating to several thousand exposures showed that only 0·08 per cent. of infections occurred after disinfection within one hour, 0·65 per cent. after from two to four hours, but 7·80 per cent. after over ten hours, or a reduction of nearly 99 per cent. by very early disinfection. 3. The question is essentially a medical one, and the fact that a single innocent child can be saved from suffering from the most serious and deadly of these diseases to my mind far outweighs any moral arguments against placing prophylaxis against these affections on the same footing as those against all other infectious diseases, while the following plain statement regarding syphilis of Professor Sir William Osler, "Get people to realise that it is a great communicable disease, two-thirds of the victims of which are innocent, and much will be done to break down the present barrier of ignorance and false sentiment," is, I think, unanswerable.

I therefore strongly urge that the greatest national service the medical profession can render at the present time is to form an active society (unless such already exists) to adopt the plan of the committee of medical men in Victoria[1] when the Victorian Government hesitated in the matter—namely, to publish and distribute widely a pamphlet, in which it is first clearly set forth that sexual incontinence is totally unnecessary and best avoided altogether; but that in the case of everyone who fails to be continent it is their duty to the nation, to themselves, and to possible future innocent victims of their errors immediately to use the simple means of disinfection set forth in the pamphlet to diminish the chances of their becoming infected, although they must remember that it is not an absolute preventive and will not make them completely safe against the penalties of their offences against morality. If every soldier returning to Great Britain, either on leave or eventually on demobilisation, is given such a pamphlet an immense amount of disease, and subsequent infection of innocent women and children, will be avoided, and the reproach recently levelled by certain colonial troops against London as "the plague spot of the world" may be partially removed.

As action rather than discussion is now urgently needed, and the writer is not in a position to take an active part in such a crusade, I shall be glad to contribute through you, Sir, to any society or body of medical men who will undertake early action, beginning in London, on some such lines as the above, the sum of £100 towards the expenses of the propaganda. To show that I have some qualifications for expressing an opinion on the matter, I subscribe myself

M.D., F.R.C.P., F.R.S.

Sept. 28th, 1918.

[1] See THE LANCET, March 17th, 1917, p. 424.

MEDICAL CERTIFICATES PRIOR TO MARRIAGE AND VENEREAL DISEASES.

To the Editor of THE LANCET.

SIR,—Recently I attended a conference of the Yorks County Branch of the National Council for Combating Venereal Diseases. At this meeting, which was addressed, amongst others, by a Mrs. Pendlebury, who is, I understand, an organiser of the National Council, one statement was made which is of such importance that I now bring it before your readers' notice—namely, that it was part and parcel of the National Council's campaign against venereal diseases to urge the policy of compulsory medical examination of both parties prior to their entering into a marriage contract, for this is what medical certification means when stripped of all verbiage.

I think, Sir, the public are entitled to an authoritative statement from the National Council on this part of their programme.—I am, Sir, yours faithfully,

A. B. DUNNE, M.B., B.C. Cantab., &c.

Doncaster, Sept. 25th, 1918.

*** We are informed by the General Secretary of the National Council for Combating Venereal Diseases that though the Council has, up to the present, passed no resolution advocating legislation on the subject of health certificates before marriage, it recommends its speakers, in general terms, to set forth the advisability of parents making inquiries as to the health of the intended partner in marriage.—ED. L.

CHRONIC INTESTINAL STASIS.

To the Editor of THE LANCET.

SIR,—In his instructive and suggestive paper on this subject which appeared in your issue of Sept. 28th, Sir W. Arbuthnot Lane carries his teaching a step further. We are now able to appreciate the effects of chronic intestinal stasis not only clinically, but even microscopically. The clinical manifestations which he originally described are now generally recognised, and for the most part are attributed to their undoubted cause. The present paper is the logical outcome of what he has already taught, and he will not be surprised if, in common with its predecessors, portions of it are "received with ridicule": for logic thrives badly in an atmosphere of jealousy. We are now in a position to estimate all or nearly all the pathological miseries which follow in the train of chronic intestinal stasis, but we are not, it seems, very much nearer the goal of all this excellent work of Sir W. Arbuthnot Lane—namely, the prevention of the condition the causes and consequences of which he describes so graphically. The *causa causans* is the upright posture, leading to the development of supporting bands which produce festooning of the transverse colon and other forms of obstruction. An obvious remedy, therefore, would be for man to revert to the posture and gait of his quadruped ancestors, a reversion which in many cases—those, for example, of Sir W. Arbuthnot Lane's detractors—would be eminently suited to their intellectual capacities.

Another lesson which we might profitably learn from a consideration of the said quadrupeds is that the damnable heritage of the colon would be infinitely less damnable if we treated ours as they treated theirs. They treated theirs to long periods of complete rest; not from religiosity, nor from diabetes, but from necessity. They went for several days without food. We never do. In us, the jejunum is said to be always empty; the ileum never. And the ileum is never empty because its contents are ponded back by the accumulation at the cæcum and onwards. If, therefore, man will not return to four-footedness and would avoid intestinal stasis he must fast. But he won't; nothing will induce him to. When his whole intestinal canal is screaming for repose he responds by giving it, in accordance with the highest medical advice, beef-tea at 11 and Benger at bedtime. Moses was a great sanitarian; but he appointed only one day of atonement by fasting in the year. If the new Ministry of Health would appoint at least 52, and enforce them, it would bring Sir W. Arbuthnot Lane's teaching to brilliant fruition.

I am, Sir, yours faithfully,

Harley-street, W., Sept. 30th, 1918. LEONARD WILLIAMS.

To the Editor of THE LANCET.

SIR,—If comment be permitted upon Sir W. Arbuthnot Lane's remarks on the above subject, I should like to point out that, whatever other factors contribute to the induction of intestinal stasis, the most important one has been omitted from his paper. It may be that he does not consider it of primary importance but only a minor concomitant. Subacute chronic inflammation of some portion of the alimentary tract, set up by some infection, precedes the stasis. The provocative bacteria, varying in different cases, are generally those against which the patient has inherited a poor resistance, or his blood may have lost some of its normal bactericidal power through depressing agents—e.g., sedentary habits, bad air, worry, improper feeding, &c. The muscular coat of the intestine grows torpid, œdematous through infiltration from the adjacent sodden mucous membrane, or in obedience to inhibiting stimuli from the nerve-centres—Nature's effort to avoid the pain of irregular peristalsis in the inflamed areas.

I have examined many specimens of intestinal mucus obtained by colon-irrigation from cases of stasis to ascertain their bacterial flora, generally for the purpose of getting a clue to some arthritic trouble. The commoner catarrhal bacteria (capsulated streptococci, staphylococci, *B. mucosus capsulatus*, influenza-like bacilli, pneumococci, enterococci, &c.) have been most frequent and numerous, often equalling the coli group in numbers. Where inoculation treatment has been successfully applied one interesting incident has often been reported to me. Some cases of most inveterate constipation, of almost lifelong duration, have been replaced by normal action of the bowels. Apart, then, from congenital defects, I honestly believe that stasis arises from causes outside the province of the surgeon, and should not be submitted to his anatomical readjustments until milder measures have been well and thoroughly tried.

I am, Sir, yours faithfully,

Bentinck-street, W., Sept. 28th, 1918. H. LYON-SMITH.

DRUG IDIOSYNCRASY.

To the Editor of THE LANCET.

SIR,—The following case of drug idiosyncrasy is perhaps worth recording:—

The patient, a baker's assistant, female, about 23, strong and well nourished, came into an institution last October in a "stuporous" condition. In 48 hours she showed intelligence and reported like attacks at intervals for the past six months, dating apparently from an air raid. There was marked constipation. Among other things she was put on a potassium bromide mixture, 10 grains to the ounce, t.d.s. On the second morning she had developed a profuse roseolar rash. The bromide was discontinued, with disappearance of the rash the following morning. She was tried with strychnine and belladonna, but responded satisfactorily only to enemas. The morning following the administration of belladonna another rash, mainly on the chest and extensor aspects, was observed, differing, however, from the first rash. On this drug being dropped, the second rash disappeared within 24 hours. I was then away for a day or two when by some inadvertence the patient, who had relapsed into her stuporous condition, was again put on bromides, with the rapid supervention in a few hours of a third skin manifestation. I stopped the bromides and the rash went away within 24 hours.

As this patient had been treated with soap enemas with some success, I incline to the view that the rashes were drug rashes, for when she was given a simple tonic and rest in bed no further skin manifestations occurred, and she was discharged in about ten days after the last one had been observed. The seizures were not definitely epileptiform.

I am, Sir, yours faithfully,

T. S. GREENAWAY, M.R.C.S., L.R.C.P.

London, W., Sept. 26th, 1918.

THE FUTURE OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—No one who knows Professor Benjamin Moore and Mr. Charles Parker can doubt their high aim in endeavouring to eliminate undesirable competition amongst professional men by the introduction of a whole-time salaried service. Those of us who are in daily touch with general practitioners fail, however, to recognise as true to life the picture these idealists have drawn for themselves of our profession as a jostling crowd of men with strong muscles and plausible tongues struggling for patients and fees. If there is a small minority of evil-doers who take advantage of existing opportunities for greedy advancement our con-

tention is that these evil instincts will not be abolished or their owners be deprived of opportunities of using them by the revolution of our system of remuneration which is proposed by the State Medical Service Association. Robust health and plausible tongues would still enable the unscrupulous amongst the salaried officials set up under the proposed scheme to gain promotion at the expense of men with better brains and more delicate consciences. Is not a higher salary a "direct personal pecuniary gain"? Do all the better-paid posts in the Army and the Church fall to the men of brain and conscience? Have plausible tongues no influence on promotion in the Civil Service or in the world of politics?

If the State Medical Service Association wishes to convert the public and the profession to the idea of a whole-time salaried service of medical practitioners it must find a more convincing argument than that thereby undesirable competition will be eliminated. The public must be convinced that it will be better served by salaried medical officers; the profession must be shown that it will have greater opportunities of freely exercising its beneficent functions. Neither the public nor the profession is, I believe, satisfied on these points by any arguments at present put forward.

I am, Sir, yours faithfully,

Sept. 20th, 1918. LAURISTON E. SHAW.

THE MANAGEMENT OF LUNACY PATIENTS.

To the Editor of THE LANCET.

SIR,—In criticism of Dr. Lionel Weatherly's statements concerning medicinal treatment in rate-supported mental hospitals, may I point out that, first, it is not an acknowledged fact, nor is it a fact at all, that illness is more rife amongst the insane than among the general population. There is, indeed, a large group of diseases which is responsible for most of the illness in the general population, from which mental patients are practically immune, which easily more than outweighs that group to which they are specially prone. Secondly, assuming that 4*s.* 4*d.* is the average amount per patient per annum spent on the item "surgery" in the maintenance account (and in many cases it is much more), this is a very much larger sum than is spent on the corresponding item under the Insurance Act, which shows how generously and well these patients are treated in comparison with the general public of the same class; and on a comparison of the average number on the sick list in a public mental hospital with the average number on the sick list of the panel doctor it would appear that the mental hospital still holds its own. I think it is quite clear from statements in Dr. Weatherly's letter and brochure that he is not familiar with the amount of honest and earnest work being done in these institutions (which he is so desirous of abusing), without display, publicity, or the stimulus of popular favour.

There are many points in Dr. Weatherly's book with which all of us must agree, but on this point we can only regret that he has gone out of his way to present to the public a picture which can do nothing but harm, and is contrary to the true condition. Unfortunately, that which is contrary to the truth has got the start.

I am, Sir, yours faithfully,

JAMES R. WHITWELL.

St. Audry's Hospital, Melton, Suffolk, Sept. 25th, 1918.

To the Editor of THE LANCET.

SIR,—I have just read with much interest Dr. Lionel Weatherly's book, "A Plea for the Insane." In vigorous and uncompromising style he trounces laws, public authorities, and individuals in a way that is quite agreeable to read—to those, at any rate, who agree with him. But better than this, he makes many valuable suggestions for the reform of the law and procedure involved in the care of the insane, and he also criticises the present-day treatment. Coming from a man of his experience and astuteness, these suggestions must carry weight; and as one who, like most practitioners, has practical interest in these matters, I should like to bring forward at the present time some points which appear to me to be of particularly practical importance, especially now that the reform of the education and practice of our profession is in the front of the background.

First of all, as to the early diagnosis of cases. I am, of course, only speaking for myself as a general practitioner, but I think from what I know of the views of others that I am not alone in my opinion. Our great difficulty is the recognition of the very earliest stages of mental disease. In any disease this is often a difficult matter and one which faces the general practitioner more than any other member of the profession. In mental disease early recognition is of vast importance, and failure to recognise in due time may easily have disastrous effects. We, with our opportunities as family practitioners, ought to be able to recognise mental disease early, but our difficulty, I am afraid, arises from want of sufficient training. I feel quite sure that we do not, in the early days of our medical life, give nearly sufficient attention to this branch of our work, and I hope that when the medical service of the country is reorganised opportunities will be provided for post-graduate study at special mental hospitals or clinics. But we have still another difficulty in diagnosis, and that is the finding of a suitable consultant. This arises partly because the public have an idea that when an alienist is called into consultation he is almost sure to recommend the patient to be removed to an asylum, just in the same way as they are afraid to have a surgeon called in for fear that he may recommend an operation; and partly also our difficulty is that consultants who are at the same time mental specialists and general physicians are few and far between. I have the very highest regard for many of the specialists in this department, whom it is my privilege to know, but I cannot get away from the feeling that there is a tendency amongst them to specialise too much; and this partly, I think, because they specialise too soon. A not long qualified man takes a post as assistant at an asylum. In time to come he is senior assistant, superintendent, and then consultant. I always have contended that a specialist ought to be evolved, not created, and the first stage in his process of evolution should be five or six years of general practice. It may seem a long time, but I do not think too long. There is no doubt that not only is the general practitioner too ignorant of the symptoms and treatment of mental diseases, but the asylum medical officer is apt, at any rate, to be equally ignorant of the treatment of many of the diseases from which his patients suffer. This has, on various occasions, been painfully brought to my notice. I think it arises, not only from want of sufficient experience in general practice, but from a system of routine and organisation fatal to individualism, originality, and enthusiasm.

Having made our diagnosis, our next difficulty is the finding of a suitable place for treatment. The ordinary nursing home, which has unfortunately come to be much abused, not only by neurologists but by all sorts of medical men, is, as Dr. Weatherly so plainly points out, quite unsuitable—not only unsuitable but positively injurious. I have known cases put into nursing homes, and there become certifiable, which had they only been in proper surroundings would in all probability never have arrived at such a deplorable state. The recognised institutions provided for this purpose are too few to be generally available, and personally I have experienced great difficulty in finding a suitable private house to which to send early cases with advantage to the patient. Too many of them are run purely as financial undertakings; and again, for the majority of one's patients—the great majority—the cost of these single houses is much too heavy. The result only too often is that the case drifts on until it becomes certifiable. Would it not be possible to have an official list of suitable houses to which medical men could refer? Nothing can be more distressing to a medical man than to watch a case that he feels sure with proper treatment would probably get well, being allowed, for want of suitable means of treatment, to drift on until it gets into the land of the certified, from which few return without some trace of their sojourn.

How long are patients and their friends and relations, not to mention their medical attendants, to be tortured and worried for want of a simple alteration in the law which would allow of notification as well as certification? The remedy is so simple, and the difficulty so negligible, that it seems to me extraordinary that the public and the profession should so long have put up with the want of it. I hope that Dr. Weatherly's powerful plea for this reform will not be long in having effect.

I am, Sir, yours faithfully,

Bradford-on-Avon, Sept. 18th, 1918. CHAS. E. S. FLEMMING.

MANGANESE POISONING.

To the Editor of THE LANCET.

SIR,—With reference to the letter of Dr. James Gairdner in your issue of Sept. 28th with the above title, and in view of the extensive use of colloidal manganese at the present time by intramuscular injection in furunculosis, acne, eczema, gonorrhœa, and generalised systemic infections, we should like to point out that in the colloid state manganese is for all practical purposes non-toxic.

Before submitting samples to the medical profession for clinical use physiological experiments were undertaken by Professor R. Tanner Hewlett, of King's College, who in July, 1918, found that 11 c.cm. of collosol manganese injected intravenously into a rabbit weighing 2 kg. produced no ill-effect. The dose found by clinical experience to produce best results is 0·5 c.cm. to 1·5 c.cm., and reports (as already mentioned by Sir Malcolm Morris and other practitioners in the medical journals) almost invariably show marked constitutional improvement after the injections.

The work of many investigators (Bertrand, Perrin, and others) seems to show that colloidal manganese acts as a peroxidase. Over-stimulation of the oxidase system is, of course, to be avoided and, if we might venture to offer a suggestion, the dosage ascertained by practical experience should be adhered to, though in the symptoms of mustard gas poisoning as much as 3 c.cm. is clinically advised.

I am, Sir, yours faithfully,

J. F. WARD,
Manager, The Crookes Laboratories.

50, Elgin-crescent, W., Sept. 30th, 1918.

METHODS OF CONTROL OF FRAGMENTS IN GUNSHOT WOUNDS OF THE JAW.

To the Editor of THE LANCET.

SIR,—I am gratified to know that Mr. C. H. Bubb, in his letter in your issue of Sept. 28th, agrees in the main with the methods I described in my communication to THE LANCET of Sept. 7th. With regard to the points on which Mr. Bubb disagrees with me, I would say: (*a*) The four-tail bandage, correctly applied, I only advocate as a "*first aid*" method. This, I think, I made clear. (*b*) To suggest that any bandage, webbing, elastic or otherwise, could possibly do what a screw lever splint does, only shows that your correspondent is not familiar with the splint. The screw lever splint exerts a *forward* pressure, opposes the action of the depressor muscles, and yet permits of free function of the jaw—things which no kind of bandage could possibly do. (*c*) The "perforating bolt and nuts" for symphysis fractures is introduced posterior to the infected area, and was designed with the precise object of leaving the latter area entirely free from any apparatus whatever. The bolt does not perforate the buccal cavity, as his circumferential wires do, and the operation is done entirely aseptically—points which Mr. Bubb evidently failed to grasp. (*d*) Mr. Bubb is surprised that I made no reference to the "open-bite" method of splinting; but I regard it as unsound and never use it, and the communication only dealt with my own methods—methods which I believe to be original.

I am, Sir, yours faithfully,

Frognal, Sidcup, Oct. 1st, 1918. H. P. PICKERILL.

THE death occurred of Clara Hind, L.R.C.S., L.R.C.P.E., of Ockley Sanatorium, on Sept. 15th. She commenced her career as a nurse and was some years at Nottingham, when she obtained her full training in medical and surgical nursing. She then trained in midwifery, getting the L.O.S. certificate. Later she was appointed matron of the Clapham Maternity Hospital, which post she held for five years, when she entered as a medical student at the London School of Medicine for Women and the Royal Free Hospital. She qualified in 1901, and then devoted herself especially to the open-air treatment of phthisis. She was appointed resident physician to Rudgwick Sanatorium, and later founded the sanatorium at Ockley, which she managed for 15 years. Her twofold training as doctor and nurse made her most fitted for such work, and her sudden death is a loss to preventive medicine in her specialty. Her help in the training of women medical students, midwives, and nurses in midwifery was invaluable. She never lost touch with the Clapham Maternity Hospital, and later became a physician to out-patients, and also a trusted and valued member of the committee, by whom her loss will be deeply felt.

THE SERVICES.

INDIAN MEDICAL SERVICE.

Temporary I.M.S. Officers.—It has recently been decided that certain classes of temporary officers of the Indian Medical Service may re-engage under the terms of the Army Department letter of Feb. 9th, 1915, provided they have been continuously employed since their first appointment. These classes are: (*a*) Those who were engaged by the Director-General, Indian Medical Service, for service overseas prior to the issue of the letter quoted above, as well as those engaged under the terms of that letter; (*b*) those who were engaged by the Bombay Relief Fund for service in Egypt, and subsequently re-engaged by the Government of India. The officers referred to above should accordingly be paid at the rate of 24*s.* per diem, whether serving in India or overseas.

Indian Defence Force Medical Corps.—The Indian Defence Force Medical Corps has just been created. Persons holding the following medical and surgical qualifications may be granted commissions: (*a*) Registrable in the United Kingdom; (*b*) L.M.S. Madras; (*c*) Membership of State Medical Faculty, Bengal; (*d*) Memberships of College of Physicians and Surgeons of Bombay; (*e*) American diplomas, the courses of study for which are recognised by the General Medical Council. Commissions in the I.D.F.M.C. will be governed by the regulations applying to commissions in the I.D.F. generally so far as they are applicable. Commissions in the I.D.F. may be on the General Service or Local Service List. Officers on the General Service List will be required to serve in any part of India. Officers on the Local Service List will be required to serve in one locality only. Officers of the I.D.F.M.C. will be granted the following substantive ranks: Lieutenant on first appointment, Captain after three years' service, Major after 12 years' service, and Lieutenant-Colonel after 20 years' service. Each step in promotion will only be granted if recommended by the officer commanding. Service as medical officer of Volunteer units will count for the purpose of this Regulation as service in the I.D.F.M.C. Officers of the I.D.F.M.C. will be placed under the orders of officers commanding station hospitals where such hospitals exist. At stations where there are no station hospitals they will be attached to units of the I.D.F. If not attached to a unit of the I.D.F. officers of the I.D.F.M.C. will be on the Supernumerary List.

ROYAL NAVAL MEDICAL SERVICE.

Temp. Surg. R. E. R. Burn, who has been invalided on account of ill-health contracted in the Service, retains his rank.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. G. J. A. Ormsby relinquishes the temporary rank of Colonel on re-posting.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Major E. B. Booth, Temp. Capt. H. Faulkner.

To be acting Lieutenant-Colonels whilst in command of a Medical Unit: Major M. F. Grant, Capt. (acting Major) E. Phillips.

Temp. Capt. A. N. Bruce to be acting Lieutenant-Colonel whilst specially employed.

Temp. Capt. L. Leslie relinquishes the acting rank of Major on re-posting.

To be acting Majors: Capt. D. Bell; Temp. Capts. O. J. Day, W. L. Lyall, J. D. Cooke, M. Fitzmaurice-Kelly, G. G. Anderson, J. R. Davies.

Temp. Capt. E. L. Warner, Canadian A.M.C., to be temporary Major.

Temporary Lieutenants to be temporary Captains: J. Martin, J. B. Wilkie, D. Young, M. B. Reichwald, H. L. Pearson, C. F. Curtis, T. Craig, D. M. Cox, J. S. Crichton, D. T. Evans, H. Graham, S. A. Furlong, M. Dockrell, S. M. Vassallo, G. W. B. Shaw, H. H. Molloy, G. M. Grundy, R. G. Meyer, F. W. Emery, F. M. H. Sanderson, L. E. C. Handson, E. G. Hodgson, H. Farncombe, A. E. Clark, C. W. Coghlan, H. D. Pollard.

To be temporary Captains: G. B. Wilkinson, H. McKinnon (Canadian A.M.C.), E. A. Aylward, W. J. Woodman (late Captain, R.A.M.C., T.F.), W. G. Lidderdale, E. S. Holloway, B. Beamish, S. L. Haslett, F. M. Harvey, J. F. Bullar, A. S. Allan, W. Hughes, P. Daly, L. J. Hood.

To be temporary Honorary Captains: S. J. Cattley and J. R. Taylor.

To be temp. Hon. Lieutenants: F. A. Georger and B. D. Brooker.

Late temporary Captains granted the honorary rank of Captain: E. A. Pearson, E. G. H. Weir, and A. M. J. Halligan.

To be temporary Lieutenants: D. H. Vickery, T. M. Richardson, L. Milburn, W. Bligh, S. F. Breakly, H. T. O'Neill, C. H. Lee, R. Lawrence, W. A. Mein, J. Black, A. D. Pringle, H. R. F. Towne, A. I. Girdwood, F. Aitken, R. M. Moore, L. N. H. Biggs, H. C. Sutton, H. Abernethy, W. K. Anderson, C. Blake, E. S. Verdon, S. Wilton, C. R. Kidd, A. I. Aylmer, E. W. Sharp, J. G. Louden, A. Macintyre.

Officers relinquishing their commissions:—Temporary Captains granted the honorary rank of Captain: T. C. Pocock (on account of ill-health contracted on active service), S. C. Westwood, T. W. Bailey (on account of ill-health), C. A. Wickham, J. W. Wayte (on account of ill-health caused by wounds); Temp. Capts. F. H. Cooke, W. H. Parsons, A. G. Graham, S. C. Shanks, P. Daly, F. J. McCarthy, A. D. Howard, W. E. Peck, B. H. Swift, J. F. Allen, C. Wace, T. S. S. Holmes, T. E. Parker, F. S. Noble, H. O'Neill, R. McCaffrey, A. P. Woollright, F. L. McKinnon, J. H. Mayston; Temp. Lieuts. T. E. Lister, F. W. Chesnaye, H. Leach, W. H. Woodyer, P. T. J. O'Farrell, A. Rogers, G. Burnet, K. D. Marriner, C. L. Birmingham, T. C. D. Cathcart; Temp. Hon. Lieut. C. E. Fearn (on account of ill-health, and is granted the honorary rank of Lieutenant).

SPECIAL RESERVE OF OFFICERS.

Lieut. D. J. Valentine to be acting Major.

Capt. N. M. Lewis relinquishes his commission on account of ill-health, and is granted the honorary rank of Lieutenant.

Capt. E. J. Bradley relinquishes the acting rank of Major on re-posting.

To be Lieutenants: R. B. MacGregor (from Edinburgh University Contingent, O.T.C.); J. F. Cunningham, W. H. Duff, A. K. I. Jones (from University of London Contingent, O.T.C.); A. M. Dugan (from Aberdeen University Contingent, O.T.C.); W. A. Hewitson (from Durham University Contingent, O.T.C.); G. R. Baxter (from Leeds University Contingent, O.T.C.); J. M. Macpherson, A. M. Davidson; and N. B. Peacock, W. Napier, A. S. Goudie, J. W. Mackay, J. B. Potter, W. Scotland, D. Finlayson, F. K. MacMillan (from Glasgow University Contingent, O.T.C.).

TERRITORIAL FORCE.

Major T. Duncan relinquishes his commission on account of ill-health, and is granted the honorary rank of Major.

Captains to be acting Majors whilst specially employed: A. L. Sharpin, G. B. Pritchard, G. H. Dominy, H. Connop, J. Walker, W. A. Campbell.

Capts. (acting Majors) C. S. P. Black and P. S. Martin relinquish their acting rank on ceasing to be specially employed.

Capt. W. Duncan to be acting Lieutenant-Colonel whilst specially employed.

Major F. G. Bushnell and Capt. C. N. Chadborn are seconded for duty overseas.

Capt. R. Richards is restored to the establishment.

Capt. (Brevet Major, temporary Lieut.-Col.) C. H. S. Frankau relinquishes the temporary rank of Lieutenant-Colonel on ceasing to command a Casualty Clearing Station.

Capt. N. C. Rutherford to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. E. D Gairdner, D.S.O., to be Major.

Lieut. W. E. Evans to be Captain.

ROYAL AIR FORCE.

Medical Branch.—Granted temporary commissions as Captains: E. G. Fearnsides (to be hon. Major), R. B. Lilly, H. P. Helsham (Capt., R.A.M.C.), B. H. Swift, M. E. H. Wale. Granted temporary commissions as Lieutenants: E. E. Rollins, A. E. Collie, E. F. Wilson, S. A. Clark.

Dental Branch.—Granted temporary commissions as Lieutenants: H. O. Salt, H. H. Chapman, G. H. W. Randell.

Medical News.

UNIVERSITY OF DURHAM: FACULTY OF MEDICINE.—At a special Second Examination for the degree of Bachelor of Medicine the following candidates were successful:—

Anatomy and Physiology.—John Neville Alexander, Francis Joseph Benjamin, Oliver Colville (second-class honours), Edward Thomas Colville (second-class honours), Thomas William King Dunscombe, Donald Falconer Hocken, James Joseph Laydon, Morris Mickler, Kenneth Moncrieff, Robert John Perring, and Sydney Terry Pybus.

UNIVERSITY OF BRISTOL.—At a supplementary First Examination for the degrees of M.B., Ch.B., recently held, Eric Cecil Keevil Kenderdine and Carrie Hooper Osmond were successful.

THE BELL FUND.—Dr. S. A. Kinnier Wilson asks us to acknowledge a donation to the Dr. J. H. Bell Fund of £1 1s. from Dr. S. H. Belfrage. Subscriptions should be sent to Dr. Wilson, at 14, Harley-street, London, W. 1.

GUY'S HOSPITAL MEDICAL SCHOOL.—The following scholarships have been awarded:—Senior Science Scholarships for University students: £75, Joshua Harold Burn, Emmanuel College, Cambridge; £35, Malcolm Henry MacKeith, Queen's College, Oxford. Junior Science Scholarships: £120, Edwin Charles Warner, Guy's Hospital; £50, Maurice Burkett Goolding. Guy's Hospital Scholarship in Arts: £100, Charles Skinner Hallpike, St. Paul's School.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.—The following scholarships have been awarded:—Senior Entrance Scholarship in Science (value £75): C. L. Pasricha, Caius College, Cambridge. Junior Entrance Scholarship in Science (value £100): B. M. Tracey, Monkton Combe School, Bath. Entrance Scholarship in Arts (value £100): J. Maxwell, Highgate School. Jeaffreson Exhibition (value £50): N. E. Laurence, Queen's Royal College, Trinidad.

CENTRAL SURGERIES IN BATTERSEA.—In order to release doctors of military age for service with the Forces the Local Medical War Committee, in conjunction with the Minister of National Service, proposes to establish central clinics in the metropolitan borough of Battersea. For this purpose the borough has been divided into three districts—east, south, and west—and practitioners have been appointed as organisers in each. In the southern district the centre proposed is the Bolingbroke Hospital, the governors having given their permission for the hospital to be used for the purpose. Six doctors have been nominated to take the evening surgery in rotation, and it is suggested that all panel lists should be pooled and the patients asked to attend at the centre instead of at the doctor's surgery. The London Insurance Committee have been asked to notify the insured persons of the proposed change. The number of practitioners on the panel in the three divisions referred to is 23, and the number of insured persons on their lists is 41,554, and the Committee, while realising that an emergency has arisen which must be met in some radical manner, find that the scheme involves a great change in the policy of administering the National Insurance Act, to which they cannot assent without further inquiry. This inquiry is now being conducted in close coöperation with the Local Panel Committee.

Appointments.

BOWHAY, ALBERT, M.D. Durh., L.R.C.P., M.R.C.S., D.P.H. Cantab., has been appointed Temporary Medical Officer for the Bere Ferrers District by the Tavistock (Devon) Board of Guardians.

PATTERSON, NORMAN, F.R.C.S., Throat, Nose, and Ear Specialist at the Willesden Municipal Hospital.

Vacancies.

For further information refer to the advertisement columns.

Barrow-in-Furness, North Lonsdale Hospital.—Second H.S. £250.
Bath, Royal Mineral Water Hospital.—Res. M.O.
Bolton Union, Townley's Auxiliary Military Hospital, Farnworth, near Bolton.—Female Asst. M.O. £300.
Bournemouth, Royal Victoria and West Hants Hospital.—Res. M.O. £400.
Bristol General Hospital.—Physician.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Carlisle City, Maternity and Child Welfare.—Female Asst. M.O. £425.
Carlisle, Cumberland Infirmary.—Female H.P. £250.
Central London Ophthalmic Hospital, Judd-street, W.C.—H.S. £50.
Derby Mental Hospital.—Asst. M.O. £350.
Dorset County Council Education Committee.—School Dentist. £300.
Dudley, Guest Hospital and Eye Infirmary.—Asst. H.S. £120.
Dumfries and Galloway Royal Infirmary.—Asst. H.S.
Great Northern Central Hospital, Holloway-road, N.—H.S. £100.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. 30 guineas.
Huddersfield County Borough.—Female Asst. M.O.H. £400.
Kensington Board of Guardians' Institution, Marloes-road, W.—Sec. Asst. Res. M.O. £325.
Leamington Spa, Warneford, Leamington, and South Warwickshire General Hospital.—Second Res. M.O. £200.
Manchester, Ancoats Hospital.—H.P. £200.
Manchester Education Committee.—Two Temp. Asst. Sch. M.O. £400.
Manchester Royal Eye Hospital.—Sen. H.S. £150.
Manor House Orthopædic Hospital, Hampstead.—Res. M.O. £300.
Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Surgeon. £200.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Res. M.O. Also Jun. H.P.
Norwich, Norfolk and Norwich Hospital.—H.P., H.S., and Res. M.O. £400 each.
Nottingham General Hospital.—Female Cas. H.S. £250.
Plymouth, South Devon and East Cornwall Hospital.—M.O. for Venereal Diseases Department. £500.
Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O. Also H.S.
Rhondda Urban District Council.—Dental Surgeon. £300.
Royal Free Hospital, Gray's Inn-road, W.C.—H.S. £50.
Royal Free Military Hospital, Gray's Inn-road, W.C.—Asst. Res. M.O. £250.
St. Pancras South Infirmary, Pancras-road, N.W.—Female Asst. M.O. £300. Or Female L.T. 7 gs. p.w.
Scottish Women's Hospitals.—Female Asst. M.O.'s for France and Greece. £300.
Sheffield Royal Infirmary.—Res. S.O. £200.
Stoke-on-Trent County Borough.—Asst. Tuberc. O. £400.
Swansea Hospital.—H.S. £250.
Wigan Infirmary.—Jun. H.S. £225. Also Surgical Dresser. £150
Winchester, Hampshire County Council.—Temp. Asst. M.O.H. £400.
York City.—Temp. Tuberc. O. £350.

Births, Marriages, and Deaths.

BIRTHS.

ALDERSON.—On Sept. 26th, at West Cross, Merstham, the wife of Captain G. G. Alderson, R.A.M.C., of a son.

MOBERLY.—On Sept. 8th, at "Chudleigh," Ewell-road, Surbiton, Surrey, the wife of Alan V. Moberly, M.R.C.S., L.R.C.P., of a son.

STRAHAN.—On August 30th, at Hong-Kong, the wife of Stuart Séguin Strahan, M.B., of a son.

MARRIAGES.

COOPER—MCKENDRICK.—On Sept. 25th, at Whippingham Church, Isle of Wight, Anthony Ashley Cooper, Temp. Capt., R.A.M.C., to Henrietta Learmont (Rita) McKendrick, fourth daughter of the late Walter McKendrick and Mrs. McKenrick, of "Runrog," Hagg-crescent, Johnstone, Renfrewshire.

LLOYD-WILLIAMS—INGLIS.—On Sept. 28th, at Corstorphine, Midlothian, Bertram Lloyd-Williams to Dr. Isabel Inglis.

DEATHS.

GERMAN.—Killed in action, on Sept. 18th, Major Hugh Bernard German, M.C., R.A.M.C., late Surgeon, Royal Navy, aged 38 years.

GRIFFITH.—On Sept. 24th, at the Homestead, The Colony, Lingfield, Surrey, Alfred Hume Griffith, M.D. Edin., D.P.H. Cantab., aged 43.

HOWARD.—Killed in action in East Africa, on Sept. 6th, Charles Reginald Howard, M.D. Cantab., Captain, R.A.M.C., attached King's African Rifles.

SHAW.—On Sept. 30th, in London, Sir Doyle Money Shaw, K.C.B., R.N., late Inspector-General of Hospitals and Fleets, in his 88th year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths

Notes, Short Comments, and Answers to Correspondents.

THE RATAN TATA FOUNDATION FOR SOCIAL SCIENCE.

Sir Ratan Tata, whose death we recently recorded, was one of the comparatively rare rich men willing to endow research into poverty and destitution, without which radical (as against merely palliative) treatment of social disease is not possible. The Ratan Tata Foundation of the London School of Economics, under the guidance of two able sociologists, Professor L. T. Hobhouse and Professor E. J. Urwick, has conducted a series of investigations which have added greatly to our knowledge of social conditions and afford good examples of the newer methods in social study.

There are two chief differences between the economists of to-day and those of a past generation. In the first place, much less confidence is placed in long trains of deductive reasoning and there is a closer checking at every stage by observed facts. Thus, the older writers—Mill, for example—dogmatised that where work was undertaken to supplement the employment on which a family was mainly dependent a lower wage would be accepted than would be the case if the family had no other means of livelihood. The Ratan Tata Foundation, inquiring into the condition of the home workers in East London, found that the reverse was true. Of the women in the tailoring trade who worked to supplement their husband's wages one-half were being paid good rates; whilst of the women who were entirely dependent on their earnings only a quarter were well paid. The explanation was that the latter dared not stop their work, whilst the former could do so "at a pinch," and therefore stood out for better money.

The second mark of the newer school of economists is that they pay much more attention to the psychology of industrial conditions. Ruskin long ago warned his contemporaries that many of their deductions were valueless because they had posited a non-existent "economic man." Mr. R. H. Tawney, who has written for the Ratan Tata Foundation two monographs on the working of the Trades Boards Act, expresses the truth very neatly: "Economic processes are not reducible to sums in simple arithmetic. The reaction which follows an increase or reduction in wages is not merely quantitative but qualitative ..... The consequences are comparable to the effect not of mechanical stresses, but of chemical reactions. There is more in the result than appears in the components, an unknown factor whose operation defies deductive reason." He illustrates this by a large body of testimony from employers that higher wages often mean better output and therefore lower cost of production. "To be well paid gives the workers dignity and self-respect. They *think* they are worth more, and therefore they are worth more."

Such investigations and publications as those of the Ratan Tata Foundation are introducing a new and sounder social science.

PARAFFIN THERAPY.

MELTED paraffin has a lower specific heat capacity than that of water—roughly, about one half, and lower for the harder paraffins—and can hence be applied to the body at a higher temperature. It also shrinks as it cools, and so makes a slight equal pressure on the tissues beneath. These characters give it advantage in the treatment of swellings and stiffness of joints, which are thus treated by it in St. Anne Hospital at Toulon, as we are told in the *Archives de Médecine Navale* for August. This use of paraffin (paraffitherapy) has been adopted by the French Admiralty. It was introduced by Dr. Barthe de Sandfort, who also introduced ambrine for the treatment of burns, and was formerly a medical officer in the French Navy. There is a room in that hospital for this treatment. A large tank of melted paraffin is the central feature. In it are two coils, one (steam) for raising the temperature to 120° C. (248° F.) to sterilise it, the other (cold water) to reduce its temperature to the practical limit of 53°–50° C.) (127°–122° F.). The melted paraffin is either put into baths in which is immersed so much of the patient as is necessary, or the patient being laid on a sheet, the hot liquid is poured over him by jugs or ladles. A patient with a stiff knee, for example, will every day for the first week have his knee dipped in a bath and removed, dipped a minute later and removed, until his leg is encased in paraffin, when he rests for half an hour or so and has his paraffin case removed, as is easily done, the case being separated by the free sweating which occurs. After the first week the treatments come every second day, and at the end of a fortnight his knee should be well—that is the usual experience. Heat somewhat prolonged, equable pressure, sweating—these are the factors which are supposed to account for the so frequently successful results. The diseases treated are swellings, stiffnesses, contractions of joints and fibrous ankyloses; neuritis, phlebitis, neuralgias, and arthritis, whether gonococcal, gouty, or rheumatic, and whether acute, subacute, or chronic. The treatment does not exhaust the patient, but increases his appetite, and the paraffin, constantly sterilised, is but little wasted. The *Archives de Médecine Navale*, from which we quote, reports this treatment as a definite therapeutic advance.

THE ZEEBRUGGE MOLE.

WE have received from Messrs. Pain and Co., 17, Farringdon-avenue, London, E.C., a copy of a little poem by Mr. Sydney Lee entitled "Well Done, *Vindictive!*" and celebrating the raid on Zeebrugge on the eve of St. George's Day of this year. The poem is a picturesque and vigorous piece of verse, the "doggerel" style being reminiscent of the old chanty. The closing verse illustrates the rough directness of the author:—

> "Now Britons! when you wish to stir the blood within your veins,
> Just chuck all thoughts of business, your losses and your gains,
> And remember the *Vindictive*, and tell the boys around
> Of those deeds of British valour that made the World resound."

The poem is published at the price of 6*d.* for the benefit of King George's Fund for Sailors.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.
MEETING OF SECTION.
Thursday, Oct. 10th.

NEUROLOGY (Hon. Secretaries—C. M. Hinds Howell, E. G. Fearnsides): at 8.30 P.M.
Discussion:
A Discussion will be opened by Dr. Wilfred Harris on "Causalgia, and its Treatment."

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
THURSDAY, Oct. 10th.—5 P.M., Chesterfield Lecture:—Dr. M. Dockrell:—Eczema in all its Stages.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.
Course of Lectures on Public Health Problems under War and After-war Conditions (each Lecture will be followed by a Discussion):—
WEDNESDAY, Oct. 9th.—4 P.M., Prof. A. Keith: Anthropometry and National Health.

Communications, Letters, &c., to the Editor have been received from—

B.—Mr. J. Burns, Edinburgh; Dr. C. Burland, Liverpool; Capt. W. G. Ball, R.A.M.C.(T.); Capitano Medico Prof. Dr. G. Breccia; Major-Gen. Sir David Bruce, K.C.B.; British Fire Prevention Committee, Lond.; Board of Agriculture and Fisheries, Lond.

C.—Capt. J. Campbell, R.A.M.C.; Dr. J. R. T. Conner, Lond.; Mr. A. L. Clarke, Hastings; Chicago School of Sanitary Instruction; Mr. F. R. Cave, Okehampton; Capt. J. C. Clayton, R.A.M.C.; Major H. A. Cookson, R.A.M.C.(T.)

D.—Dr. L. Doncaster, Cambridge; Mr. A. C. J. Dalby, Avonmouth; Dr. A. B. Dunne, Doncaster; Dept. of Scientific and Industrial Research, Lond.; Dr. S. Davies, Woolwich; Capt. S. C. Dyke, R.A.M.C.

E.—Dr. A. B. Elliott, Abergele; Dr. F. W. Edridge-Green, Lond.

F.—Major M. Foster, R.A.M.C.(T.)

G.—Mr. J. W. G. Grant, Lond.; Dr. J. Gairdner, Crieff.

H.—Dr. J. S. Haldane, Oxford; Prof. W. Hall, Bristol; Capt. R. Hall, R.A.F.; Mr. J. T. Henderson, Pietermaritzburg.

I.—Insurance Committee for the County of London.

K.—Kensington, Medical Officer of Health of.

L.—Dr. H. Lyon-Smith, Lond.; Mr. S. M. Lawrence, Gravesend; Mr. E. M. Little, Lond.; Local Government Board and Scottish Office, Lond.; Mr. A. H. Long, Lond.; The Library Press, Ltd., Lond., Director of; London Units of the Scottish Women's Hospitals for Home and Foreign Service.

M.—Dr. H. Mackenzie, Lond.; Medical Supply Association, Lond.; Munitions Inventions, Lond., Controller of; Councillor MacLachlan, Lond.; Capt. S. A. Moore, N.Z.M.C.; Metropolitan Public Gardens Association, Lond.

N.—National Food Reform Association, Lond., Hon. Sec. of; National Hospital for the Paralysed and Epileptic, Lond.

P.—Mr. R. K. Phillips, Lond.; Pharmaceutical Society of Great Britain, Lond.; *Pearson's Magazine*, Lond., Editor of; Major H. P. Pickerill, N.Z.M.C.; Mr. S. G. Papadopoulos, Lond.; Mr. J. W. Phillips, Seattle.

R.—Dr. R. R. Rentoul, Liverpool; Dr. C. H. Roberts, Lond.; Dr. V. I. Russell, Lond.; Royal College of Physicians, Lond., President and Fellows of; Royal Institute of Public Health, Lond.

S.—Mrs. F. G. Saint, Lond.; Capt. J. L. Stoddart, M.C., U.S.A.; St. John's Hospital, Lond., Sec. of; Mr. T. P. Smith, Bolton; Mr. D. F. Steel, Glasgow; Major J. J. M. Shaw, R.A.M.C.

T.—Mr. W. S. Tietjen, Lond.; Dr. W. A. Turner, C.B.; Capt. J. G. Thomson, R.A.M.C.; Mr. H. Teggart, Glasgow; Mr. E. D. Telford, Manchester.

U.—U.S. Public Health Service, Hygienic Laboratory, Washington.

W.—Dr. L. Williams, Lond.; Mr. J. F. Ward, Lond.; Major E. A. Willcocks, A.I.F.; Dr. C. E. Wheeler, Lond.; Mr. T. Wing, M.P., Lond.; Mr. C. Wilson, Lond.; Dr. J. R. Whitwell, Melton.

Offices: 423, STRAND, LONDON, W.C. 2.

The Treatment OF GUNSHOT WOUNDS OF THE JOINTS.

BY J. CAMPBELL, M.D. LIVERP.,
CAPTAIN, R.A.M.C. (S.R.); LATE SURGICAL REGISTRAR, ROYAL INFIRMARY, LIVERPOOL; SENIOR ASSISTANT TO THE PROFESSOR OF ANATOMY, ROYAL COLLEGE OF SURGEONS IN IRELAND, ETC.

PART I.

GUNSHOT wounds involving joints form something like 4 per cent. of the total number of wounds met with in the present war. They are of first-rate importance owing to the frequency with which they are followed by loss of life or limb or, short of these, by ankylosis, complete or incomplete, with a corresponding degree of incapacity to the individual.

This paper is founded on an experience of over 800 cases and on operative and post-operative treatment carried out in casualty clearing stations and general hospitals. Amongst those treated in the latter, separate series of cases involving the various joints were isolated and collected and not discharged to England till either completely healed or sufficiently far advanced in the process of healing to place them beyond any likelihood of subsequent interference, and this was verified by tracing the later history of all such cases to their termination in England. In a fair percentage of the remaining cases the end results were obtained by information gained from England. In this way I venture to think that some definite conclusions can be drawn as to the merits of the various methods of treatment and as to those most worthy of adoption.

CHARACTERISTICS OF JOINTS.

Synovial membrane.—Most joints are lined by synovial membrane. This possesses, in common with other serous membranes, two important characteristics on which all successful treatment is based—namely, (1) an extraordinarily strong capacity for overcoming septic infection; and (2) an equally strong capacity for forming adhesions. These adhesions form with considerable readiness; at the end of 24 hours they are very well marked indeed; sometimes they may form within several hours. As a result of this capacity for forming adhesions the advent of sepsis from without is largely prevented, and any sepsis inside the joint remains localised for a considerable time, granted that the exudation poured out has a free exit. It is largely in consequence of these two characteristics that joint lesions are now regarded as of much less surgical importance than was thought to be the case several years ago, granted that the wound is efficiently treated within a reasonable time of its infliction.

Articular cartilage.—Articular cartilage depends for its existence upon lymph. Anything, therefore, which interferes with its normal supply will assist in causing its death. Intact cartilage presents a definite resistance to infection and does not readily undergo erosion in the presence of sepsis, if it is not at the same time the subject of pressure. On the other hand, if it is the subject of pressure it does rapidly undergo erosion at the site of pressure. This is an important consideration in treatment and shows the necessity for maintaining constant extension in the axis of the limb so as to minimise or abolish the pressure of opposed cartilaginous surfaces on one another. Granted this is efficiently maintained, erosion can be largely avoided or its onset delayed in the presence of low or even moderate degrees of sepsis.

This influence of pressure on erosion was very vividly impressed on me in a case of low grade infection of the knee-joint resulting from secondary spread from a foreign body in the immediate neighbourhood. The case came under my care somewhat late (about two and a half to three weeks after the onset of the arthritis) and at the time was not making satisfactory progress; there was a definite degree of outward flexion causing deformity; extension had been more or less satisfactorily maintained on a Thomas's knee-splint. Radiographs taken at the time showed considerable erosion and loss of outline of the cartilage over the external condyles of femur and tibia, with no observable change over the internal ones.

The differences between the two sides of the joint were so striking as to induce one to make inquiries as to the details of the previous treatment. It transpired that it had been the custom to turn the patient over on to his normal side when changing the dressings and attending to the skin over his back. As a result the limb tended to sag inwards during the process owing to stretching of the joint capsule and ligaments from inflammatory softening which always accompanies an arthritis; consequently, the external condylar surfaces were jammed together and the internal ones separated, producing the condition described above.

The onset of erosion is frequently associated with "night starts." When these make their appearance it is a sure index of imperfect extension, and they disappear immediately the extension is tightened up and made adequate.

Arrangement of the blood-supply.—Another point of the greatest importance is the arrangement of the blood-supply to the articular ends of the bones; and as these are covered by avascular cartilage it follows that in gunshot wounds large masses of bone may readily be completely cut off from their vascular supply. Especially is this the case with the head of the femur when the wound involves the intracapsular portion of the neck of the bone. The same applies, only to a less extent, in the case of the head of the humerus and in varying degrees to the ends of other bones. These masses of loose bone form a suitable nidus for the growth of any organisms that have found their way into the wound, and are then often the site of origin of an acute arthritis.

Structure of the articular ends of bones.—The epiphyses and adjacent parts of the shaft are formed of cancellous tissue. Like other tissues—e.g., muscle, this suffers contusion, and then becomes just as liable to septic invasion with its attendant dangers. Contused cancellous tissue, then, must play a large part in producing septic arthritis in many cases.

GENERAL CONSIDERATIONS GOVERNING TREATMENT.

The general factors governing treatment cover a wide range and involve considerations of: (1) the patient; (2) the surgeon; (3) surrounding conditions generally; (4) nature of wound; (5) time elapsed after being wounded; (6) nature of infecting organism; and (7) radiography.

The Patient.

As regards the patient himself, the following should be taken into consideration:—

Age.—The younger the patient the more readily is he able to withstand conservative measures.

General condition.—The better this is, the more does the above suggestion apply. It is well when resorting to conservative measures in cases involving the larger joints, especially the knee and hip, to keep a close eye on the patient's general condition, for sometimes the local condition may appear to be making satisfactory progress, yet the patient is slowly going downhill and the pulse beginning to lose its volume. When this event occurs the time has passed for persistence in conservative measures, and the limb must be sacrificed.

Multiple wounds.—The more wounds a patient has, the less should be the degree of effort in the line of conservatism. For instance, if a patient is injured in such a way that the upper and lower limbs are both in jeopardy, unless there is reasonable certainty of saving both it is better to save the upper at the expense of the lower, sacrificing the leg at the outset rather than lose both arm and leg and, maybe, the life of the patient later on.

Occupation.—It is well to ascertain this at the outset, first, because in certain work a rigidly stiff limb is less useful to some patients than an artificial one; and, secondly, because it gives guidance as to the best position in which ankylosis should be secured, if such is likely to ensue—e.g., a farm labourer should have the elbow ankylosed at an angle of 135° to allow of the lifting of heavy weights; a professional man at an angle of 100°, to allow of writing and of access to the pockets. The same applies to the shoulder: the heavier the work done the less should the arm be abducted from the side (but in no case less than 40°), and the lighter the work done and the more mobility required for the arm the nearer an abduction of 90° should be secured. Other injuries will also largely affect the position for ankylosis—e.g., if the other hand be lost, then the remaining arm must be secured so that the patient can feed himself—that is to say, in complete flexion with semi-pronation of the forearm.

The Surgeon.

In serious cases treatment largely depends on the surgeon himself. If his skill and experience are large he naturally has the right to attempt greater degrees of conservatism than if his experience is small. His speed in operation and the amount of time he has at his disposal to give to after-treatment are also important. In doubtful cases nothing is more to be regretted than division of responsibility for treatment during the time when risk to life or limb is present.

Surrounding General Conditions.

During times of stress it is only natural that less conservative treatment should be adopted than during quiet periods on account of the lack of time at the disposal of everyone generally to attend to after-treatment, and also on account of the urgency of many other cases awaiting operation, for conservative measures take up considerably more time than more radical ones.

Nature of the Wound.

This is a matter of first-rate importance and involves consideration of: (*a*) size of aperture of entry or exit or both; (*b*) nature of the missile; (*c*) extent of the bone injury.

(*a*) *Size of entry or exit or both.*—The size of these apertures largely determines the treatment required—e.g., leech-bite entry and exit are usually not followed by sepsis, even when accompanied by severe fracture. Large wounds, on the other hand, even with little if any bone injury, are vastly more important in that their size varies directly with the amount of septic material that was introduced into the joint by the missile, and also with the amount of sepsis that has subsequently invaded it from without. Large external wounds, however, that communicate freely with the synovial cavity and thereby allow of the free exit of fluid from it, are appreciably less dangerous than similar wounds with valve-like openings which do not allow of this escape. With the former type I have frequently seen but little bad result in knee-joints, but with the latter very frequently serious consequences. In the one case the sepsis became localised by synovial adhesions; in the other it was soon disseminated over the entire joint surface by exudate. Unoperated cases demonstrating these differences in results were frequently to be seen in the general hospitals in 1915 and 1916.

(*b*) *The nature of the missile* largely determines the urgency or otherwise of the case; shell wounds are much more dangerous than those caused by undistorted rifle or machine-gun bullet. Indeed, early in the war it was comparatively uncommon in the base hospitals to see bad after-results accrue from the latter, granted that the ingress of sepsis from without was prevented, even in the case of quite large exit wounds. Where, however, the entry wound was large the cases had almost equally as much sepsis along their track and were equally as dangerous as shell wounds.

The size of the missile has an important bearing on the liability to sepsis and the urgency or otherwise of the necessity for intervention. It can be laid down as a working rule of practical importance for use in times of stress that missiles up to the size of a small pea usually give but little trouble; hence if such cannot be operated on within 48-60 hours, they are usually best left alone until all danger of lighting up sepsis by operation has passed. It follows, too, that these may, with a fair degree of safety, be allowed to pass straight to the base, after being efficiently immobilised.

Retained foreign bodies.—The relation of these to radiography will be discussed later on. There is no doubt that the sooner they are removed the less is the risk to the patient. The most satisfactory treatment is to excise the wound if possible *en masse*, together with the foreign body, at as early a time as possible; the joint is then carefully washed out, and the wound closed in layers—the synovial membrane by a continuous fine catgut suture to ensure a watertight closure, the capsule, muscle, and fasciæ in their separate layers by interrupted sutures, and finally the skin by silkworm gut.

In the absence of adequate and efficient radiographic reports (and perhaps even with the aid of them) the wound may require to be excised in layers. Any damaged bone surface is then carefully gouged or chiselled away *en masse*, and the joint cavity irrigated as before. The damaged surface of bone is then very lightly smeared with B.I.P. paste, and the joint closed as before.

It is surprising how long the effusion into a joint will remain sterile in cases where the foreign body is retained, especially if the limb is immobilised. In the case of the knee-joint, as late as the second, or even the third, day, I have on a number of occasions found the fluid sterile on cultivation with quite a large shell fragment *in situ*, even with fragments of clothing adherent to it—yet the foreign body readily yielded heavy cultures.

(*c*) *Extent of bone injury.*—This is a factor of paramount importance in treatment, and assumes a rôle of increasing prominence the greater the time that has elapsed between the injury and the operation. If the case is one due to rifle or machine-gun bullet with small entry and exit, however much the extent of bone comminution, there is little doubt but that the case is best left alone, excising perhaps the wounds in the skin only. Whatever the missile, if the case is seen early and has ragged entry and exit wounds, and more especially if the missile be retained, primary suture after efficient excision of the wounds and removal of all loose bone is the best line of treatment to adopt if it be feasible. Short of this, only two courses are left open as a primary measure—excision of the joint and amputation. Which of these should be adopted depends on the ability or not of being able to retain the case in hospital after operation and the patient's general condition. In certain cases the danger of accompanying fracture can be largely, if not completely, abolished by isolating the bone lesion from the synovial cavity; this may be accomplished by suturing together opposed synovial surfaces round about the fracture or by transplanting flaps of the same. This can sometimes be accomplished with ease in the knee-joint.

A serious and difficult problem that confronts the surgeon when operating on these cases is the amount of bone that should be removed.

It has been mentioned above that the cancellous tissue near a joint is very liable to contusion with its resultant dangers, particularly sepsis. Indeed, in the general hospitals it used to be quite common to see necrotic patches of this cancellous tissue on the cut surface of any bone in excised joints and in other cases also. This was largely due to the fact that sufficient of the contused tissue had not been removed.

It is advisable in these cases to make a point of removing contused tissue till definitely oozing bone is exposed with the chisel. This does not necessitate removal of all the contused bone any more than, in the case of muscle wounds, all contused muscle should be excised; otherwise far too much tissue would be unnecessarily sacrificed. If this hopelessly damaged bone is not removed any organisms remaining behind are liable to produce not only local sepsis with its serious consequences, but even a fulminating osteomyelitis. This last complication was not infrequently seen at the base in the earlier part of the war, when so many cases arrived there without any operation having been previously performed. Its presence is suggested by the patient's serious general condition and by tenderness, possibly with thickening along the entire length of the bone. On amputation its presence can usually be readily recognised in the marrow.

If the case has become septic before the operation is resorted to, more radical methods must be used varying, according to the joint involved, from drainage (e.g., elbow) to excision (e.g., hip, shoulder) or even amputation.

Fractures secondarily involving a joint.—Such cases treated early—i.e., within six to eight hours or even longer—usually yield satisfactory results if the wound and fracture are treated locally and the crack left severely alone. Should the joint be distended with bloody effusion it is well to empty it and then apply a firm bandage to prevent its recurrence. Later on, when sepsis may have spread along the entire extent of the fracture, a certain number settle down readily, granted that the fracture is well drained and carefully immobilised. But unfortunately the joint has often to be drained as well, or even the limb sacrificed in the case of the larger articulations.

Time Elapsed after Receipt of Wound.

This must be ascertained at the outset, before operation, as it is of more importance in some respects, in the case of joint wounds, than in the case of other wounds of the extremities. On it depends, in a way, the type of operation that must be done. Roughly speaking, there are two types of cases—those under 24 and those over 36 to 48 hours old. This division is entirely arbitrary; the intermediate cases cannot be readily classified, but must be treated on their merits according as they appear to belong to the first or second group.

Cases over 36 or 48 hours old are best left alone if progressing not unsatisfactorily after having the skin in the neighbourhood carefully cleaned and sterilised and the joint immobilised, this being aided by fixed extension in the straight position. With regard to cases that have been mounted in flexion after being hit, it is well to remember that the advantages to be gained by fixed extension may be outbalanced by the consequences of moving a joint that is settling down. Such movement may break down the synovial adhesions which form the only existing barrier that prevents external sepsis from invading the joint.

Cases under 24 hours old are, as a whole, best operated on immediately and the wounds closed. In a number of cases with marked damage to the neighbouring tissues or in which the wound cannot be excised perfectly, it is advisable to close only the joint cavity and capsule. The rest of the wound is left widely open but with loose sutures placed *in situ* ready to be tightened up later on. The wound is then well packed with paraffin gauze, tightly bandaged, and left undressed for 2-4 days, when, granted it is sufficiently clean bacteriologically, the wound is closed by tightening the stitches. Should the condition be not then satisfactory, it is advantageous to apply the Carrel-Dakin method of treatment if this has not already been used from the outset.

Nature of the Infecting Organism.

As elsewhere, different organisms and different strains of the same organism produce widely different effects and in later cases treatment may depend on their recognition. Those most frequently encountered and clinically the most important are: (*a*) The bacilli of gas gangrene; (*b*) staphylococcus; (*c*) streptococcus. Of these the most dangerous to life and limb is the *streptococcus*, but even here the strain is largely the governing factor—e.g., a highly hæmolytic one infecting the knee-joint gives rise to a fulminating septicæmia, fatal within a few hours; on the other hand, quite a large number infected with other strains readily settle down.

As regards infection with *staphylococcus*, most cases get well if carefully immobilised, the source of infection, if

possible, removed, and cross infection from without prevented. Nearly all more serious staphylococcic cases that do not respond to the above treatment settle down after efficient and suitable arthrotomy followed by drainage.

B. perfringens, when invading a joint cavity, has a strong tendency to disappear; but it is, unfortunately, almost invariably accompanied by either one or both of the above organisms. It is these others that assume the major importance in treatment. In this connexion one should mention that the presence of gas in a joint does not necessarily indicate *B. perfringens* infection; it is sometimes due to certain strains of streptococci.

Estimation of the degree of infection.—This is by no means an easy matter to decide and requires a large clinical experience to enable one to draw reliable conclusions, and even then errors are not rare—i.e., granted that efficient conservative measures are adopted. Clinically, the degree of sepsis is best estimated by the pulse-rate and general appearance rather than by the temperature. It has been my custom not to worry about any case in which the pulse-rate has been below 100, whatever the temperature might be. A high pulse-rate, more especially when associated with a rising temperature, and still more so with a dry tongue, is of serious omen. But even in these cases it is well to proceed to a bacteriological examination of the joint contents before resorting to drastic measures, because occasionally in such cases one is unable to obtain cultures of organisms and the case settles down on being left severely alone. Some complication perhaps is the cause of the condition.

Besides the above, other methods of estimating the degree of infection should be followed out—namely: (*a*) cytological, and (*b*) cultural.

The cytological examination of the exudate yields information in regard to the nature, number, relative proportion, and staining characteristics of the cells present. A relative increase in the number of organisms to leucocytes suggests unsatisfactory progress, and the converse holds equally true.

Nature of the cells.—An exudate showing a high proportion of mononucleated, and more especially eosinophile cells, indicates a mild degree of infection as compared with one in which they are few or absent.

Number.—The fewer the leucocytes and the more the organisms, the more dangerous is the infection as a rule, and vice versa.

Staining characteristics.—Cells staining badly and showing much disintegration indicate either (*a*) cytolysis due to toxins, or (*b*) senile degeneration. The general appearance of the cells and the high proportion of lymphocytes and eosinophiles present in effusions of some duration readily allow of differentiation of the two types.

The cultural characteristics of the organisms are of value, especially in the case of the streptococci as demonstrated by the degree of hæmolysis they may produce; the higher the hæmolytic power the graver is the infection. Infection of the knee- or hip-joints with strongly hæmolytic streptococci is remarkably and rapidly fatal, usually from a fulminating septicæmia.

Notwithstanding, however, the value of these laboratory findings, one must always bear in mind the general condition of the patient.

If the patient is slowly going downhill, some modification of the treatment is required. In doubtful cases nothing gives a better idea of a patient's condition than his general appearance and the changes it undergoes. These changes are not readily appreciated by one in constant attendance on the patient, but are painfully obvious to anyone seeing him at intervals (2–4 days, for example). Indeed, in such cases an outside opinion on this point every 2–4 days is a useful and necessary adjunct to treatment, and may be the means of avoiding some unfortunate results.

In this connexion there is one source of error which, unless it is appreciated, is fraught with serious consequences: when the septic exudate, after being under high tension for a time, bursts through the capsule, there is an appreciable improvement in the general condition, the pain locally is less, and the temperature and pulse-rates fall appreciably, due to diminished toxin absorption from lowered tension. But this improvement is only temporary; at the end of 2–3 days the patient's condition is as bad as, if not worse than, before. The bursting of the infection through the capsule is readily seen by the local increase in swelling, not confined to the limits of the synovial cavity. Such a condition calls for immediate interference, otherwise extensive tracking along fascial planes may occur, with its attendant dangers.

Radiography.

The value of efficient radiographic examinations in joint cases cannot be over-estimated. To be adequate it entails: (*a*) Localisation of any foreign body present by marks on both surfaces of the limb in two planes at right angles to one another, and (*b*) good radiographs, taken by preference in two planes as before. In each instance the most suitable planes for use are the anatomical antero-posterior and transverse ones. I think that such an examination yields more information and is of vastly greater value than one made by stereoscopic plates alone.

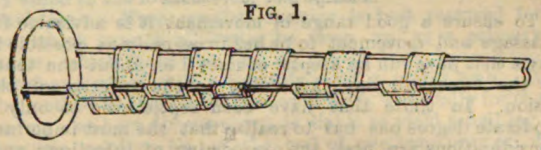
Granted that the examination has been carried out as described, an accurate estimation of the site of any foreign body and the extent of bone damage can be readily made; and in consequence the nature and site of operation can be planned from the outset, so as to allow of excision of the wound in an efficient manner—perhaps in one piece, inclusive of the foreign body.

FUNDAMENTAL PRINCIPLES UNDERLYING TREATMENT AND OPERATIVE TECHNIQUE.

Absolute Rest and Fixation.

Absolute rest and fixation are the essential principles underlying the successful treatment of all joint wounds in their early stages, and their value cannot be over-estimated. Cases have frequently been sent under my care which appeared to be doing unsatisfactorily, but which completely settled down after securing adequate rest and fixation combined with efficient extension, and I am quite convinced that a large number of such cases escaped serious surgical interference and even amputation merely by securing these fundamentals. The best method for securing them, whether for transport or treatment, is by fixed axial extension of the limb in one of Thomas's or Jones's splints, the limbs being supported in it by bands of perforated zinc, the ends of which are turned round the lateral bars (Fig. 1);

FIG. 1.



finally, the limb is well padded, covered with Gooch's splinting, and secured in the splint by a firm bandage. *To ensure an absence of movement during dressings it is essential for as few as possible of the metal supports to be removed, and then only with the greatest care. No movement, however slight, should be permitted.* On not a few occasions have I seen limbs and even lives jeopardised by careless movement of a large joint during a dressing.

In this connexion the use of strips of flannel or cotton bandage to support the limb cannot be too strongly condemned; they are not rigid, and so permit of an appreciable amount of movement in bed and during transport—sufficient to vitiate the result in many of the more serious cases.

The need for rest and fixation by no means begins in the C.C.S.; it is essential for them to be secured at the time the patient is wounded or at the next earliest moment possible. Since splints—more especially the Thomas for knee cases—have been used systematically at the regimental aid-post or field ambulance the results obtained in wounds of the joints have considerably improved. But even yet it is surprising how many cases escape having splints applied before reaching a C.C.S., and still more surprising how common it is to see the Thomas's knee-splint imperfectly applied.

In one's own experience fully 40–50 per cent. reach the C.C.S. with the extension bands quite slack; this is nearly always due to the bands being tightened before the ring of the splint has been pushed home against the ischial tuberosity; in such a case, seemingly adequate extension has been applied at the time of splinting, but the point of counter extension has really been the fleshy fold of the buttock assisted by the weight of the patient, and not the non-yielding tuberosity of the ischium. To avoid this, it is essential during the application of the splint to pull down through the ring this fleshy mass—otherwise the splint cannot rest against the bony point.

Another cause of imperfect extension is the use of a Thomas's splint with a ring that is either too large or too thickly padded—though when applied it may rest against the bone, it slides inwards on to the perineum with the slightest movement, and so extension is lost. This defect may generally be surmounted by placing a *large, firm* pad between the outer part of the ring and the hip; thereby any inward displacement is prevented.

A similar criticism applies to the use of a Thomas's arm-splint fitted with a swivel attachment—it certainly does permit of easier transport by allowing adduction of the limb, but only at the expense of loss of extension and fixation.

Plaster-of-Paris is sometimes used instead of splints to secure fixation—in late stages of convalescence it is useful to allow of the patient getting about. But in early septic cases its use is attended with many disadvantages. Chiefest of all is the impossibility of preventing the plaster from becoming soiled with the septic discharge from the wound; this then forms a centre from which the wound is constantly reinfected. Another important disadvantage is that it does not allow of access to the adjacent parts of the limb, thereby preventing all possibility of massage and obscuring any changes in the neighbourhood of the joint.

Asepsis.

It is essential for this to be secured at the time of operation. There should be one or several changes of the instruments employed. After excision of the wound locally down

to, and inclusive of, the capsule it is advisable to begin again as for an entirely fresh operation. This should include covering up of the excised wound, re-sterilisation of the limb, and a fresh incision to open the joint in an entirely different situation. Asepsis, too, is just as important at each subsequent dressing and cannot be too strongly insisted on. In the writer's opinion, joint cases should in each unit be allocated as far as possible to special wards and tended by persons skilled in their treatment and in asepsis.

Dressings should be changed as infrequently as possible for two reasons: (1) the risk of movement, and (2) the risk of fresh infection from without. This latter is a consideration of prime importance where it has been impossible to close the joint cavity and sew up the wound. For these cases it seems best to use B.I.P. paste in preference to any other method of wound treatment, even the Carrel Dakin one. In the treatment of individual cases division of responsibility as regards dressings is to be deplored; the dressings should be undertaken by the same person on each occasion.

Massage and Movement.

To ensure a good range of movement it is advisable for massage and movement to be begun as early as possible in cases that have run an aseptic course—i.e., about the tenth to the twentieth day, according to the severity of the lesion. In those that have been septic even to only a moderate degree one has to realise that the most important considerations are, first, the overcoming of infection; and, second, the avoidance of a recrudescence, and nothing is more prone to cause the latter than too early movement. Such cases should have been free from all clinical signs of infection for at least three weeks or even longer, according to the degree of sepsis, before movement is resorted to. The appearance of effusion in the joint or of general or local reaction after movement is an indication for a pause in its application. The resumption of movement in joints where foreign bodies are retained is liable to be attended by trouble that may quite easily cost the patient his limb. Unless the foreign body is removed by operation, movement is best postponed for at least several months.

Use of the Tourniquet at Operations.

The application of a tourniquet to the limb prior to operation is essential if a uniformly high standard of results is to be obtained, for several reasons:—

1. The spread of sepsis by contaminated blood flowing over freshly cut aseptic surfaces is avoided.
2. The need for using many instruments is diminished.
3. The field of operation is not obscured by blood.
4. Ligatures need but rarely be used, and hence their action as foreign bodies is avoided.
5. All bleeding into the joint cavity is prevented, not only at the time of operation but subsequently, granted that the limb is very firmly bandaged and completely immobilised in the splint before the tourniquet is removed. I am quite sure that one cause of failure in a number of cases where the tourniquet is not used (especially knee and tarsal ones) is due to the extravasation of blood into the joint cavity after the bandage has been removed. The clot so formed provides a suitable nidus for organisms to multiply in and prevents opposed synovial surfaces from forming adhesions and thereby localising sepsis.

Washing Out of the Joint Cavity.

As a routine measure at a primary operation where the joint is laid open this appears useful.

From personal experience it is best carried out either with a solution in water of 2 per cent. di-chloramine-T and 2 per cent. neutral sodium oleate or with a mixture of hydrogen peroxide and Dakin's solution. At the same time flakes of fibrin and fragments of blood clot should be removed individually and with the greatest care by forceps. Each of the mixtures mentioned above is of benefit from its mechanical rather than its antiseptic action. When used for septic arthritis care should be taken that adhesions are not broken down by pressure; otherwise recesses that are locked off may have sepsis driven into them.

After drainage of the joint cavity it was the rule earlier in the campaign to wash out the joint at each dressing; the result of this was that adhesions were prevented from forming or were broken down whilst still feeble. In this way the joint cavity remained widely open and was only slowly obliterated. Meanwhile it was exposed to and not infrequently became the subject of cross infection with its increased dangers. There is no doubt that such irrigation is a frequent cause of failure, and should not be adopted. Its abandonment as a routine measure has enormously improved results, especially in knee cases.

Obliteration of Dead Space: Use of Paraffinised Gauze Packs.

Accumulations of blood are liable to occur in wound recesses after operation, and may then be the starting-point of septic infection—the blood acting as a dead tissue in which organisms left behind after operation can flourish. Every attempt, then, should be made when dealing with early wounds to prevent these accumulations by obliterating all "dead space" and yet allow of drainage of any exudate that may take place.

If primary suture is performed, this may be accomplished by careful hæmostasis, followed by the application of a very firm bandage. Should, however, the wound be unsuitable for primary suture or, with suture, still show a dead space, these objects can be gained by using as a pack gauze soaked in sterilised liquid paraffin; this is carefully and firmly pushed into every recess and the limb firmly bandaged. The pack exerts pressure, and so helps in hæmostasis, and the paraffin hinders coagulation of blood and serum, and so allows of their drainage along the gauze into the more superficial parts of the dressing. Such a pack may be left *in situ* for two to four days or longer, the superficial parts of the dressing being changed on the first or second day only if the "dressing has come through." When the pack is removed it may be replaced by paraffinised or dry gauze as required, unless the wound can be entirely closed.

The cases in which this treatment yields excellent results are those showing large loss of bone substance involving articular cartilage, and in which the synovial cavity cannot be closed for anatomical reasons. Such cases are universally acknowledged to be amongst the most difficult of all to treat satisfactorily. I always prefer to use the paraffinised gauze in conjunction with a small amount of B.I.P. paste.

Moist gauze when used to obliterate dead space does not yield anything like so good a result. It is inadvisable to use it after removal of a paraffin pack. I have been greatly impressed, particularly during the past ten months, by the readiness with which gunshot wounds, after excision, may be successfully sewn up by primary or delayed primary suture if all moisture is very carefully kept away from them. On the other hand, if moist gauze is used as a primary dressing or to replace any paraffinised pack, a much larger percentage of excised wounds either do not reach a condition suitable for such measures or if sutured break down. This is due to the moisture providing a suitable medium for the growth of organisms.

Herein, I think, lies another advantage to be gained by the use of paraffinised gauze. To sum up its chief advantages, one may say it allows of better drainage of the wound than can be obtained by the use of moist dressings without possessing their disadvantages. It does not furnish a moist medium in which organisms can flourish; it does not adhere to the surface of newly forming granulations, and on removal does not cause bleeding, as does dry gauze; thereby the risk of opening fresh paths for septic invasion is avoided.

Unless the wound has been excised *en masse* the use of fat grafts to obliterate dead space would seem to be not unattended by risk. Where, however, asepsis can be reasonably guaranteed they yield excellent results. Should any gap be left in an articular surface, one way of obliterating it that yields useful results is to fill it up with a 2 per cent. paste of di-chloramine-T in neutral sodium oleate or neutral sodium stearate before closing the joint. A mass of B.I.P. paste should not be used owing to the risk of bismuth poisoning arising shortly afterwards or from the danger of its acting as a foreign body and being extruded later on.

Secondary Operations.

In a base hospital these are not infrequently required for one reason or another. It is essential to carry them out without removing the splint. To attempt otherwise courts disaster from a recrudescence of septic arthritis with its attendant consequences. Careless manipulation or movement in septic infections affecting a large joint may rapidly sweep off a patient from a fulminating septicæmia.

OPERATIVE TREATMENT.

Besides the essentials in treatment described above certain other methods are used and may be discussed at once.

Aspiration.

This procedure is useful in doubtfully infected cases for the purpose of making bacteriological and cytological examinations of the joint fluid, but if carelessly performed the damage done to the articular cartilage and synovial lining may immeasurably outweigh the advantages gained. It is advisable to use it as rarely as possible in those cases that are but mildly septic; indeed, here it is scarcely necessary, since the ordinary clinical signs yield information of more practical value for treatment. It is necessary, however, when the intra-articular tension becomes high, otherwise the infection may burst outside the synovial cavity and perhaps track widely along the fascial planes.

Exploration and Washing Out of the Joint Cavity followed by Suture.

This procedure appears to have but a limited application. Indeed, the greater one's experience is in dealing with infected joints the less does one resort to this procedure, for two reasons: first, because such cases as seem suitable for the treatment almost invariably settle down if carefully

immobilised in the extended position and left severely alone, aided perhaps by aspiration; and, secondly, because in those cases where it is used further operative procedures have nearly always to be resorted to.

As regards the earlier cases in which this treatment was used and which seemed to derive benefit from it, looking back on them one cannot but be impressed by the fact that almost all would have made equally satisfactory, if not better, progress had they been left alone.

Should this procedure be adopted, free exit for the fluid should be permitted for fear lest any recesses in the joint cavity that are already locked off by adhesions should be opened up and have sepsis driven into them. All flakes of blood clot, fibrin, and pus should be carefully sought out and removed; finally, the limb is bandaged tightly to prevent exudation and allow of the rapid formation of adhesions.

Excision of the wound has already been discussed above.

The Use of B.I.P. Paste.

The value of Morison's B.I.P. paste in wound treatment would appear to be completely established.

In regard to *early* joint cases it seems to have two valuable fields of use.

(*a*) In cases where a portion of the bone inside the joint has been chiselled away it is advisable to smear a small quantity over the freshly cut surface prior to closing the joint. Should a cavity of any sort remain in the bone connected with the joint it may be obliterated, as described above, with chloramine paste or a fat graft.

(*b*) In cases—e.g., the knee—where, after operation, a large gap that cannot be repaired is left in the joint coverings, accompanied by a more or less extensive loss of subjacent bone involving the articular surfaces, B I P. paste may be smeared over the entire wound surface after excision and the wound closed as far as possible in layers either at once or by delayed suture, after having carefully obliterated dead space with a paraffinised gauze pack. Secondary suture in such a case is a somewhat risky procedure unless all dead space is obliterated. If this cannot be done it is preferable to allow the wound edges to fall in and the wound to heal by granulation.

Use in the treatment of septic arthritis.—Here B.I.P. paste has been largely advocated and not infrequently adopted. The joint is widely opened up and cleaned out. B.I.P. is then distributed over the entire joint surface directly and indirectly by movement. Finally, the joint may be sewn up or left open. In quite a number of the cases where I have seen it used with apparent success I was struck by the fact that nearly all of the cases would almost certainly have settled down had they been left alone and efficiently immobilised. In but few cases was the pulse-rate higher than 100 when treated. B.I.P.P. used in this way inside a joint has a serious drawback: it may be ejected later on as a foreign body and so cause considerable trouble on resumption of movement.

The Use of the Carrel-Dakin Method.

In early cases, after efficient excision of the wound, this method only rarely need be adopted. There is no doubt that simple primary suture or delayed primary suture after using B.I.P.P. yields the better results.

On the other hand, when sepsis develops, in the large majority of cases the Carrel-Dakin method yields the better results. When a wound of any size leading into the joint cavity is more than 36 hours old and appears fairly clean it is well not to adopt any operative procedure, but rather merely to cover the wound with Carrel tubes and, if possible, perform a secondary suture as soon as the condition of the wound allows. The same treatment applies to more recent wounds that are very septic and require excision down to and inclusive of the capsule owing to risk of spread of infection into the interior of the joint. The presence of a retained foreign body may necessitate interference.

Carrel tubes may be inserted into the joint through the original wound, but not shortly after the injury. It is, however, a most useful procedure when it is found that definitely infected fluid is exuding from the joint cavity and it appears probable that the sepsis is localised to one part of the cavity. The tubes should have open ends and be inserted with the utmost care, otherwise adhesions localising the infection may be broken down. Not more than two or three should be inserted at a time even into such a large joint as the knee. They should be changed once every two days—not oftener. The tubes are no longer required when the joint cavity is obliterated save for the tracks occupied by them; these tracks may be obliterated by a firmly applied bandage.

Use after drainage of the joint by free incisions.—Drainage of the joint is the only method of saving the limb in a large percentage of the more septic cases. It is successful if suitably and efficiently carried out. It should, if possible, be combined with the insertion of Carrel tubes into the joint cavity, in a suitable way and in properly chosen situations. These tubes are removed as soon as adhesions have occluded the cavity—i.e., usually from the second to the fourth day; if left *in situ* more than two days they are changed every other day. In some joints, however, the tubes cannot be inserted, and simple arthrotomy yields excellent results—e.g., the elbow.

Excision of the Joint.

This procedure can be used for either early or late cases, and may be either partial or complete. As a rule the object to be aimed at is mobility in the upper limb, stability and bony union in the lower.

Early cases.—Here *complete excision* is best reserved for cases which cannot otherwise be sewn up as a primary measure, which have the end of one or both bones comminuted and which will ultimately yield a useful limb. It is the method of election in the lower limb, especially for the knee-joint, as here fibrous union is liable to yield a flail leg. *Incomplete excision*—i.e., of the end of one bone only or of part of one bone—is of most use in the upper limb and yields excellent results, as it is frequently followed by a fair range of movement. In both forms early or immediate closure is essential to avoid the risk of sepsis and fibrous union in the lower, and to allow of early movement in the upper limb.

Late cases.—Excision as a method of treatment for septic arthritis cannot be advocated as a sound or wise procedure as a general rule. The exposure of large surfaces of newly cut cancellous tissue to severe infection is a dangerous procedure, more particularly when, as so often happens, the infection in the bone has been already localised. In a number of instances I have seen more or less successful results, but these were nearly always in mildly septic cases and such as, I feel sure, would yet have yielded quite satisfactory results without any interference.

In the more severe cases amputation has sooner or later to be resorted to. At one time late excision was widely advocated by the French, but now has largely fallen into disrepute amongst them, and by many is severely condemned. In certain special cases, however, it must be used to save the life or limb of the patient—e.g., in the shoulder, hip, or ankle. In the shoulder and hip it is rendered necessary by the anatomical arrangement of the ends of the bones and of their blood-supply. In the ankle, if the astragalus is fractured to any extent and the joint becomes infected this bone is very liable to a septic osteitis and requires removal; excision of the bone, too, may be necessary merely to allow of efficient drainage of the joint.

When resorting to excision of a joint two methods may be employed according as we desire bony or fibrous union; they are respectively: (*a*) subperiosteal, and (*b*) non-subperiosteal (i.e., the periosteum is removed with the bone). The second method should only be used after the most careful consideration, as there is such a strong tendency for a flail joint to result, particularly if the wound has suppurated for some time. It is well to bear in mind that later on a plastic operation to allow of movement can in many cases be easily and successfully carried out.

Amputation.

This operation is reserved for:—

(*a*) Cases that are too ill to allow of conservative measures being adopted.

(*b*) Cases in which the comminution of bone is so extensive as to preclude the possibility of a successful end-result.

(*c*) Cases accompanied by severe lesions of the main nerves and muscles.

(*d*) Cases in the lower limb accompanied by serious damage to the main vessel and in which there is considerable risk of gangrene.

(*e*) Septic cases, where an extensive osteomyelitis of a large bone—e.g., femur or tibia—is also present.

(*To be continued.*)

SOME ASPECTS OF INFANT FEEDING.

BY J. C. DRUMMOND, D.Sc.

THERE are few problems of nutrition which arouse greater interest at the present time than those which relate to the feeding of infants. Our knowledge of the dietary requirements of the human organism has advanced so rapidly during the last decade that it has led to abandonment of many beliefs and the modification of many fundamental theories. Such a theory was that which taught us that the food requirements of the animal body could be expressed in terms of what had for so long been regarded as the primary food units—the proteins, fats, carbohydrates, and inorganic salts.

It is unnecessary to review here the large amount of research work which has demonstrated the inaccuracy of this theory, for it is now generally accepted that these food units are in themselves insufficient to satisfy the requirements of the animal for growth and maintenance of health, and that there exist a number of indispensable dietary components which are not members of any of these four recognised classes of foodstuffs.

Accessory Factors of the Diet.

It is mainly as a result of the pioneer work of Hopkins[1] in this country that research upon this subject has been stimulated so far that a stage has now been reached when we can almost claim to be able to define the fundamental dietary units. Animals fed upon a diet of pure protein, fat, carbohydrate, and inorganic salts rapidly decline in health and die within a comparatively short time unless they are provided with an adequate amount of certain other dietary factors. These substances received the name "vitamines" from Funk, but chiefly for the reason that this term is very misleading it is now being discarded. These substances are now referred to collectively as the accessory factors of the diet. So far the existence of three individual substances of this type has been detected. At least two of these are of primary importance for growth, whilst all three are undoubtedly necessary for the preservation of health.

The provisional and non-committal names which have been allotted to these factors are as follows: (1) Fat-soluble A"; (2) "Water-soluble B," or anti-beri-beri (anti-neuritic) factor; and (3) "Water-soluble C," or antiscorbutic factor. As yet practically nothing is known of the chemical nature of any one of these substances.

The object of the present paper is to draw attention to the influence of these factors on infant nutrition. Unfortunately, those interested in the science of infant feeding are only just beginning to appreciate the vital importance of these substances for growth, and one still encounters many misleading and inaccurate statements about them.

"Fat-soluble A" is synthesised by the plant and is found present in most green leaves and in the embryos of certain cereals. Such foodstuffs constitute the primary sources of the factor for the animal organism, which, apparently, does not possess the power to synthesise it. In the embryos of seeds this substance probably occurs in loose combination with protein, but when liberated, as it is during digestion, it shows similar solubilities to the fats and lipoids, and accompanies these substances during absorption. The growing animal demands a liberal supply of this factor, but we are ignorant as to the exact rôle it plays in the body. The adult can maintain good health upon a much smaller intake. Probably in both cases any excess of intake over and above the actual requirements for growth or tissue repair is stored in company with depôt fat. Young animals deprived of this factor in their diet usually show no ill effect for a little time, during which it is probable that they are drawing upon their reserve supplies to make good the deficiency. Sooner or later, however, growth ceases, and they exhibit a greatly impaired resistance to disease, which usually results in an early death from acute infections, particularly of the lungs. Prompt correction of the inadequacy in the diet by the inclusion of some foodstuff containing an ample amount of the missing factor results in a more or less rapid recovery of health, and ultimately the resumption of a normal rate of growth.

The "water-soluble B" is probably identical with the dietary factor that has been termed the anti-beri-beri vitamine.[2] The diseases known as beri-beri and infantile beri-beri represent, however, the final pathological condition induced by a deficiency of this factor in the diet. Long before such syndromes appear the deficiency manifests itself in a retardation or inhibition of growth. Young animals show absolutely no growth when entirely deprived of this dietary unit, and it is only after this inhibition has been maintained for some time that the typical symptoms of nerve incoördination appear. The animal cannot synthesise "water-soluble B," and is therefore entirely dependent upon the plant kingdom for its supplies. Cereal embryos and yeast are the richest known sources amongst the natural foodstuffs.

The antiscorbutic factor, or, as we may now term it, "water-soluble C," is probably indispensable to all growing animals, although many species exhibit a very slight susceptibility to scurvy, and therefore require very small amounts of the protecting substance. As in the case of the factors "A" and "B," the animal is primarily dependent upon the plant kingdom for the substance "C," which chiefly occurs in fresh vegetables and fruits.

The following tables indicate the chief properties of the three substances, and give a short guide as to their distribution in natural foodstuffs:—

TABLE I.

A — "Fat-soluble A." B — "Water-soluble B," or anti-beri-beri factor. C = "Water-soluble C," or anti-scorbutic factor.

—	A.	B.	C.
Stability to temperature.	Stable at 100° C., probably stable at 140° C.	Comparatively stable at 100° C. Slowly destroyed at 120° C. and above.	Gradually destroyed above 50° C. Rapidly destroyed above 80° C.
Stability to alkalies.	Stable in cold, possibly stable when hot.	Slowly destroyed in cold. Rapidly destroyed when hot.	Rapidly destroyed even when cold.
Stability to acids.	Probably stable.	Comparatively stable.	Comparatively stable below 50° C.

TABLE II.—*Distribution of Accessory Factors in Natural Foodstuffs.*

A = "Fat-soluble A." B = "Water-soluble B," or anti-beri-beri factor. C = "Water-soluble C," or antiscorbutic factor.

Foodstuff.	A	B	C	Foodstuff.	A	B	C
Milk	++	++	+	Wheat, whole grain	+	++	—
Butter	+++	—	—				
Cream	++	+	+ ?	Wheat, embryo	++	+++	—
Separated milk	—	++	+	Wheat, endosperm	—	—	—
Whey	—	++	+ ?				
Egg yolk	+++	+	?	Wheat, bran	—	+	—
,, white	—	+	?—	Rice, polished	—	—	—
Beef fat	++	—	—	,, whole grain	+	++	—
Lard	—	—	—	White bread	—	—	—
Vegetable oils	—	—	—	Wholemeal bread	+	++	—
Animal fat, margarines	+	—	—	Yeast, dried	+ ?	+++	—
Vegetable oil, margarines	—	—	—	Yeast, extract (commercial)	—	+++	—
Lean meat	—	—	+	Cabbage, fresh	++	+	+++
Liver	++	++		,, dried	++	+	—
Heart, kidneys	+	+		Spinach	++	+	+++
Pancreas	+	++		Potatoes	—	+	++
Brain	+	++		Oranges	—	—	+++
"Lean" fish—e.g., cod	—	+	+ ?	Tomatoes	?	+	?
				Onions	?	—	+++
"Fat" fish—e.g., herring	+	+		Apples (green)	?	—	+++
				Lettuces	+	—	+++
Fish roe	+	++		Peas, dry	?	+	—
Cod-liver oil	+++	—	—	,, fresh	+	+	+++
Fish-body oils	++	—	—	Malt extract	—	—	?

A rough attempt has been made to give some idea of the relative values of foodstuffs containing the factors by employing more than one positive sign. A negative sign indicates the absence of a factor, whilst an interrogation mark shows either a doubtful result or that no investigation has been made.

During the last few years I have carried out a large amount of experimental research on the influence of accessory substances upon the nutrition of young growing animals. For these experiments I have employed the rat, an animal which has many times been proved to be of the greatest value for such a purpose. The results I have obtained may have, I believe, in many cases an important bearing upon child nutrition, and for that reason I am putting forward certain suggestions, based upon practical

experience, which I trust will engage the attention of those who possess a wide knowledge of the practical side of infant feeding.

These experiments upon animals have demonstrated the absolute indispensability of an adequate supply of the accessory factors during the period of growth. Since there is a certain amount of evidence in favour of the view that these substances are quantitatively utilised during tissue formation, it follows that the demand for them will be greatest during the period of most rapid growth—that is, during very early life.[3]

What I wish to emphasise with all possible force is that the food-supply need not be entirely deficient in a factor such as these in order to bring about nutritive failure. A very slight inadequacy operating over a considerable period may be the cause of an apparently insignificant, but in reality very serious, disturbance of the health of the growing child, the effects of which may be marked long after the deficiency has been corrected.

Breast Feeding.

Experimental research has recently shown that the nursing mother is dependent upon her food-supply in order to provide her young with the accessory factors. Physiological evolution has elaborated a wonderful mechanism whereby the composition of the milk is, as far as possible, protected against the effects of dietary restrictions. But this protective process does not appear to extend to the accessory factors. Sacrifice of the mother's own tissues will frequently tide over a period of dietary deficiency as regards protein or energy intake, but only in the case of the "fat-soluble A" can she indirectly make good an inadequacy of accessory factors, and then only to the extent of calling up any reserves of that factor which she may possess. It should, therefore, be appreciated how vitally important is the necessity for an adequate supply of the accessory factors in the dietaries of expectant or nursing mothers. In fact, I go as far as to say that public authorities should emphasise this point with as much vigour as they do the importance of breast-feeding.

If the mother does not receive an adequate supply of these substances two results follow. First, what she does receive probably goes into her milk, for physiological evolution undoubtedly demands development of the child even at the expense of the mother, therefore she herself suffers the effects of a very serious deficiency; and, secondly, the young, in spite of the maternal sacrifice, receive an insufficient amount of the factor for normal nutrition.[4]

This point may be illustrated by the following experimental results obtained with rats.

A young adult female rat was placed upon a diet seriously deficient in "fat-soluble A" as soon as it was observed that she was pregnant. Eight young of normal weight were subsequently born, of which four were destroyed to reduce the task of rearing. For over a fortnight the surviving young grew at a normal rate, during which time it is surmised that the mother was correcting the dietary inadequacy by drawing upon her own reserves of the factor, but they then began to show signs of failing health. The rate of growth declined and both they and their mother showed great susceptibility to infection, particularly a form of external eye disease which will be described subsequently. Two of the young died 31 days after birth from pyogenic infections, and both the mother and the surviving young were then given a normal dietary. One of the young failed to recover, having lost the sight of both eyes and contracted an infection of the lungs, but the mother and the remaining youngster survived and slowly regained their health. After 40 days from birth the young rat appeared normal, and resumed a normal rate of growth upon the adequate ration.

Such a case is typical of a very large number, and exhibits what may be the consequences of a serious deficiency of one factor in the diet. It is improbable that deficiencies of so serious a nature would occur in this country, where even the poorest classes are able to obtain a mixed diet. On the other hand, there is considerable danger that the cost of the chief foodstuffs which serve as sources of the "fat-soluble A"—milk, butter, and eggs—may result in a large number of mothers attempting to nurse their young whilst themselves receiving a dietary more or less inadequate in that factor.

I have carefully followed the results of feeding considerable numbers of rats upon such dietaries, and believe that they may serve to explain certain types of malnutrition so common in the lower classes. As described above, the young rats when born are usually of normal weight unless the mother has suffered from the restriction for some time previous to delivery, when, of course, her reserves may be already near exhaustion. They may also show throughout the period of dependence upon their mother a normal, or only slightly subnormal, rate of growth. But what is most important is that they never exhibit a normal standard of resistance to disease. Amongst rats this very frequently takes the form of a peculiar susceptibility to a characteristic form of external eye disease, which has been classified as a xerophthalmia.

The condition may be only slight if the dietary inadequacy of "fat-soluble A" is also slight; but, on the other hand, it may be so severe as to involve the cornea and result in permanent blindness. I make the suggestion here that much of the low resistance to disease shown by the young of the poorer classes in this country is indirectly due not to any deficiency of protein or calories, but to their having received during a most critical period of their development an inadeqate supply of one or more of the indispensable accessory factors.

Fortunately our varied dietary in this country precludes any great danger from a deficiency of the "water-soluble B," and we need therefore not fear the incidence of conditions as severe as infantile beri-beri. Nevertheless, we should therefore take due precautions to ensure an adequate supply of this factor to the nursing mother.

Equally important is the necessity of providing the suckling child indirectly through the diet of the mother with a sufficiency of the antiscorbutic factor. I have not been able to work this point out experimentally, as the rat shows an extraordinarily low susceptibility to scurvy. This, however, is not so with the human infant, and we must remember that serious damage to health, perhaps with life-long effects, may result from a failure to supply the child with an adequate amount of this substance, although it may be receiving sufficient to prevent the incidence of the typical syndrome of scurvy.

Feeding with Cow's Milk or Modified Milk.

Since the rate of growth of the calf is greater than that of the child we have a certain amount of right to assume that cow's milk is an adequate source of the accessory factors for the growing human infant. This assumption appears to be supported by the fact that children can in certain cases thrive from a very early age on unmodified cow's milk. Perhaps, in such cases, it is wise to guard against a possible deficiency of the factor "C" by occasional administrations of orange juice,[5] for the cow probably represents a species with a low susceptibility to scurvy, and therefore its milk contains little of the antiscorbutic substance.

The modification of cow's milk for infant feeding is a most important problem. In the past pediatricians have had as their aim the preparation of a fluid resembling human milk in its gross composition, and they have therefore made their calculations solely in terms of protein, fat, carbohydrate, and inorganic salts. Such a basis must now be discarded in favour of one which takes full account of the important accessory factors which we have described. If the modification of cow's milk is carried out only with products derived from milk there is little danger that a foodstuff deficient in the growth factors will be obtained. It should therefore be impressed upon all who have to carry out the modification of milk that true success will only be achieved by the employment of such units as cream and whey.

Too little attention is frequently paid to the source of fat used in modifying milk. For instance, one widely adopted substitute for cream is what has been termed "Marylebone cream," a preparation which is in reality an emulsion of linseed oil. This is added to a separated milk product and must therefore result in the production of a foodstuff very seriously deficient in "fat-soluble A," for it has been shown that vegetable oils do not contain this factor.[6] Olive oil, another oil inadequate in this respect, is also employed to no inconsiderable extent for a similar purpose. I have no knowledge what results have been obtained in the feeding of infants with such preparations, but from my experience with animals fed on food mixtures showing the same deficiency I believe it will be found that such children will show a seriously diminished resistance to disease in spite of their having, perhaps, shown a normal development.

Dried and Condensed Milk.

Dried milk is employed very extensively at the present time in infant feeding, and from the very fact that such excellent results are being obtained it appears that the accessory factors which influence growth are being supplied in a sufficient amount. The majority of dried milk is prepared by one or other of two processes, which we may term the "drum" and the "spray" processes respectively. In the former the exposure to a high temperature is probably insufficient to cause any appreciable destruction of factors "A" and "B," but it appears that the antiscorbutic principle may suffer. In the spraying processes, however, the dried milk powder remains in the chamber heated by a current of air at 115° C., presumably until sufficient material has been collected. If this period extends over an hour or two a certain amount of destruction of the water-soluble growth factor may be caused. The majority of condensed milks are prepared by processes which should effect a very inappreciable destruction of the factor "B," and unsweetened condensed whole milk should, when carefully diluted, be an adequate source of the two growth factors "A" and "B." There is, however, very considerable danger in the employment of the other forms of condensed milk. The use of these products is discouraged on the ground that they are, when diluted according to the directions given on the package, seriously deficient in fat for infant feeding. We are here faced by a very important problem. Characteristic symptoms of malnutrition have often been described as following the use of fat-deficient infant foods, and it is most interesting that these symptoms are closely similar to those which are now associated with a deficiency of the indispensable "fat-soluble A." We may therefore ask whether a deficiency of fat is in itself a serious matter for the infant, or whether nutritive failure does not rather result from a restricted supply of the accompanying accessory factor. Personally, I believe the latter view is correct, and that mere corrections of the fat deficiency by the addition of a fat which does not contain the accesssory would effect little, if any, improvement in the health of the child, whereas the employment of an adequate fat, such as butter or cod-liver oil, would at once restore the subject to health. I put forward this suggestion purely as a result of experimental work with rats, and hope that those who make an extensive study of the subject of the artificial feeding of infants will give it some attention.

Proprietary Infants' Foods.

These substitutes for mothers' milk must from their composition in many cases be seriously deficient in both accessory factors "A" and "B," but particularly in the former. Many of them are fat-deficient, and therefore equally deficient in the indispensable accompaniment to milk fat. Here again we may have a partial explanation of the characteristic liability to infection which is so frequently shown by the fat but pasty baby reared upon this type of food. Such dietaries should be adequately supplemented with rich sources of this factor in the form of cream or cod-liver oil, otherwise malnutrition will inevitably follow.

I have not touched on the important subject of infant scurvy because my experimental work with rats has given me no opportunity of studying that deficiency disease. This aspect of the problem has, however, been very fully treated by other workers in a previous paper which appeared in THE LANCET.[5]

It now remains for the practical worker on infant nutrition to apply the results of these experimental studies as soon as he is convinced of their accuracy.

References.—1. F. G. Hopkins: J. Physiol., 1912, xliv., 425. 2. J. C. Drummond: Biochem. J., 1917, xi., 255. 3. J. C. Drummond: Biochem. J., 1918, xii., 25. 4. E. V. McCollum, N. Simmonds, and W. Pitz: J. Biol. Chem., 1916, xxvii., 33. 5 H. Chick, E. M. Hume, and R. F. Skelton, THE LANCET, Jan. 5th, 1918. 6. W. D. Halliburton and J. C. Drummond, J. Physiol., 1917, li., 235.

ROYAL SANITARY INSTITUTE.—A visit has been arranged to Messrs. Pilkington's Tile and Pottery Co.'s Factory, Clifton Junction, at 2 P.M., on Friday, Oct. 18th, and at 6.30 P.M. a discussion will take place at the College of Technology, Manchester, on "Welfare Work in Factories and Workshops," to be opened by Professor J. Radcliffe, M.Sc.Tech., and Miss Ethel Brown (welfare secretary to Messrs. John Bright and Brothers, of Rochdale). The chair will be taken by Dr. Philip Boobbyer. Tickets from the secretary of the Institute, 90, Buckingham Palace-road, London, S.W. 1.

PROPHYLACTIC VACCINATIONS

AGAINST CATARRHAL AFFECTIONS OF THE RESPIRATORY TRACT.

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AND

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AMONGST those who are in the habit of employing vaccines therapeutically in civilian practice the impression has steadily gained ground that sufferers from catarrhal conditions of the respiratory tract are benefited by inoculations prophylactically administered. So far as we know, however, there have never been recorded any extended observations bearing upon the immunity obtained by the ordinary soldier from the prophylactic use of "mixed" vaccine against respiratory catarrh, although Wright[1] and Lister[2] employed pneumococcus vaccines for the prevention of pneumonia in the South African miner and Cecil and Austin[3] used similar vaccines for the protection of the American soldier.

As we have recently had the opportunity of carrying out such a series of inoculations, on a scale which permitted the observation of a nominal roll of 1000, we believe it might be of interest to record our results.

Outbreak of Measles and Rubella Complicated by "Purulent Bronchitis."

During January, 1918, 327 cases of measles and rubella, all of a mild type, were admitted to hospital from a certain camp occupied by the *n*-th Reinforcement of the New Zealand Expeditionary Force, which had arrived in England on the 7th and 9th of the month. During February a further 124 cases were admitted, and of these 24 died.

In consequence of this heavy mortality one of the present writers was detailed, together with Lieutenant-Colonel H. French, R.A.M.C., consulting physician to the Aldershot Command, to investigate the outbreak. In all some 33 cases were inspected, and it at once became apparent that the exanthem was usually complicated by "purulent bronchitis" identical in its clinical features with the outbreak of purulent bronchitis investigated by the same observers in the Aldershot Command during the early part of 1917—that is to say, apart from the rash of the primary measles or rubella, often very indistinct and atypical, the physical signs were insignificant, usually only a few scattered rhonchi, but in all the sputum was abundant, consisting of pure pus, in most instances greenish-yellow, but in two cases reddened by altered blood. In the recent and severe cases cyanosis was pronounced, although the patients were lying flat and not in great distress.

Fourteen cases were selected for detailed bacteriological examination. Of these, three died, and observations were made on the post-mortem material thus rendered available. An autopsy was also made upon an Imperial officer from the same area, who—unconnected in any way with the N.Z.E.F.—had died from purulent bronchitis uncomplicated by any exanthem.

Speaking generally, the bacteriological findings were very similar. *B. influenzæ* was present on one or more occasions in 12 of the 14 sputa examined, usually associated with *Streptococcus longus* and various types of *Micrococcus catarrhalis*. In the fatal cases the heart blood and spleen showed the presence of *Streptococcus pyogenes longus* with marked hæmolytic properties. Thus the analogy with the cases of purulent bronchitis observed the preceding year[4] was complete; there was evidence of a primary infection of the respiratory tract by *Bacillus influenzæ*, which so lowered the resistance of the individual that secondary infection by the *Streptococcus pyogenes longus* (and not the pneumococcus, as in the Aldershot epidemic) ensued, and in many instances resulted in an acute and rapidly fatal streptococcic septicæmia.

[1] THE LANCET, 1914, i., 87.

[2] Publications of the South African Institute for Medical Research, 1916, No. 8, and 1917, No. 10.

[3] Journal of Experimental Medicine, 1918, xxviii., 19.

[4] Purulent Bronchitis. By Abrahams, Hallows, Eyre, and French, THE LANCET, Sept. 8th, 1917, p. 377.

The morbid histology of the pulmonary tissues was similar to that detailed in the "Aldershot" report and consisted chiefly of a purulent bronchitis and peribronchitis associated with areas of œdema, areas of collapse, and patches of lobular broncho-pneumonia, whilst at the bases of the lungs the process tended to involve larger areas, and, in rare instances, to progress to complete consolidation.

The incidence of rubella and morbilli must be regarded, in many instances, as a predisposing cause producing the initial lowering of resistance which facilitated the entry of the *Bacillus influenzæ*; in other cases the eruptive fever appeared to be merely a coincidence.

Details of Cases.

Fatal Cases.

CASE 1.—Admitted Feb. 7th, 1918. Rubella (rash appeared Feb. 5th) and bronchitis. Seen during life—cyanosed—*in extremis*. Typical purulent nummular sputum. Died 3 P.M., Feb. 24th.

Post-mortem same day 5 P.M. (therefore post-mortem decomposition changes negligible). (*a*) *Lung—Naked-eye*: Practically sound externally; no consolidation; cut surface exuded thick yellow pus, in some parts frothy. Œdema and collapse. *Microscopically* the condition was one of purulent bronchitis, bronchiolitis and peri-bronchiolitis, with areas of collapse and areas of œdema. Small patches of broncho-pneumonia were present. *Cultures* gave a growth in which, although *B. influenzæ* were present, *Streptococcus pyogenes longus* and *Micrococcus catarrhalis* were the predominant bacteria. (Cultures from the upper lobe showed more *B. influenzæ* than those from the lower lobes.) (*b*) *Heart blood culture*: *Streptococcus pyogenes longus*. (*c*) *Kidney*: Early cloudy swelling, albumin in tubules, hæmorrhage into some glomeruli, few Gram-positive diplococci observed. (*d*) *Liver*: No gross changes; in some parts the liver cells showed some vacuolation.

CASE 2.—Admitted Feb. 8th, 1918. Rubella (rash appeared on Feb. 7th). Bronchitis developed and a second rash (measles) appeared on Feb. 20th. Seen during life: Feb. 24th: T. 101°, P. 130, R. 40; marked cyanosis; typical nummular purulent sputum; very few signs in chest; no consolidation. *Sputum*: Pus cells, Gram-negative intracellular minute bacilli, few Gram-negative micrococci, Gram-positive cocci in pairs and short chains. *Cultures*: *B. influenzæ*, *Micrococcus catarrhalis*, *Streptococcus pyogenes longus*, *Diplococcus pneumoniæ*. Died during the night of Feb. 24th–25th.

Post-mortem, Feb. 25th.—(*a*) *Lung—Naked-eye*: Consolidation at base, especially right (pieces sank in water). Upper lobes: Patches of broncho-pneumonia. Middle lobe right: No marked changes beyond shotty feel of cut bronchioles; cut surface exudes purulent and frothy mucus. Bronchiolitis and purulent bronchitis. *Microscopically*: The bases showed large areas of pneumonia, progressing in places towards gangrene. Upper lobe: Numerous hæmorrhages and small patches of broncho-pneumonia. Middle right lobe: Purulent bronchitis and peribronchial infiltration, with small cells. (*b*) *Spleen cultures*: *Streptococcus pyogenes longus*. (*c*) *Heart blood cultures*: *Streptococcus pyogenes longus* associated with a few *B. coli*. (*d*) *Pericardial fluid cultures*: *Streptococcus pyogenes longus* (conglomerate masses).

A third post-mortem was carried out upon an Imperial officer. The history supplied was:—

Operation on nose Jan. 24th, 1918, Officers' Hospital. Discharged Jan. 28th. Sick in quarters Feb. 2nd, after a long motor ride, ? influenza. Readmitted Officers' Hospital Feb. 11th with bronchitis. Sputum frothy; mucopurulent; profuse in amount; bacteria few in number; streptococcus predominant. Cyanosis; oxygen administered. Died on Feb. 23rd.

Post-mortem, Feb. 25th.—Appearances of the lung were practically identical with those noted in Case 2. Owing to the interval that had elapsed between death and the autopsy no material was taken for cultures or for sections, but exudation from bronchi, when examined microscopically, showed pus cells and intracellular Gram-negative minute bacilli, in addition to numerous other bacilli and cocci, evidently representing numerous varieties.

Severe Case.

CASE 3.—Feb. 24th, 1918: Rubella and bronchitis. T. 101°, P. 126, R. 32. Very marked cyanosis. Typical sputum. Fine crepitant râles all over chest. No consolidation. *Blood culture*: Scanty growth of *Streptococcus pyogenes longus*. *Sputum*: *Microscopically*—pus, Gram negative intracellular minute bacilli, many simulating diplococci, also Gram-positive cocci in chains and some Gram-negative cocci. *Cultures*: *B. influenzæ*, diphtheroids, short chains of Gram-positive cocci, very few *Micrococcus catarrhalis*. This patient died two days later.

Subacute and Convalescent Cases in Ward 6.

Ward 6 contained 11 patients, all of whom were stated to have had purulent sputum on admission.

CASE 4.—Rubella and bronchitis. Typical sputum. Dullness in right mid-axillary line. *Lung puncture*: Only a few drops of blood withdrawn. Cultures remained sterile. *Sputum* on two occasions (Feb. 24th and March 5th) gave similar bacteriological findings, although the second specimen, naked eye, was less typical and distinctly frothy. *Cultures* on each occasion gave a growth of *B. influenzæ*, *Streptococcus longus*, and diphtheroid bacilli.

CASE 5.—Rubella and bronchitis. Typical sputum. Convalescent; scroopy rhonchi all over chest, but both lungs resonant. (Blood cultures on Feb. 16th stated to have given (?) pneumococcus). *Sputum cultures*: *B. influenzæ*, *Streptococcus longus*, few *Micrococcus catarrhalis*.

CASE 6.—Rubella and bronchitis. *Sputum*: March 5th, 1918. *Cultures*: Very mixed growth; some *B. influenzæ* present, but large numbers of *Staphylococcus aureus*, *Streptococcus pyogenes longus*, *Streptococcus brevis*, and *Micrococcus catarrhalis*.

CASE 7.—Rubella and bronchitis. Convalescent, but still some cyanosis. *Sputum*: Few purulent pellets in abundant frothy mucus. *Microscopically*: Very few Gram-negative intracellular bacilli; numerous Gram-positive cocci. No cultivations made.

CASE 8.—Rubella and bronchitis. Marked cyanosis. Prune-juice-coloured purulent sputum. Sticky non consonating râles all over chest. *Sputum*: Feb. 24th, 1918. Pus cells, blood cells, Gram-negative intracellular bacilli, Gram-positive diplococci. *Cultures*: *Micrococcus catarrhalis*, *Streptococcus longus*, *B. influenzæ*.

Subacute and Convalescent Cases in Ward 7.

CASE 9.—Rubella and bronchitis. Cyanosis; typical sputum. *Sputum*: Pus cells and intracellular Gram-negative minute bacilli and diplococcoid forms. *Cultures*: No growth occurred; presumably the tubes were never inoculated.

CASE 10.—*Sputum cultures*: No *B. influenzæ* could be detected. Growth mainly *Streptococcus longus* and *Micrococcus catarrhalis*.

CASE 11.—*Sputum cultures*: Showed only a few *B. influenzæ*, numerous streptococci, both of the longus and brevis types, and *Micrococcus catarrhalis*.

CASE 12.—*Sputum cultures*: No *B. influenzæ* could be detected. The growth was a mixed one of *Streptococcus longus* and *Micrococcus catarrhalis*.

CASE 13.—Rubella and bronchitis. T. 102°. Reddish brown (but not typically "rusty") purulent sputum. *Blood cultures*: Scanty growth of *Staphylococcus aureus*. *Sputum cultures*: *B. influenzæ* and *Staphylococcus aureus*. A second specimen of sputum (March 5th) gave almost identical cultures, consisting of *B. influenzæ*, associated with *Staphylococcus aureus*.

Subacute and Convalescent Case in Ward 8.

CASE 14.—Rubella and bronchitis. Cyanosis and typical purulent nummular sputum with intracellular Gram-negative bacilli, resembling *B. influenzæ*.

The few blood counts that were made showed a slight but distinct polymorphonuclear leucocytosis, not only relative, but also absolute. The red cells averaged 4,500,000, and the leucocytes ranged from 10,000 to 12,000. The differential leucocyte count in 8 cases was as follows:—

Case No.	1	3	4	5	7	8	12	14
Polymorphs	77	78·5	81·5	74	64	81	81	77
Lymphocytes	19	19	15·5	23·5	33	15	17	20
Large mononuclears	3	2	2	2	2	2·5	1·5	3
Eosinophiles	1	0·5	1	0·5	1	1·5	0·5	0

Prophylactic Vaccination.

On account of the severity of the infection affecting the Colonial troops in question, and bearing in mind the susceptibility of the average New Zealander to infections of the respiratory tract, and also because of the definite bacteriological findings as stated above, it was thought well to advise the N.Z. medical headquarters of the desirability of attempting, in addition to the improved sanitary measures adopted at the camps, to attempt to immunise reinforcements by prophylactic vaccination against catarrhal infection. This measure was at once authorised and arrangements were accordingly made for the vaccination of the entire personnel of the two most recent reinforcements in England. So promptly did the N.Z. medical headquarters act that within 14 days not only had a large amount of "mixed" vaccine been prepared (from cultivations derived from the cases already detailed), but the initial dose had been administered to several thousand men.

The vaccine was prepared in two different strengths, the weaker initial dose being followed ten days later by the second stronger dose—in each instance the volume of vaccine administered amounted to 0·5 c.cm.

Our first concern was to determine whether initial reactions would prove at all severe and thereby interfere with the necessary training of the troops inoculated. For this purpose reaction record sheets were prepared and sent to each area concerned, together with the following memorandum describing the vaccines and indicating the reactions likely to be observed:—

N.Z.E.F.

Mixed Catarrhal Vaccines for Prophylactic Inoculation against Purulent Bronchitis and Respiratory Catarrhs.

Description of vaccine.—A multiple vaccine has been prepared from organisms contained in the secretions of purulent bronchitis and in the sputa of other catarrhal cases among the troops of England. It contains:—

Organism.	1st dose.	2nd dose.	Organism.	1st dose.	2nd dose.
Pneumococcus	50 ...	100 million*	*M. catarrhalis*	25 ...	75 million.*
Streptococcus	10 ...	50 ,,	*B. pneumoniæ*	50 ...	100 ,,
B. influenzæ	10 ...	30 ,,	*B. septus*	50 ...	100 ,,
Staph. aureus	200 ...	500 ,,			

* Organisms per 0·5 c.cm.

This vaccine has been designed to produce an artificial immunity, not only against the first three virulent organisms, which are frequently found present in fatal purulent bronchitis, but also to immunise against the other organisms most frequently found in

catarrhal sputa and nasal discharges. Its multivalency will not depreciate its value against the more serious cases or prohibit its usefulness in the less serious infections.

Dosage.—The vaccine is prepared for use in two strengths, as described above, each being distinctly labelled for first and second doses. The amount of vaccine to be given on each occasion is 0·5 c.cm; the second inoculation, with the stronger vaccine, to be given after an interval of ten days. In cases which give a severe reaction after the initial dose the second dose should be given, but after a longer interval—say 14 days. Where the prodromal symptoms of measles, &c., are suspected the prophylactic vaccine should not be used, but that arranged for *treatment*, which contains considerably smaller doses and is being prepared.

Reactions to be Expected.

1. *There may be no reaction*, but in such cases the immunity conferred may be as efficient as in those who react. 2. *There may be slight reaction.* This is the most likely sequela, and will probably occur during the 24 hours following inoculation and, apart from a possible tenderness at site of injection, may produce a mild general malaise, tiredness, stiffness, and slight headache. In cases with existing catarrhal discharges these may be temporarily aggravated. 3. *There may be severe reaction.* This is not expected except in a small percentage of cases. Such will develop during the following 24 hours an aggravated condition of the above symptoms, and also probably a rise of temperature and pulse-rate. In these cases at least 14 days should be allowed to elapse before the second dose is given. Severe reactions may possibly occur if the occasion of inoculation happens to coincide with the onset of measles, &c. *Inoculated men should be excused duty for 24 hours.*

Immunity.—The immunity conferred will probably not last longer than 12 months, and it should not be forgotten that there is always a certain percentage of persons in whom it appears impossible to produce any immunity.

Records.—The date of both catarrhal vaccine inoculations should be entered in each man's pay-book, and the letters "M.C.V." (which mean mixed catarrhal vaccine) should be adopted to indicate when the man was inoculated and to prevent the occasion of his catarrhal inoculation being confused later with that of his T.A.B. or A.T.S. inoculations. If men refuse inoculation the fact should be written or stamped in their pay-book, "Refused M.C.V. inoculation," and the date. It will be of great value to have all available data of the immediate result of these inoculations as regards reactions, and for this purpose "reaction record sheets" are enclosed, upon which the reaction results can be entered, and when the bulk of men have been inoculated for the second time these sheets must be forwarded as soon as possible to Medical Headquarters, London, to be sent on to Captain Lowe, N.Z.M.C., pathologist.

Through the details of these returns, so thoroughly filled in by the R.M.O.'s, the following data have been obtained:—

(A) 2081 men inoculated with the initial dose. (B) 1627 men inoculated ten days later with the second dose.

	(A)	(B)
No reaction	2033 = 97·7 per cent.	1607 = 98·8 per cent.
Slight reaction	42 = 2·0 ,,	13 = 0·7 ,,
Severe reaction ...	6 = 0·3 ,,	7 = 0·4 ,,

As *slight reaction* the M.O.'s in charge note: Headache in 24 cases; temperature from 99°–101° in 14; sore throat in 5; neck stiffness, nausea, and fainting in 5.

As *severe reaction* the above symptoms, more marked and accompanied by temperatures between 101° and 104°, are the points noted.

All the men were excused duty for 24 hours on the occasion of both inoculations, and the incapacity occasioned by the severest reactions did not last for more than 72 hours. However, in spite of there being so small evidence of immediate reactions, there was no doubt an increased susceptibility to the prevalent catarrhs of the area, as will be pointed out below, where the records of respiratory complaints in 1000 inoculated men are detailed.

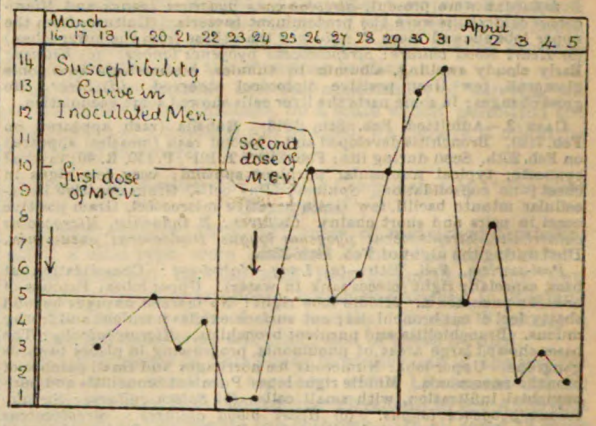
Statistical Record of Results of Vaccination.

Having thus obtained data that showed that the extensive use of catarrhal vaccine would not incapacitate troops in training to any appreciable extent, the next step was to endeavour to obtain some kind of statistical records as to whether these inoculated men had gained any appreciable immunity to respiratory catarrhal complaints, which are the special bugbear of Colonial troops in England. For this purpose a nominal roll was made of the first 1000 men inoculated, and week by week all entries referring to any respiratory complaints reported have been collected.

Further, it was intended to compare these with exactly similar reports received from another selected 1000 men of a reinforcement which arrived in England about six weeks earlier and none of whom had been inoculated with this, or as far as we know, any other catarrhal vaccine. This, however, proved impracticable, and therefore an average of all respiratory complaints occurring per 1000 among the uninoculated N.Z. Troops in the United Kingdom has been arranged as a comparison. The figures thus obtained have been collected independently by the Officer in Charge of Medical Statistics N.Z.E.F., and cover a period from March 15th, 1918, to August 18th, 1918, the prophylactic inoculations being given on or about the 16th and 26th of March respectively.

The experimental work upon which prophylactic, and still more therapeutic, vaccination was originally based showed clearly that, quite apart from the immediate local and general reactions, there supervened a period of lowered resistance or increased susceptibility towards infection by micro-organisms of the same species as those constituting the antigen, and that this so-called "negative phase" varied in extent from a few hours to two or three weeks, in accordance with the size of the dose of antigen, the general physical condition of the inoculated subject, and other factors. We were, of course, fully alive to this aspect of our experiment, and anticipated that during the seven days following the first inoculation and the ten days following the second, there would be an increase in the number of catarrhal affections reported from the troops comprising our nominal roll, and in order that none might be missed arrangements were made for all these cases to be admitted to hospital for observations.

The accuracy of our surmise was proved by subsequent events, as will be seen from the accompanying curve,



showing the relevant admissions from day to day for a period of three weeks from the date of the initial inoculation. Thus 15 admissions were reported between the administration of the first and second doses of M.C.V., and during the ten days following the injection of the second—much larger—dose of vaccine no less than 82 cases were admitted. Of course, most of these were quite trivial, and in the ordinary course of events, and amongst uninoculated men, would never have been admitted, but, nevertheless, even when heavily discounted, these figures emphasise the reality of the "negative phase," and prompt the suggestion that the initial dose might, with advantage, have been somewhat larger, or preferably that the interval between the two inoculations should have been a few days longer.

The subsequent behaviour of our nominal roll towards infections of the respiratory tract is shown in the accompanying table, where the relevant admissions are paralleled with the corresponding admissions per "average 1000" uninoculated N.Z.E.F. in the United Kingdom, to the marked advantage of the former.

Records of Admissions to Hospital with Respiratory Complaints

(A) Of Nominal Roll of 1000 Inoculated N.Z. Men. (B) Of per average 1000 Uninoculated N.Z. Men in United Kingdom.

Week ending—	(A)	(B)	Week ending—	(A)	(B)
April 12th	2	4·3	June 28th... ...	1	14·2
,, 19th	1	3·2	July 7th... ...	0	5·0
,, 26th	0	4·0	,, 14th... ...	0	3·1
May 3rd	2	4·3	,, 21st... ...	0	1·2
,, 10th	1	3·2	,, 28th... ...	0	1·0
,, 17th	2	4·3	August 4th... ...	0	2·0
,, 24th	2	3·3	,, 11th... ...	0	1·4
,, 31st	0	3·3	,, 18th... ...	0	1·1
June 7th	0	4·0			
,, 14th	1	3·2			
,, 21st	0	7·0	Total	12	73·1

The few serological tests we were able to carry out, and to which reference is made below, indicated that an immuno-

logical response had been made by some of the inoculated individuals to the prophylactic vaccinations, but in June Nature stepped in and provided clinical proof of the protection conferred, for in this month a widespread pandemic of "influenza" commenced. The bacteriology of this epidemic has been variously reported upon by different observers, of varying experience, from different areas, with the result that *B. influenzæ*, pneumococci, *Micrococcus catarrhalis*, and other allied organisms have all been implicated. Our own opinion, based upon the examination of material derived from cases occurring in widely separated parts of the United Kingdom, is that *B. influenzæ* was the prime factor in this epidemic, but was associated, particularly in the severe cases, with various other catarrhal organisms (all represented in the strains from which our M.C. vaccine was compounded), and an examination of the figures from our nominal roll shows that the incidence of the "influenza" epidemic was appreciably less amongst the inoculated men than that affecting the "average 1000" of the uninoculated New Zealanders (2 per 1000, as against 28·4 per average 1000), a result which amply justifies the prophylactic use of M.C.V.

Serological Tests.

When the initial inoculations were being undertaken, it was decided to collect samples of blood from a small group of men both before and several weeks after inoculation, with the object of demonstrating by laboratory methods the presence or absence of immune bodies or their subsequent increase in the blood sera.

For this purpose the S.M.O.'s at three different camps in which inoculations were being arranged selected men who on account of their duties were likely to be still available four or five weeks later. In this way 30 samples of blood were obtained and five weeks later a second sample was obtained from 20 of these—the other 10 were not available, having been despatched to other depôts or to France.

Agglutination reactions were carried out microscopically with emulsions prepared from 24 hours' subcultures of each of the seven component organisms of the catarrhal vaccine employed, the dilution of sera used in each case being 1 in 20 and 1 in 200. Throughout the whole series of experiments the greatest care was exercised to maintain uniformity of technique, and all doubtful reactions were repeated and discarded if still doubtful. Controls of sterile saline and rabbits' serum were used with each batch of reactions.

The data given below also included the agglutination reactions obtained as a comparison by using the sera (individually) of 10 English soldiers who had not received any catarrhal vaccine and had not suffered more than ordinarily from catarrhal complaints. This group was included to ascertain whether the average English born and bred soldier has a better natural immunity to the prevalent organisms of catarrh than the average Colonial soldier. The results obtained are as follows:—

Serum of 20 N.Z. Soldiers showing Agglutinins Present. (A) Before Inoculation. (B) After Inoculation.
(C) Serum of 10 English Soldiers showing Agglutinins Present.

Organism.	(A)	(B)	(C)	Organism.	(A)	(B)	(C)
	%	%	%		%	%	%
Pneumococcus	20	85	30	*Micrococcus catarrhalis* ...	40	85	40
Streptococcus longus ...	10	75	30				
B. influenzæ	20	95	50	*B. pneumoniæ* ...	0	40	60
Staph. aureus	90	100	90	*B. septus*...	15	80	40

These percentages are drawn from far too small a number of cases to allow of much weight being accredited to them, but from what there is it appears (1) that the average colonial, just arrived in England, has only about 50 per cent. of the natural immunity to the organisms of catarrh prevalent in England that the average English soldier enjoys; (2) that as the result of catarrhal vaccination his immunity can be considerably increased; and (3) that, at any rate for a time, his specific agglutinins to catarrhal organisms exceed in amount those of the average Englishman.

THE Madras Government have decided that lady assistant surgeons shall be employed and granted the same rates of pay and allowances as those drawn by the members of corresponding classes in the male medical service.

THE DIAGNOSIS OF EARLY PHTHISIS.

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THIS paper is written from the point of view of a general practitioner. Text-books help very little when the general practitioner is called on to diagnose phthisis without the aid of physical signs. He has only one guide, and that is the effect of the poison of tubercle on the patient.

Having seen the characteristic attacks that occur amongst sanatorium patients during the quiescent stages of their disease, induced by some indiscretion, usually over-exertion, I began to think that if it were possible to recognise this toxæmia it would be possible to diagnose phthisis without physical signs. The indiscreet patient some 24 hours after his indiscretion loses his appetite, feels seedy all over, coughs a little more, and has more or less rise of temperature, and usually tells you he has had an attack of influenza. Now as the attacks occur in patients who are not suffering from secondary infections it seems reasonable to suppose that the poison is tubercle pure and simple.

I would like it to be quite clearly understood that the cases of hæmoptysis, and pleurisy with effusion, both of which are frequently the first indication of the presence of tubercle, are not referred to. These symptoms should be a sufficient guide as to the course to adopt.

The Symptoms of Pulmonary Tuberculosis.

With these reservations and explanations borne in mind the symptoms of pulmonary tuberculosis may be grouped as follows: (1) Cough and expectoration; (2) loss of weight; (3) loss of appetite; (4) rise of temperature. It can safely be taken for granted that no phthisis can exist without these symptoms in the ordinary way. The number of cases in which one or more of the symptoms is absent is very small. Each symptom is open to wide variations in severity.

In any case the picture presented by tuberculous toxæmia is sufficiently regular to enable a diagnosis to be made with a fair degree of accuracy. General seediness and loss of energy are frequent complaints and may accompany the above symptoms, or recurrent influenza is complained of, but these four symptoms are inseparable.

The cough.—This symptom is the only guide to the situation of the focus and varies very greatly in intensity. One case will cough to vomiting, another will not be aware of the cough and inquiries must be made from friends in order to obtain the information. A common history is that of a small bout of coughing on rising in the morning and the expectoration of a small quantity of mucus; in fact, a regular "morning clear-up." The amount of expectoration may be almost negligible and the cough would appear to be more the result of a reflex irritation than from a local cause, such as excessive secretion. Here let me say that the great majority of the cases I have seen originally diagnosed as bronchitis have been cases of tuberculosis with an unusually large amount of bronchial catarrh. My experience lies mainly in Australasia; I have very considerable doubts as to the existence of bronchitis except in the very old and young, where there is no evidence of irritation due to occupation or asthma with an unusual quantity of secretion. What occurs in Europe I do not know, but in this country bronchitis without any broncho-pneumonia is, I believe, unknown.

Loss of weight goes hand-in-hand with *loss of appetite*. There is little evidence that it is due to the wasting produced by some toxæmias, and would appear to be due to the lessened intake of food, plus defective absorption due to the digestion being out of order. The number of patients who seek advice on account of indigestion caused by tubercle is considerable, the indigestion being so great as to mask all the other symptoms. Thus it is a safe rule to follow that patients whose habits of eating, drinking, smoking, and tea-drinking are good, whose teeth are adequate, whose gums are clean and free from suppuration and stumps, and who are not constipated, should always be suspected of phthisis if they are dyspeptic or loth to eat and are losing weight. Short of actual dyspepsia, patients will tell you that, though hungry, on going to table very little satisfies them, and they can eat no more. A patient who "runs down" easily, loses weight quickly and picks up equally quickly on having a holiday, is probably tuberculous. The history of patients whose summer holiday has staved off the onset of phthisis for years is common and characteristic.

The Temperature.

This is the most characteristic feature of the disease. Speaking broadly, there can be no active phthisis without temperature. The characteristic chart is a subnormal temperature in the morning and a slight rise some time between 2 and 6 P.M., the daily variation being from 97° to 99·2° F. or more.

The question arises, What must be considered a rise above normal? Without going into details, it may be taken that a temperature of 99·2° as usually taken in the mouth is pathological. The rise may not occur every day; during the attack of "influenza" it will surely be present, and an attack may be induced by extra exertion and a clear history be given of feverish attacks following some unusual amount of exercise.

I would say here and now, without any reservation whatever, that it is impossible to make a diagnosis of phthisis without the aid of physical signs unless it is possible to have a record of the temperature, preferably every two hours. Demonstration of bacilli in the sputum is the only other unfailing guide. Cases do occur in which phthisis is present without temperature, but these are cases of comparatively long standing and which are in the quiescent stage, such as is induced by sanatorium treatment in quite a number of cases. Sooner or later a relapse occurs and the temperature rises, and there is generally a good deal of cough and expectoration. Such cases, however, are rare, as this is not the time at which the patient seeks advice.

The mouth temperature does not always reveal the truth, so when a case is in doubt a rectal temperature must be taken. There is a general idea abroad that the rectal temperature should be above normal: this is a mistake. The failure of the thermometer to rise in the mouth is due to faulty technique, nothing else. Influences that raise or lower the temperature of the mouth take a very long time, in minutes 30, or more, to pass off.

I would say that the chief bar to early diagnosis of phthisis is the difficulty of obtaining a reliable temperature chart.

Sources of Fallacy in Diagnosis.

There are a few conditions which may simulate tuberculosis, but associated with troubles that are fairly obvious if care is exercised in taking the history: The pre-menstrual rise of temperature in some women; cases of dilated stomach; some cases of anæmia, or latent pyosalpinx. All may show slight rises of temperature during the day. No doubt other causes can be found, but they are not common, and the cause is fairly obvious with careful examination.

It must be borne in mind that phthisis is a disease which remits. Few cases commence and progress without remission to a fatal termination, and a history which points to attacks of tuberculous toxæmia extending over a series of years is quite common. Also, these patients respond most wonderfully to a little help for the time being. I have found that a short stay in hospital with a view to the accurate observation of temperature is quite worth while.

I would like also to point out that tuberculosis officers, though probably much better able to interpret physical signs owing to the constant practice they have, are no more in a position to make a diagnosis where no signs exist than anyone else, unless they are able to secure a record of the temperature. In short, I believe that the solution of the trouble of diagnosis rests in the provision of means whereby the temperature can be recorded, till some reliable and easily applied test for active tuberculosis is discovered.

There is, however, no royal road to the diagnosis of phthisis except by this means, and all the complaints about the inability of the practitioner to make the diagnosis are due to the lack of appreciation that phthisis is a disease of symptoms as well as of signs. If he is provided with the necessary temperature chart the rest is quite simple, as an early phthisis chart is about as characteristic as any chart made.

Conclusion.

Lest anyone should be in doubt as to what I wish to point out, I would like to say that in my experience the case that has definite physical signs is quite an advanced case in most instances, and therefore if we desire to do the best for our patient we must discover his disease before physical signs are present. Given adequate facilities it can be done.

I see by the latest literature arrived since this paper was written that a suitable antigen for a complement deviation test of tuberculosis has been discovered. I hope it will prove reliable on extended trial.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

AN OPERATION FOR THE CURE OF PTERYGIUM.

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THERE being a great tendency for pterygium to return after it has been removed from the cornea, various plans have been devised to prevent this; but while the more simple frequently fail to secure against return the more successful demand considerable incising of the neighbouring conjunctiva and displacement. Considering the advance over the cornea to be due to some *vis a tergo*, I conceived the idea of removing the direction of the growth into a direction which would be harmless if it persisted by inverting the head or part growing over the cornea, under the body, or thickened conjunctiva, and as this is done with the greatest simplicity and in the few cases I have done it has proved entirely satisfactory I consider it merits a trial by those who are frequently called on to treat this disease.

A short snip with scissors is made into the neck or junction of the head and body, just outside the cornea both above and below and the body undermined, keeping close to the sclera, for a distance of several millimetres, which varies with the length of the head we are to invert; the scissors blades closed are then passed under the neck and by a rapid upward jerk made to strip the head from the cornea. The tip of the head is then gripped by strabismus forceps; each end of a thread of No. 2 silk 8 in. long is carried through a needle, and the needles are inserted from without inwards through the head just behind the forceps, one near its upper and the other near its lower border; the needles are then by a director pushed under the body, carried horizontally under it, and made to pierce it from within outwards about 10 mm. from the cornea. The needles being removed the ends of the thread are crossed in a half knot and pulled upon till the head is inverted and the neck about 1 mm. free of the cornea when the knot is completed. If the head is a long one the needles are passed through it about 2 mm. from the neck and then the head within this snipped off vertically by the scissors.

The suture is pulled out after ten days. The narrow bare area of sclerotic outside the cornea soon becomes covered over with epithelium, and no obvious pocket or fold of the conjunctiva is to be seen after a few weeks.

A CASE OF STAPHYLOCOCCUS PHLEBITIS.

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HOUSE PHYSICIAN, ADDENBROOKE'S HOSPITAL, CAMBRIDGE; LATE HOUSE PHYSICIAN, UNIVERSITY COLLEGE HOSPITAL, LONDON.

I HAVE not been able to find any account of phlebitis or thrombosis due to the *Staphylococcus aureus*. The history of the case is as follows:—

Patient, aged 58, farm labourer, was admitted on Dec. 23rd, 1917. A week before his left leg began to swell; also history of pain in leg chiefly in front of left thigh and behind left knee, and especially in region of left saphenous opening. No history of rheumatism, gout, or typhoid fever, nor of any local septic condition. On admission the superficial veins of left leg and thigh were more marked than those of right limb; there was soft swelling of whole of left leg and thigh (lymphatics did not seem affected), pain on pressure over left popliteal space and along course of left femoral vein. No thrombosis of superficial veins; no evidence of any endocarditis.

On Jan. 2nd, 1918, he complained of pain in calf of right leg, which was swollen; on careful examination a superficial vein was found to be inflamed and tender. On Jan. 4th whole right leg and thigh were œdematous; right internal saphenous vein and several smaller superficial veins of leg were thrombosed. On this day a bought vaccine of *B. coli* was given, and three (increasing) doses of this vaccine were given at intervals of ten days without any good result.

Patient was admitted with T. 102° F., and he ran septic temperatures until last week in February, when evening rise above normal ceased.

On Jan. 14th there was some suggestion of thrombosis affecting probably the mesenteric veins; abdomen distended, stools offensive and contained blood to the naked eye. This condition passed off after a week; an agglutination test was done; no agglutination to typhoid or to paratyphoid B.

On Jan. 25th T. still very septic; evening rise to 102°, morning T. 100°. Blood culture; *Staphylococcus aureus* grown, and suspected to be accidental, but a second culture showed same result. From this a vaccine was prepared and was given on Feb. 14th when the T. came down to normal for first time. There had been a very definite reaction to the dose of coli vaccine given on evening of Jan. 8th; the T., which had been coming down, rose on Jan. 9th to 103·4°. After that of Feb. 14th (*Staphylococcus aureus*) there were some occasional rises of T., but these gradually subsided, and on and after Feb. 23rd it remained quite normal. The doses of vaccine were gradually increased; definite reactions after third and fourth injections. Blood culture on Feb. 11th showed no growth.

A further complication of interest is that on Feb. 27th a small carbuncle developed on sacrum; this was opened and scraped and gave no trouble. In the pus *Staphylococcus aureus* was present.

Patient gradually improved and was allowed up on March 7th. Still slight œdema of leg. He went home on March 27th wearing elastic stockings.

The temperature strongly suggested a septicæmic condition, and the discovery of a staphylococcus on blood culture made us hope that we had discovered the cause, although we realised how easily the culture may have been contaminated. The result of vaccine treatment was very heartening and proved that the organism was the staphylococcus. I am indebted to Sir Clifford Allbutt for permission to record these notes.

Reviews and Notices of Books.

The Action of Muscles. By W. COLIN MACKENZIE, M.D., F.R.C.S., F.R.S.Edin., Member of the Council of the Anatomical Society of Great Britain and Ireland; formerly Lecturer on Applied Anatomy to the University of Melbourne. Illustrated. London: H. K. Lewis and Co., Ltd. 1918. Pp. xvi.–267. Price 12*s.* 6*d.* net.

Gymnastic Treatment for Joint and Muscle Disabilities. By H. E. DEANE, Brevet-Colonel, R.A.M.C., in charge of War Hospital, Croydon. Illustrated. London: Oxford Press Warehouse. 1918. Pp. 146.

Dr. Colin Mackenzie's original work is a milestone of advance in our knowledge of the function of muscle. While much of it is revolutionary, the author makes out a fair case for his conclusions, which may be briefly summarised by reference to a few concrete examples. There is a physiological law that if a muscle contracts, the antagonist must relax, and we know that supination of the forearm and forcible extension of the elbow are not incompatible. If, then, the biceps were a flexor of the elbow, it would be called upon to relax during the action of the extensor, and, at the same time, contract as a supinator. The conclusion is therefore drawn that the biceps is a pure supinator, does not act as a flexor, and its antagonists are the pronatores teres and quadratus. The antagonist to the triceps is the only true flexor of the elbow—viz., the brachialis anticus. So, too, the old-time controversy as to the rotatory action of the ilio-psoas is done away. It is accredited with the power of flexing the hip only, while the gluteus maximus becomes a pure extensor of this joint. Turning to the fingers, we find that the extensor communis is shown to extend only the metacarpo-phalangeal joints, the lumbricals serving as antagonists; while the proximal interphalangeal joints are flexed by the sublimis, the distal by the profundus, the interossei being given as antagonists to both. The brachio-radialis is shown to be a pure supinator. Evidence in favour of the author's argument is forthcoming as the result of ingenious research in comparative anatomy, and is presented in convincing manner. We anticipate that the bulk of these conclusions, doubtless in somewhat modified form, may later become commonplace knowledge. The author indicates their practical application in muscle rest and re-education, and this will form an attractive study for those engaged in physical therapeutics, and serve to promote independent thought and research rather than the present uncritical absorption of preconceived doctrines. But we find the author a little sanguine in expecting that many of his patients will be ready to carry out the treatment he advocates for 20 minutes four to six times a day. On the one hand, the simplicity of the author's method is a great attraction; we fear, on the other hand, that monotony may be found a serious drawback. But no one who practises physical treatment can afford to ignore his ideas or to dismiss the conclusions untested or the treatment untried.

Colonel H. E. Deane's book should be read and studied as a sequel to Dr. Mackenzie's, although in many respects it is its exact antithesis. Dr. Mackenzie approaches his subject from the standpoint of the comparative anatomist and reaches his conclusions by pure scientific reasoning. His theme is the re-education of muscle. Colonel Deane deals exclusively with the restoration of function. He leaves argument aside, and in one place at least throws science to the winds when he says that the intricacies of muscular association "defy anatomical differentiation." The author expounds two main elementary facts and shows us their application. The first point, so admirably emphasised again and again, is that recovery of function entails voluntary effort; and the second, that it is futile to regard a limb as an entity, but that rather we must consider the whole body when attempting to restore a limb to usefulness. Thus he points out the great value of the leg exercise involved in climbing a rope while training a patient with an arm injury to grip, and of work on the parallel bars should the leg have been injured. The key-note is associated movement, and the plea made is for exercise of every sound muscle in the body, be it strong or feeble. But above all is emphasis laid on what we can only describe as the re-education of volition. Colonel Deane has much to say on the use of mechanical appliances in restoring of function, and he makes out a strong case against it. On the other hand, he acknowledges that in using gymnastics as a remedial agent "a good deal depends on the ingenuity and personal qualities of the instructor." Only those who have had the privilege of seeing Colonel Deane's work at Croydon can realise the great weight these two factors can carry. There will be few, indeed, who can copy, but all who are responsible for the care of the injured should attempt to emulate. The simplicity of the apparatus used by Colonel Deane is a great attraction. The barest gymnasium would be for him fully equipped. The text is well and clearly written and furnishes all that is required as a guide; detail of application can only be attained by experience. The book is well produced and the numerous illustrative cases should prove of great service.

The methods advocated in these two books taken together should provide for the injured of the future a hope of more rapid and more perfect restoration than has been the lot of those who have suffered in the past.

Diseases of the Male Urethra, including Impotence and Sterility. By IRVINE S. KOLL, B.S., M.D., F.A.C.S., Professor of Genito-Urinary Diseases, Post-Graduate Medical School and Hospital, Chicago. London and Philadelphia: W. B. Saunders Co. 1918. Pp. 151. 14*s.*

THIS book comprises a number of sections, including the anatomy of the urethra; the diagnosis and treatment of gonorrhœa and its complications; stricture of the urethra; non-gonorrhœal urethritis; tumours of the urethra; impotence and sterility. The book is conspicuous for its conciseness and the absence of excessive detail in the treatment of the conditions dealt with. It is a little surprising in a work professing to deal fully with the subject of gonorrhœa to find the use of irrigating methods not more fully discussed, but the author has confined himself principally to the methods used in his own clinic. The illustrations are excellent, including many original drawings and coloured urethroscopic pictures. The articles on sterility and impotence are quite short and very useful. The book should prove useful to the practitioner.

Aspects of Death and Correlated Aspects of Life in Art, Epigram, and Poetry. By FREDERICK PARKES WEBER, M.A., M.D.Camb., F.R.C.P. Lond. Third edition, revised and much enlarged. London: T. Fisher Unwin, Ltd., and Bernard Quaritch, Ltd. 1918. Pp. 784. Price 30*s.*

WE reviewed the first and second editions of this informing work, then going under a slightly different title, in THE LANCET of Dec. 17th, 1910, and August 22nd, 1914, respectively, so that we have but little to add as concerns this, the third edition, except that it is nearly five times the size of the first. The increase is due both to large additions to the text and to many more illustrations. The second edition ran to 461 pages. The subject, of course, is almost inexhaustible, and Dr. Weber's book might easily be expanded into a volume the size of the Post Office Directory. In his account of monuments of the "gisant" type—i.e., those in two compartments, showing the deceased both as he appeared in life and as a skeleton or a mouldering corpse—we think that Dr. Weber might have referred to those monuments of which a few examples exist in England—namely, where the dead are represented clothed in a shroud. We can call to mind five such—one in the south choir aisle of St. Paul's Cathedral in memory of Dr. Donne, also interesting as being the only monument which escaped the Great Fire, and the other four in Maidstone Parish Church to the memory of two John Astleys, father and son, and their wives. All four figures are represented as standing in their shrouds. Of punning monuments, to which Dr. Weber refers on p. 7, there is an interesting example in a City church,

either that of St. Katherine Cree or St. Giles', Cripplegate, to a person by name Cage. The monument mainly consists of a heavily barred iron grating, through the bars of which are looking out a number of skulls. Finally, there is one mortuary inscription which Dr. Weber should certainly add to those quoted by him; it is in the cloisters of Winchester College, and runs as follows: "Sub hoc marmore sepultae sunt reliquiae Thomae Welstead, quem calculi impetu atra mors abstulit Non. Mart. 1676. Primus erat in schola, nec, ut speramus, ultimus in caelo, quod pro Oxonio adiit." There is something unconsciously humorous in recording the fact that the boy arrived in Heaven instead of Oxford. After the war we hope that Dr. Weber will issue a fourth edition which shall include, so far as can be done in one volume, the literary aspects of Death.

MONOGRAPHS ON INDUSTRIAL CHEMISTRY.

Organic Compounds of Arsenic and Antimony. By GILBERT T. MORGAN, D.Sc., F.R.S., F.I.C., A.R.C.Sc. Pp. 376. Price 16*s.*

Colour in Relation to Chemical Constitution. By E. R. WATSON, M.A.Cantab., D.Sc. Lond. Pp. 197. 12*s.* 6*d.*

Coal and Its Scientific Uses. By WILLIAM A. BONE, D.Sc., Ph.D., F.R.S. Pp 491. Price 21*s.*

The Applications of Electrolysis in Chemical Industry. By ARTHUR J. HALE, B.Sc., F.I.C. Pp. 148. Price 7*s.* 6*d.* London: Longmans, Green, and Co. 1918.

Dr. Morgan has done medical science good service by writing this interesting survey of the organic compounds of arsenic and antimony which have found such wide application in treatment during recent years. It is medicine, in fact, which has given a stimulus to this branch of research, with the result that many organic compounds of arsenic and antimony of interesting theoretical structure have been prepared. The starting-point was cacodyl, or Cadet's arsenical liquid, produced for the first time, as Dr. Morgan tells us, by Louis Claude Cadet de Gassicourt, as far back as 1760. Great chemists, like Bunsen, Berzelius, and Frankland, saw the significance of the discovery, inasmuch as it meant that an analogue of the alkali oxides had been formed in which the elementary alkali radical is replaced by a compound organic radical. Later followed the elaboration of the organic arsenical medicaments now familiar to us by such names as atoxyl, salvarsan, neosalvarsan, galyl, and others. It was not surprising to find that similar antimony compounds could be prepared, since antimony and arsenic are chemical twins, and so the aromatic stibines were brought into being, and further researches are producing other metallic organic combinations, as, for example, mercurial compounds. Dr. Morgan has written a very interesting monograph, which, besides indicating what British chemical industries can do, should advance our knowledge of the pharmacology of the substances described, and should help us to fathom the relationship of chemical constitution to physiological action.

Dr. Watson's book has also an interest for medicine, since the dyestuffs have a well-known application in medical research and in some cases are employed in therapeutics. The relation between colour and constitution is a fascinating line of practical study, but, as Dr. Watson points out, the quest for the ultimate cause of colour has revealed the great complexity of the problem and has shown the need for further work in this direction. It is obvious that as this relationship is revealed the chemist should be in a position to produce any colour or shade at will. The book is valuable as a record of the facts and developments of research so far as they have gone in an important field of investigation.

It need hardly be said that the publication of Professor Bone's book on "Coal and Its Scientific Uses" is opportune at the present time when we are all forced to consider very seriously the problem of fuel economy in the coming winter. The potential energy of coal has been scandalously wasted in the past through the lack of applied scientific method in employing it for fuel purposes. The directions in which reforms are needed are clearly and most interestingly pointed out by Professor Bone, and the economic lines suggested, by utilising to the full the calorific value of coal, would, when established, mean an asset of inestimable value to the nation. We have read with particular interest the chapters on domestic heating and the smoke nuisance and its abatement, since we have published many practical contributions in connexion with these problems. The book is a valuable addition from the national point of view to the interesting series of monographs, which are ably edited by Sir Edward Thorpe.

Amongst industries to which the war has given a great stimulus come those in which electrolysis has been employed instead of purely chemical methods for the production of certain chemicals. Mr. Hale's book outlines very clearly the electrolytic applications in chemical manufacture which so far have been successfully and economically developed. A very good example, and of interest to medicine, may be quoted of the advantages of the electrolytic method in the production of iodoform. The old method of producing this antiseptic was by the action of iodine upon alcohol in the presence of sodium carbonate, but only 30 per cent. of the iodine by this process goes to form iodoform. By electrolysing alkali iodide, however, in the presence of alcohol the whole of the iodine used goes to form iodoform. Saccharin is produced also electrolytically, but the book is devoted mainly to accounts of the electrolytic production of the great industrial chemicals, chlorine, bleaching powder, caustic soda, white lead, potassium permanganate, and others. There is also an interesting chapter on the electrolytic winning of metals, such as copper, zinc, lead, nickel, and sodium. It is interesting to observe that as far back as 1807 metals were produced by electrolytic methods by Humphry Davy; it has taken us the best part of a century to put this great scientific discovery into practical application. Mr. Hale's work is illuminating on a subject of real importance in industrial affairs.

Treatise on Cystoscopy and Urethroscopy. By Dr. GEORGES LUYS. Translated and edited with additions by ABR. L. WOLBARST. London: Henry Kimpton and Co. 1918. Pp. 386.

As the authors in their preface state, the object of the book is to bring before the profession the results of their efforts as the product of 15 years' practical endoscopy. The book not only deals with the ordinary urethroscopic and cystoscopic methods, which are dealt with in great detail, but also goes into the various applications of these methods and the various uses to which the modern forms of apparatus can be put—e.g., ureteric catheterisation, direct vision cystoscopy, endo-urethral treatment of prostatic hypertrophy, the endo-vesical treatment of bladder tumours, and so forth. Each of these subjects is dealt with in a self-contained chapter, illustrated profusely with pictures and records of cases demonstrating the practical value of the methods and difficulties likely to be met with in carrying them out. In addition there are a large number of coloured drawings representing the appearances of normal and abnormal conditions of the urethra and bladder as seen through the urethroscope and endoscope respectively; these give a rather exaggerated view of the usual appearances seen, still they serve a useful purpose in pointing out the details which it is essential for the endoscopist to recognise. The book is certainly the best that we have seen dealing with this very important subject, both as regards the technique and the difficulties which are likely to be met with. It may be recommended both to the beginner and the expert cystoscopist as a useful addition to his library. It also serves another purpose in stimulating the use of the direct vision endoscope, which should have a more prominent place in the armamentarium of surgeons in this country than it has at the present time.

A Diabetic Manual for the Mutual Use of Doctor and Patient. By ELLIOTT P. JOSLIN, M.D. Philadelphia and New York: Lea and Febiger. 1918. Pp. 187. Price $1.75.

WE have recently reviewed at length (THE LANCET, 1917, ii., 936) Dr. Joslin's comprehensive work on the "Treatment of Diabetes Mellitus." The manual before us aims at securing the intelligent coöperation of the patients, and thus enabling the general practitioner to raise the standard of his treatment to the level of recent discoveries in laboratory and clinic. The manual is arranged in four parts. Part I. the author calls a diabetic primer, giving in untechnical language a rapid survey of the whole subject. Part II. covers the same field in greater detail and outlines the treatment of the severer diabetic. Part III. consists of diet tables and recipes. Part IV. gives simple tests for estimation of sugar and acid bodies. The whole is well arranged and illustrated, and will, we think, well serve the author's aim.

THE LANCET.

LONDON: SATURDAY, OCTOBER 12, 1918.

The Coming Ministry of Health.

AT the meeting of the medical profession held on Oct. 1st in Steinway Hall, having for its object the securing of more adequate representation of the medical profession in Parliament, Dr. CHRISTOPHER ADDISON, the Minister of Reconstruction, alluded to the Bill for the erection of a Ministry of Health in terms suggesting that there was now no doubt that such a measure would be considered at an early date. Dr. ADDISON could not pledge the Government to any particular date; nor, we think, would it be possible for the Government to arrange any programme of domestic legislation whatever to which strict adherence could be expected, having regard to the military and political position of the country, and indeed of the world. The plight and attitude of the Central Empires and our engagements to our Allies in Europe and to the United States of America alike preclude any possible statement that such and such a thing will be certainly done in Parliament by a certain date; there is, however, no reasonable doubt that a Bill will be promoted at the earliest opportunity. The medical profession is consequently feeling its want of representation in the House of Commons, for, in the absence of any public statement as to the provisions of the Bill, there are no channels of discreet information such as most certainly lawyers would be able to employ if a measure were in question of first-class importance, dependent for its working upon the legal profession. It is quite reasonable where a new Bill is concerned that, its general scope and purport having been made clear, no details should emerge until the Bill is read in the House of Commons. But, as a rule, legislation bearing intimately upon the life-work of one section of the community, however entirely public and national its broad bearings are, has been promoted by leaders of that section, or in response to combined work and opinion of that section, and in this way the class most closely interested is aware of what is in store for them. The Ministry of Health Bill has no lineage deriving directly from the medical profession, it is intended to be, more or less in Dr. ADDISON'S words, an "assortment of different departmental responsibilities in health matters," and this assortment has been made in general recognition of the fact that "the most urgent national needs should be made the duty and responsibility of a definite body of men."

We need not here recapitulate the circumstances which have called for such assortment. We all know that six (or more) State Departments at the present moment discharge duties in connexion with the people's health, and we know, also, the particular medical work for which the various departments stand guardian. Those familiar with the medical aspects of legislation in the making will also understand how it has come about that so many different State departments find themselves in possession of a medical bureau and in charge of medical responsibilities. The story here is exactly illustrative of British methods of progress, where the results, though in certain directions they may in their latest developments be found comic, are none the less expressions of very genuine progress. The Poor-law Commissioners of 1834 perceived that ill-health was a principal source of pauperism, and that the removal of the causes of ill-health ought to be a more economical proceeding than the treatment of its consequences; and early public health legislation contained the germ of a national health department. The nation at the time did not appreciate the meaning of the work which was beginning. But medicine, leaping forward from theory to accurate knowledge, became first an official aid and then an inspiriting counsel to further effort; and soon sections of the community became alive to the fact that in various directions they could be relieved of masses of evil, to whose pressure they had hitherto resigned themselves. The public learned that through preventive medicine and sanitation barriers to their health and happiness could be removed which were standing with no better apology than could be found in their antiquity. And as this or that class in the community was aroused it made its claim for relief heard and obtained such remedy as it could get. Schemes of reform initiated in this manner to meet various emergencies were entrusted for their carrying out to various departments of Government and various local authorities. Promptitude was obtained at the time, but there has followed overlapping of jurisdictions, with waste of energy and money, while the resulting confusion has been worse confounded by the creation of new Government Departments and the rearrangement of local administrative machinery. The outcome has been to make the care of the health of the people, as conducted in this country, a medley in which great ideas and brilliant accomplishments are blended with the extravagance and dissipation of strength associated with the want of a central plan. All this has been for many years perfectly obvious to the medical profession, as well as to men and women whose public life has brought them into contact with the truths of our social existence. With them the feeling has been implicit that the health of the people, being a national asset, should have the national supervision of a Government Department. And now the whole nation agrees.

It is to tidy up the muddle that the Bill in the first instance will be promoted by Government, but all medical men look forward to something a great deal more, and a great deal more is expected by the country. For this reason medical men will regard the method in which the new Ministry is kept in touch with modern medicine with interest and even jealousy. The actual administrators of a Ministry of Health must be medical men; the prime authority must have the best services of medicine at call, a desideratum

which is provided for in the workmanlike Scheme for a Ministry of Health put forward by the British Medical Association. We do not think that anyone would suggest otherwise, and if the Ministry is put into possession of a strong Consultative Medical Council from the beginning, chosen on proper lines so that the right men get on this statutory committee for the right reasons, the task of assortment of duties will proceed with much greater ease. For undoubtedly there are difficulties ahead. It is quite easy to laugh at the fact that, for example, the Privy Council is the supreme midwifery authority of the country, and yet it finds itself in that position for perfectly logical reasons; and a representative body of medical men, knowing how the anomaly arose, will know how to end it. There will be difficulty in adjusting the claims of the new Ministry of Health in respect of, for example, the physical welfare of children where the Board of Education is deeply interested, and the sanitary conditions of factories where the Home Office is at present a very judicious authority. The affiliation of medical research to medical practice will be a fundamental necessity in the new legislation. The National Health Insurance Commission at the present moment conducts an admirable Research Bureau on funds raised by itself. The claims of the nation and the rights of the National Insurance Commission can only be adjusted satisfactorily by a thoroughly competent Consultative Medical Council, and the constitution of this body will be the most important part of the forthcoming measure, which does not propose to institute a State medical service.

The Early Diagnosis of Pulmonary Tuberculosis.

EARLY diagnosis is the essential factor in the treatment of pulmonary tuberculosis, but there is still a tendency to attach too great weight to the physical signs alone. We may recall two of the aphorisms of the late Dr. SAMUEL GEE: "Therapeutics must begin before physical signs have developed; for if you wait for physical signs you wait too long"; and "In any case of phthisis the disease is more extensive than the physical signs would seem to indicate."[1] Conversely, extensive physical signs may be left after arrest of the disease, and may be consistent with health and freedom from all activity of the old pulmonary lesions. It is necessary in every case, before making a diagnosis or advising treatment, to review the history, the symptoms, the physical signs, the general condition of the patient, and sometimes his reaction to varying conditions, especially where there is no sputum for examination. We publish in our present issue an admirably suggestive article on this question by Mr. ALFRED FOSTER, of Christchurch, New Zealand, emphasising the importance of these considerations for the general practitioner, to whom, in a large proportion of cases, the opportunity for the early diagnosis of pulmonary tuberculosis is afforded. If the doctor suspects the onset of phthisis before the actual development of unequivocal physical signs, and takes steps to establish the diagnosis by a careful review of all the information available, the patient may be enabled to secure treatment under the most favourable conditions. Mr. FOSTER was impressed by the attacks which occur in sanatorium patients, usually induced by some indiscretion, such as over-exertion. These he describes as associated with loss of appetite, feeling seedy all over, increased cough, and with more or less rise of temperature. Such attacks are sometimes referred to as due to auto-inoculation, and are doubtless the result of the action of the products of the tubercle bacillus. Mr. FOSTER classifies these symptoms as follows: (1) cough and expectoration, (2) loss of weight, (3) loss of appetite, and (4) rise of temperature. He urges that the concurrence of these conditions should lead to a careful examination of the evidence in favour of pulmonary tuberculosis, and in particular that a careful and continuous record of the temperature should be taken. Too often this association of symptoms is attributed to recurrent influenza, or to trivial catarrhal conditions, and thus the opportunity for early diagnosis and treatment may be lost. Such evidences of auto-inoculation, especially if continuous or repeated, should give point to slight and dubious signs or tend to a diagnosis even in the absence of signs. Attacks like this are commonly observed *within* sanatoriums while the patient is under treatment, and Mr. FOSTER thinks their nature should be recognised as suggestive in patients *without* sanatoriums before a diagnosis is established.

[1] Medical Lectures and Aphorisms. By Samuel Gee. London: Smith, Elder. 1902.

A Risky Experiment in Municipal Hygiene.

LAST week London had an opportunity of observing on a large scale what it throws away each day into the streets. Normally this pot-pourri is collected each night by sweepers, and what remains is washed away by watercarts and revolving brushes into the gutters. But for several weeks on end a dispute in regard to a war bonus induced the public servants whose task it is to perform these duties in the Borough of Holborn to stay away from work until their demands were granted on Tuesday last. The spectacle was not an edifying one. In the chief lines of thoroughfare cigarette-boxes, large pieces of paper, and matches constituted the main bulk of the obvious debris, with only a moderate admixture of dried horse dung, inasmuch as the traffic is mainly driven by motor-spirit, gas, or petroleum, and what horse traffic there is is rapid. In the side streets and alleys the amount of horse dung was remarkable, in many places being spread in a continuous adhesive layer over the wood pavement, and on asphalt surfaces, to which it adheres but little, forming a deposit ankle deep in the gutters. Many of the courts and blind alleys were half filled with paper, straw, and other packing material, much of it doubtless carried by the wind into these quiet backwaters. Though the actual stable-yard impression was limited to the Borough itself, dried dung much resembling chaff was carried some distance over its borders, its presence betrayed by an unusual number of feasting pigeons. Fortunately, the weather was favourable for such a bold experiment in municipal hygiene. The air was cool and fresh, and little if any unpleasant odour was present, while the wind was not strong enough to blow clouds of dried dung into the faces of passers-by, but this we owe rather to the clerk of the weather than to the clerk and other authorities of the Borough. There was no obvious accumulation, as might have been expected, of dog dung; presumably the unpleasant habit of urban dog-keeping

is not practised generally in the central district. Nor were the pavements covered with the viscid layer succeeding the shower of sputum described by eye-witnesses as the outward and visible sign of the debouchment of Lancashire workfolk from their factories. The metropolis may have the advantage in this respect.

It will be interesting to watch the health returns of Holborn in comparison with other London boroughs for the dirty week. The first impression of the naive observer may well be some degree of amazement at the apparent smallness of the nuisance which has resulted. And it has even been asked, why fuss? The reply to this laissez-faire attitude is afforded by the accumulated experience of hygiene the world over. Nothing is more certain than that dirt lowers the average health of a community. This is its chief condemnation, and it holds true even though an occasional lapse in a normally clean city cannot be reckoned upon to produce striking epidemics from which to draw sanitary lessons. There were, as a matter of fact, no deaths in the Borough last week from epidemic diarrhœa, although if the weather had been hot and dry it might have been quite otherwise. But even so, simple lessons are there to draw. One is immediate and obvious, and concerns the general public. It is never a tidy habit to throw into the street packing material of any kind, and now when it has its immediate market value it is stupid as well as thoughtless. For the future the riddance of horse traffic from crowded city precincts is seen more than ever to be advisable, and can hardly fail to have some effect in raising the general level of public health.

Annotations.

"Ne quid nimis."

FORMS AND INFORMATION.

PRIMITIVE folk set little value on the written word, and a few reams of paper would suffice their needs for a life-time. Increasing civilisation goes hand-in-hand with the increased use of paper, and the Public Health Acts, and especially the National Insurance Act, have resulted in the medical profession acquiring, if with reluctance, the habit of using abundant printed forms. In respect of the use of paper, indeed, the medical profession may count as a primitive folk, for the large bulk of general practitioners among us make few clinical records, their prescriptions are brief, and letter-writing is almost a lost habit for lack of leisure time. The consumption of paper by the official runs to enormous dimensions, as double entry has taken the place of single, and as for convenience of office routine documents have become quadrupled and quintupled. In commercial life the use of paper to push the sale of articles may be said to be roughly inversely proportionate to their value. It is therefore a satisfaction to find a recent edict of the Local Government Board making a clean sweep of many official documents when they attain a sufficient age. Six-year-old treasurers' books, cash books, and petty cash books, inventories, collectors' books, and a host of others, the existence of which was hardly suspected, may now be sold to the waste-paper merchant with great relief both to office and paper-supply. Notifications of diseases, births, and the like, may be pulped on the expiration of 12 months from the completion of the audit of the last entry contained in the records, or in the case of other documents, "as may be considered desirable." For our part we cannot see how a notification of infectious disease can possibly serve any useful purpose after it has been entered up by the medical officer of health on his spot-map or schedule. And the same must surely apply in some measure to a host of other documents. In the case of Poor-law documents, public vaccinators' registers, medical relief lists and indices may now be released when over six years old, but not the registers of vaccination officers. Medical officers' record cards, temperature charts, and dietary books may all go sooner. This more rapid turn-over seems to us entirely of a salutary nature. Might not, in fact, a small amount of paper in rapid circulation between town hall and pulper serve every possible purpose? The hoarding of forms is the result of sloth and want of enterprise on the part of those who should abstract from them the essential information for current use. Hoarded forms are not only waste of paper, but they are actually harmful by appearing to convey information which, in fact, they simply bury. Perhaps the shortage of paper will last long enough for the form hoarding habit to disappear and for its place to be taken by rational abstracting and indexing.

PTERYGIUM.

AMONG the many obscure points which puzzle the ophthalmic surgeon the condition of pterygium presents special difficulties; its origin, its development, and its tendency to relapse and recurrence, all offer problems which are still to solve. Much has been written of its causation, but without bringing to light the solution of the riddle. Some writers lay great stress on the influence of race; others deny any racial influence and consider the difference of incidence to be climatic only. Certainly, the disease is not common in England; equally certainly, it is comparatively common in some climates; it is said to be endemic in Madeira. Nor is its mode of development much clearer; the theory, originated many years ago, that the fold of conjunctiva is pulled over the cornea by the gradual inward progress of an ulcer at the tip of the fold, seems definitely disproved; but what process it is which leads to the destruction of Bowman's membrane, and the adhesion of the conjunctiva to the cornea, is still discussed. Certainly, the position of the folds in the line of the palpebral fissure leads one to think that irritation probably has some part in the production of pterygia; but occasionally they are found in other meridia; again, what part, if any, in the causation is played by the pinguecula? Is there any real share, or is the supposed relation nothing but the coincidence of position? All these points await solution; and in this country the material is so scanty that we have done little to throw light on the subject. The arrival of a large number of men from the uttermost parts of the earth during the last few years has increased this material, and has offered opportunities for operation greater than we have hitherto had. In operation the chief point has been to overcome the tendency to recurrence; for this reason the pterygium has been transplanted in various directions; but it has been considered an essential to cover the region of the sclerotic, laid bare by the removal of the growth, by means of conjunctival

flaps taken from healthy conjunctiva. In the note which is published elsewhere in our present issue Major G. F. Alexander suggests a method which is very like the methods of Galezowski and of Bettman in the manner of dealing with the pterygium by rolling the head, or part near the cornea, under the body. This process Bettman called "subvolution" or "subinvolution," but both these operators were careful to cover the raw surface. Galezowski and Bettman laid it down that the presence of the conjunctiva against the sclerotic tended to prevent a relapse. Major Alexander has not found recurrence in those cases in which he has left a raw surface. Unfortunately, he does not tell us the condition of the pterygia on which he operated. Although all pterygia are pathologically the same—at least this is the received opinion—they are not all the same in their clinical behaviour; some are much more liable to relapse and recurrence than others. If Major Alexander's cases were all of the form called clinically p. crassum, his observation and results are most important. If, on the other hand, the cases were p. tenue, it does not follow that he would be equally successful with the other form.

POISONING FROM EXHAUST GAS.

Two years ago attention was drawn[1] at a French Army medical reunion to the risk from exhaust gas in motor ambulances. Fatal cases of poisoning had been observed where the exhaust-pipe of the motor was leaky, the post-mortem lesions suggesting carbon monoxide poisoning. In a recent number of the *Journal of the American Medical Association* Dr. C. W. H. Hitchcock has added another instance occurring in civilian life. A chauffeur entered a small close garage about noon to do some work on the car. About two hours later a maid sent to call him could hear the engine running but got no answer. She produced a key and unlocked the door. The man was found in the seat of the car dead, the engine still running, and the door and windows closed. There was a pinkish red discolouration all over the body. The internal organs were found normal and the blood saturated 58 per cent. with CO. In another case a man, aged 30 years, went to his garage on a cold morning, started the motor, and returned to the house. After a few minutes he went back to the garage to oil the car. While doing so he smelt something very sweet and had a desire to laugh. He saw yellow flashes before his eyes and felt weak at the knees. His first thought was to sit down on the running board, but he decided to return to the house. When just outside the garage he felt a sudden throbbing of the temples and extreme weakness. An hour later his wife found him lying in the snow apparently asleep. He could be roused, but staggered, and could not walk alone. He was put to bed and went to sleep. After an hour he awoke, complaining of dizziness, and was unable to walk. He complained of a throbbing headache, and talked incoherently. He apparently recovered and returned to work on the following day, but he talked incoherently and was unable to remember dates and other simple facts. When he returned home in the evening he remarked that he could not get any sense out of the evening paper which he was trying to read. During the night severe headache and cough began. A fatal attack of pneumonia followed. As we pointed out when the French cases occurred, the explanation is not quite simple. Exhaust gas ordinarily contains a minimal quantity of carbon monoxide, and it would require 600 c.cm. of CO to saturate the three litres of blood in the vessels of the average man. But whatever the precise toxic agent may be it is evident that neither garage nor ambulance should be without means of ventilation.

[1] THE LANCET, 1917, i., 161.

THE INTERDEPENDENCE OF THE SYMPATHETIC AND CENTRAL NERVOUS SYSTEMS.

THE current number of *Brain* contains a paper by Dr. David Orr and Dr. R. G. Rows that is of interest rather for its suggestiveness than for its record of actual research. The work of these two observers has been instrumental in distinguishing clearly two types of morbid invasion of the nervous system, the lymphogenous and the hæmatogenous. In the case of the former the lesion results from the involvement of the ascending lymph paths of cranial or spinal nerves, and the phenomena which arise are essentially those of a primary inflammation of the fixed tissues. In the case of the latter, experiment has shown that invasion of the nervous system by the blood stream brings about coagulation necrosis of cells, degeneration of fibres, œdema, dilatation of the vessels, and hyaline thrombosis, with practically no inflammatory reaction. In the cord these lesions are found almost entirely, in the first instance, round the cord margin and on either side of the median septum of the posterior columns. Lymphogenous infection causes lesions which spread by direct continuity; hæmatogenous infection appears to result in unexpectedly limited lesions both in brain and cord—the brain lesions are almost always, if not always, confined to the cortex, cornu ammonis, and amygdaloid nucleus. These areas, both in brain and cord, derive their blood-supply from the vessels of the pia arachnoid. This peculiar and special anatomical distribution, to the total exclusion of the central areas, suggests that the theory of a general intoxication via the blood stream requires considerable qualification. In other words, some other factor than mere blood dissemination is necessary to explain this curious limitation of blood intoxication in both divisions of the central nervous system. Dr. Orr and Dr. Rows believe that evidence can be advanced in favour of the view that the sympathetic nervous mechanism may be an important factor in determining at which points a toxin circulating in the blood shall exercise its primary action upon the central nervous system. They base their argument on a consideration of certain cases of spinal cord change due to toxic conditions of the blood stream—e.g., in visceral cancer, Addison's disease, and subacute combined degeneration of the cord associated with severe or pernicious anæmia. If the spinal cord is examined in these cases changes are found not of an inflammatory but of a degenerative nature, mainly in the posterior columns in the vicinity of the septum, and also towards the periphery of the cord; in subacute combined degeneration the changes are, as a rule, much more profound and widespread, although their character is the same. Further, considered vertically, these alterations occur chiefly in the lower cervical, dorsal, and upper lumbar segments. The authors next point out the difficulty of explaining non-systematised yet peculiarly limited lesions by the action of a general morbid agent, and suggest that this cord localisation can be correlated with the spinal distribution of the thoracico-lumbar sympathetic system. As for the cervical lesions,

the sympathetic afferent fibres of the lower cervical cord come from the stellate ganglion, which consists in a fusion of the first two or three thoracic ganglia. The suggestion, then, is that the cord lesions of the conditions above enumerated are due to some interference with the thoracico-lumbar sympathetic "reflex," caused possibly by pathological stimuli, or by the absence of substances which maintain its balance. This results in dilatation of the pial vessels, whose permeability is thus increased, whence diffusion of noxious substances and resulting degeneration.

PARAFFINED GAUZE.

THE introduction of gauze which has been smeared or soaked in paraffin, either soft or liquid, is comparatively recent; yet this form of dressing has several merits, and there can be no doubt that it will be more widely employed in future. Attention is drawn to it in the article on Gunshot Wounds of Joints, by Captain J. Campbell, the first part of which appears in the present issue of THE LANCET. He points out that among its merits are these: it exerts pressure, and so restrains hæmorrhage; it does not furnish a moist medium in which micro-organisms can flourish; it does not tend to adhere to the surface of newly formed granulations, and when it is removed the surface does not tend to bleed as when moist gauze is employed. There is a further advantage to which Captain Campbell does not allude, and that is that as it does not tend to adhere to the granulating surface its removal does not cause nearly so much pain as does the removal of a piece of gauze which has been moistened with a watery fluid. Some surgeons prefer that the gauze should be prepared by soaking in sterilised liquid paraffin, while others think that better results are obtained by using soft paraffin. Further experience may show which is the better method of preparation.

THE WATER-SUPPLY OF THE COUNTRY.

IT was stated at a meeting of the Municipal Waterworks Association last week that a system of national control of watersheds was urgently needed in order to secure to the community a fair division of the country's supplies. Many of the large watersheds had already been secured and some authorities had come to the end of their present resources and were looking afield for an enhanced supply. Big cities like Glasgow, Birmingham, and Manchester soon found that their supplies drawn from lake districts were hardly adequate to the needs of a population growing rapidly year by year, and various schemes from time to time have been considered with the view of increasing the quantity of water. It is a fact that in many thickly populated parts of the country nearly all the most accessible areas are now taken up, and the suggestion has been made that the Government should exercise some control over the nation's water-supply in order to secure for each town and district an adequate quantity of water based upon the population at a reasonable cost. In connexion with this subject Sir Alexander Houston, the Director of Water Examination, Metropolitan Water Board, has written a useful little guide dealing with rural water-supplies and their purification.[1] As he points out, despite the enormous improvements in our public water-supplies, not only as regards quality and quantity of water, but in respect of its availability to isolated communities, there remains a large but scattered population, whose only source of a primary necessity of life is rain-water or the water from shallow wells. The utilisation of rain-water is largely Sir Alexander Houston's theme, and he gives directions as to how this is best done with simple methods of purification and sterilisation. The one difficulty with rain-water appears to be to render it palatable and free from sooty taste. Slow filtration through charcoal gives the best results.

[1] Rural Water-Supplies and their Purification. By Alexander Cruikshank Houston, M.B., D.Sc., F.R.S. Ed. London: John Bale, Sons, and Danielsson, Ltd. 1918. Pp. 136. Price 7s. 6d. net.

LOCAL CANCER RESEARCH: REPORT OF THE MEDICAL OFFICER OF HEALTH OF WOOLWICH.

Dr. Sydney Davies, medical officer of health of Woolwich, has for some years been conducting research in regard to cancer, and in his annual report of 1917, just available, he states that the period had the lowest cancer death-rate for five years; the reduction being greater in men. As compared with 1913, and previous years, in men there had been a decrease under carcinoma of the throat and intestines; and in both men and women an increase of cancer of the stomach. The special inquiry into the habits of persons suffering and dying from cancer since 1912 was continued. The scope of this and the standards taken are shown in previous annual reports. The following table gives the parts affected for males and females:—

Parts Affected.

Seat of primary disease.	Male.	Female.	Total.
Face, mouth, jaw, and tongue	35	7	42
Pharynx, œsophagus, larynx, and neck	37	6	43
Stomach and pylorus	29	22	51
Intestines (excluding rectum)	16	14	30
Rectum and anus	17	17	34
Liver	9	4	13
Breasts	—	8	8
Uterus	—	4	4
All other...	11	2	13
Total	154	84	238

Further analysis of the cases shows:—

Seventy-four of the patients were stated to be excessive users of alcohol, 22 took the standard quantity, and 127 below the standard. There were thus 33 per cent. of excessive alcohol-drinkers. 91 smoked excessively, 18 consumed an average quantity of tobacco, and 113 below the average, giving 41 per cent. of excessive smokers. 65 were excessive tea-drinkers, 89 moderate, and 54 small tea-drinkers, giving 31 per cent. of excessive tea drinkers. 99 were large eaters, 72 moderate, and 48 small eaters, giving 45 per cent. large eaters. 71 were large meat-eaters, 86 moderate, and 57 small meat-eaters, giving 33 per cent. of large meat-eaters. 130 had a daily action of the bowels and 44 suffered from constipation, giving 75 per cent. of persons with a regular action.

Control or non-cancer cases.—These cases may be compared with those obtained for 218 persons of similar or greater age, living under similar circumstances, who did not die of cancer. Of these, 37 took alcohol excessively, 24 took the standard quantity, and 157 below the standard, giving 17 per cent. excessive drinkers. 46 smoked excessively, 19 in moderation, and 157 were non-smokers or slight smokers, giving 21 per cent. of excessive smokers. 66 took tea excessively, 96 in moderate amount, and 48 were small tea-drinkers, giving 31 per cent. of excessive tea-drinkers. 28 were large eaters, 22 moderate, and 13 small, giving 44 per cent. of large eaters. 19 were large meat-eaters, 9 moderate, and 36 small, giving 30 per cent. large meat-eaters. 166 had a regular daily action of the bowels, and 26 suffered from constipation, giving 14 per cent. of constipation.

It will be seen that, comparing persons who suffer from cancer with those living at advanced ages, or who died at advanced ages through other causes,

the great differences are as to habits with respect to alcohol, smoking, and the action of the bowels. Cancerous persons had 33 per cent. of excessive alcohol users, 41 per cent. excessive smokers, 31 per cent. excessive tea-drinkers, 45 per cent. large eaters, 33 per cent. large meat-eaters, and 25 per cent. of constipation. Non-cancerous persons, living to a greater age, had 17 per cent. of excessive alcohol users, 21 per cent. excessive smokers, 31 per cent. excessive tea-drinkers, 44 per cent. large eaters, 30 per cent. large meat-eaters, and 16 per cent. of constipation. These differences are still more marked with respect to alcohol and smoking, if only those who died from *cancer of the mouth and throat* are considered. Of 103 persons dying from cancer of the lips, tongue, jaws, fauces, larynx, œsophagus, and cervical glands, 46 (or 45 per cent.) took alcohol excessively, while 73 (or 71 per cent.) smoked excessively. Twenty-eight of these smoked chiefly a clay pipe, 27 a briar, 3 cigarettes, and 3 cigars. There were only 5 out of the 37 cases of cancer of the mouth and tongue who did not smoke; 3 of these had bad teeth. Among the non-cancer cases all the smokers smoked pipes (42 clay and 25 briar, and 5 both), except 2 who smoked cigarettes. Of 161 cases with cancer of other parts than the mouth and throat 39 (or 24 per cent.) took alcohol excessively, and 36 (or 22 per cent.) smoked excessively. It would appear, then, that both alcohol and smoking (especially alcohol) have some general effect in promoting cancer, but chiefly exert their injurious influence locally. This is shown also as regards alcohol by the figures given below for cancer of the stomach, which occupies an intermediate position. Of the 103 cases of cancer of the mouth and throat, 28 (or 27 per cent.) were excessive tea-drinkers. Tea-drinking does not seem to be specially injurious locally or generally as far as cancer is concerned. If the injurious effect of smoking were chiefly due to the local effect of heat one would have expected excessive drinking of hot tea to have had a similar result. Of 13 cases of *cancer of the stomach*, 8 were large eaters and 2 were large meat-eaters; and of 52 cases 16 (or 31 per cent.) were excessive alcohol-drinkers. As regards *cancer of the bowels*, out of 59 persons dying from cancer of the intestines, 32 had a regular daily action, and 26—i.e., 44 per cent.—had constipation. The above results in tabular form are as follows:—

—	All cancer cases.	Cancer of mouth and throat.	Cancer of other parts.	Control cases (non-cancer).
	Per cent.	Per cent.	Per cent.	Per cent.
Excessive alcohol-drinkers..	33	45	24	17
,, smokers	41	71	22	21
,, tea-drinkers ...	31	27	34	31
Large eaters	45	—	—	44
,, meat-eaters	33	—	—	30
Constipation	25	—	—	16

Thus constipation seems to predispose to cancer of the bowels.

MEDICAL SOCIETY OF LONDON.—A general meeting of this society will be held at 11, Chandos-street, W., at 8 P.M., on Monday, Oct. 14th, when the treasurer's report and balance-sheet will be presented, and the new officers will commence their duties. The first ordinary meeting of the session will follow at 8.30 P.M., when the incoming President, Major Arthur Francis Voelcker, R.A.M.C., will deliver the opening address, to be followed by a demonstration on "Degeneration in Art, Music, Science and Literature," by Dr. Theo. B. Hyslop.

TRENCH FEVER:

A CRITICAL ANALYSIS OF THE REPORT OF THE AMERICAN COMMISSION.[1]

BY SIR WILLIAM OSLER, BART., M.D.

I.—*Introduction.*

THIS handsome volume of 446 pages represents the work of a commission appointed at the suggestion of the Medical Research Committee of the American Red Cross, the official sanction for which dates from Jan. 11th, 1918. A Trench Fever Committee, consisting of Major H. Cushing, Major H. F. Swift, and Major R. P. Strong, was appointed, to which was added Major J. W. McNee, R.A.M.C., as an honorary member. It was arranged with the authorities that the work should be carried on at a stationary hospital of the B.E.F., near enough to the line to catch cases of trench fever in the very early stages. The members of the Commission were Major R. P. Strong, Major E. L. Opie, Major H. F. Swift, Captain W. J. MacNeal, Captain W. Baetjer, and Captain A. M. Pappenheimer, all of the Medical Reserve Corps, A.E.F., and Captain A. D. Peacock, R.A.M.C., as entomologist, and subsequently attached First Lieutenant Rapport, A.E.F. From the start there was active coöperation between the British and American authorities, and in framing the plan of research the Commission had the benefit of the advice of Colonel Leishman, General Bradford, General Herringham, and Colonel Beveridge.

The suggested problems for investigation were the method of the transmission of the disease, and the infectious properties of the blood, with a view of repeating and confirming the previous work of Major McNee. Since, so far as was known, the disease is not transmissible to animals, the next problem was to secure volunteers for the experiments. This was arranged by General Ireland, chief surgeon of the A.E.F., with the Commander-in-Chief, with the proviso that each volunteer was to have the nature of the experiments fully explained, and that he should sign a paper expressing his willingness to undergo the experiment. Sixty volunteers were selected out of hundreds who applied, and subsequently 14 were added. All underwent a careful examination to exclude any unfit, and then bacteriological examinations were made of the blood, urine, and fæces. Four-hourly temperature charts were taken, semi-weekly inspections were made of the bodies and clothing, followed by a bath, and the clothing was sterilised once a week. The men of the experimental detachment were segregated from the British hospital personnel and patients. As it was realised that the time was limited before the spring offensive began the experiments were planned to be completed within approximately two months' time. Major Swift took charge of the clinical work, Major Opie the bacteriological investigations, Captain Pappenheimer the serological studies, Captain Baetjer the inoculations, Captain MacNeal and Captain Peacock conducted the louse investigations, while Major Strong directed and superintended the work and prepared the report for publication. On March 27th, for military reasons, it became necessary to evacuate the trench fever detachment from the hospital where the work had been progressing for two months. The necessary experiments to complete the investigation were made at the American Red Cross Hospital, Neuilly.

The study of the problem of transmission involved the investigation of the infectious properties of the blood, sputum, urine, and fæces, the differentiation of the disease from the forms of enteric fever, and particularly the agglutination curves of inoculated subjects. 103 different human experiments were carried out in connexion with the transmission of the disease and its cause, of which 28 were in connexion with blood transmission, 38 transmission by lice, 16 in connexion with the urine, fæces, and sputum, and 21 in connexion with the virus. The disease has been produced experimentally by different methods in 62 instances.

II.—*Story of the Disease.*

In the autumn of 1915, at a C.C.S., Dr. G. H. Hunt, of Guy's Hospital, showed the writer cases of fever characterised by short paroxysms, with a tendency to recurrence.

[1] Trench Fever: Report of Commission, Medical Research Committee, American Red Cross. At the Oxford University Press. 1918.

Major J. H. P. Graham gave the first description in THE LANCET (Sept. 25th, 1915), and other papers followed by G. H. Hunt and A. C. Rankin (THE LANCET, 1915, ii., 1133) and J. W. McNee, E. H. Brunt, and A. Renshaw (*Brit. Med. Jour.*, 1916, i., 225). Sir Wilmot Herringham early recognised that it was a disease unlike any of the ordinary forms. We then began to have cases admitted to the hospitals in this country with the diagnosis of trench fever, characterised by short paroxysms of pyrexia and a curious complication—viz., painful shins. The disease came to be widely recognised on the Western front in both Allied armies, in Germany (where it was called Wolhynian fever, His-Werner or five-day fever), in Salonika by Hunt, in Italy and in Mesopotamia by Coombs. It became very frequent and one of the principal causes of sickness. Captain E. R. Grieveson stated (THE LANCET, 1917, ii., 84) that trench fever formed 40 per cent. of his hospital evacuations and at one time 60 per cent. of all cases of sickness. McNee (loc. cit.) states that it is the most serious disabling disease of the soldier in the Western armies, and with scabies constituted fully 90 per cent. of all cases of sickness in one of the British armies. A majority of the cases labelled P.U.O. are believed to be due to it. The question of the relation of trench fever to other diseases is discussed in Chapter II. by Major Strong, whose large experience in the tropics gives weight to his opinion that it cannot be definitely identified with any hitherto-described disease.

The *incubation period* has been proved to vary from 14 to 30 days, though if a large dose of the virus is acquired the period may be shorter.

"*Symptoms and course.*—During the incubation period slight prodromata, as headache and pain in the limbs and slight fever, are occasionally noted. The most characteristic clinical features of trench fever are the sudden onset, accompanied by headache, dizziness, pain in the legs and back and behind the eyeballs, particularly when moved, nystagmus on turning the eyes completely sideways, injection of the conjunctivæ, and a sharp rise of temperature to 103° or 104° F. The fever in over one-half of the cases subsequently assumes a relapsing character. Enlargement of the spleen and the appearance of small erythematous spots or papules occur in from 70 to 80 per cent. of the cases. The erythematous spots are observed particularly over the chest, back, and abdomen. They are usually not raised above the surface of the skin, are pink in colour, disappear on pressure, and generally measure about two to four mm., although sometimes they may measure from four to six mm. in diameter. Occasionally the rash is distinctly papular in character. In number the spots vary from several to one or two hundred. They often disappear in less than 24 hours after their appearance, and they may occur early in the fever, as on the second or third days, or be first observed just prior to or during a relapse. While no one of these symptoms given above can be regarded as characteristic or constant, the presence of several or all of them usually serves to make the diagnosis of trench fever accurate. The urine often shows a trace of albumin, but evidence of true nephritis is not present. The leucocyte count is very variable. There is frequently a leucocytosis, and the leucocytes may rise at the time of the relapse. In other cases, however, the count may be normal or there may be a leucopenia.

The fever does not always follow a definite type, but may consist of, first, a short attack, lasting for about a week, with sometimes, but not always, after a few days, a single short rise; second, a more prolonged initial fever, sometimes lasting for six or seven weeks, with relapses not distinctly marked; and, third, a more regularly relapsing fever, with more or less definite normal intervals, lasting from five to seven days. Many variations of these types of fever are also seen, and in some of the patients there may be a long fever lasting from 40 to 60 or more days with only very slight remissions." (p. 16.)

The number of relapses varies: three to five periods are common, and there may be as many as seven. Recovery follows in all cases.

III.—*Specific Nature.*

Chapters III. and IV. deal with this question. The first point to determine was whether there was any evidence of infection with the enteric group of organisms. The examination of the blood, urine, and fæces of spontaneous and experimentally produced trench fever by methods adopted to demonstrate typhoid and paratyphoid bacilli were uniformly negative. An extensive study of the agglutination tests gave no support to the view that trench fever was a modified enteric infection. The details of this study, as given in Chapter IX., are most interesting. The titre of the serum in individuals inoculated against the enteric group was in a few instances modified by the trench fever, but in neither a constant nor a characteristic way. This is the first opportunity there has been for a careful bacteriological study of so many cases of a pure strain of trench fever produced by inoculation through successive generations, and the authors hope these investigations will terminate the controversy regarding the relationship of the disease to the enteric group. Examinations of the blood were also made to exclude other known forms of infection. Anaerobic cultures were studied by the dark-field microscope for spirochætes with negative results. No definite micro-organisms were discovered by any of the known means of examination.

McNee, Brunt, and Renshaw first demonstrated that the disease was infectious and transmissible by the blood. Seven men were inoculated with the whole blood, and all developed the disease. One inoculated with clear serum remained healthy, one inoculated with hæmoglobin-tinted serum developed the disease; of two cases inoculated with washed corpuscles one did and one did not, while none were infected who received inoculations with filtered serum. These crucial experiments of McNee and his colleagues made in 1916 received ample confirmation by the American Commission in February, 1918. Thirty-four of the volunteers who had been carefully studied in every possible way were inoculated either with blood or some constituent element of blood taken from trench fever cases in the febrile stages, of whom 23 contracted the disease. The results agree in a number of points with those obtained by McNee and his colleagues. The blood is always infective in the early stages. They found the incubation period to be from 6 to 22 days, the American observers from 5 to 20.

"They, however, consider that the organism of trench fever was intracorpuscular and not free in the plasma or serum. They, however, performed only one experiment with plasma, and though the disease was produced in an individual inoculated with it, they concluded that it was infective only because hæmolysis of red cells had occurred, the plasma being tinged with hæmoglobin. In another case they produced the disease with hæmoglobin-tinted serum and drew the same conclusion, as in another case they failed to produce the disease with clear serum. We also failed in one case to produce the disease with clear centrifuged serum. In relation to the production of the disease with washed corpuscles, McNee, Brunt, and Renshaw performed two inoculations. One of the men developed trench fever, the other did not. We obtained positive results with washed blood corpuscles in three instances, and have already discussed the significance of them (p. 27) and pointed out that apparently the virus remained so intimately mixed with the corpuscles in these experiments as not to be separated by washing with saline solution. Our conclusions, based on the results of our experiments, differ from those of McNee and his colleagues in that we believe that the virus or organism of trench fever is present particularly in the fluid portion of the blood, and is not contained within the blood corpuscles themselves" (p. 28).

Extensive experiments were made to determine the filterable qualities of the virus. The original must be consulted for details, but three positive experiments, of five performed, demonstrated that at least in one stage of development the virus of trench fever is filterable and ultramicroscopic.

"It was found that the virus resists a temperature of 60° C. moist heat for 30 minutes, and is fully virulent after such treatment, but is killed by a temperature of 70° C. moist heat for 30 minutes. Obviously, therefore, a temperature of 55° C. for 30 minutes, which destroys the louse *Pediculus humanus* and its ova, does not suffice to destroy the virus of trench fever which may be present on the underclothing of trench fever patients. The details concerning these experiments are given in Chapter XII., p. 284."

The authors conclude that the outlook regarding a method of vaccination against the disease does not appear particularly hopeful.

IV.—*Etiology and Mode of Transmission.*

In Chapter V., after a review of previous investigations, the conclusion is reached that the causative organism of the disease remains undiscovered. The blood is invariably infective in the early stages. The virus was not found in the fæces, and attempts at inoculation failed; but it was present in the urine, and sometimes in the mixed sputum and saliva, as shown by successful inoculations. Chapter V. deals with the mode of transmission, in which the authors demonstrate conclusively the rôle played by the louse. Various suggestions had been made as to the part played by lice, mosquitoes, fleas, rats, and mice, and the literature is fully considered. Weldon and Davies, in 1917, made the first experiments with lice, and on Feb. 3rd in THE LANCET reported a successful case of transmission. There had arisen a strong feeling that the disease was lice-borne, supported actively by Hurst, Hunt and McNee, Grieveson and others, but adequate proof was not forthcoming. The Commission undertook the investigation of the problem.

"*Transmission experiments.*—Thirty-eight healthy men from the 82 volunteers referred to in Chapters I. and IV. were employed in the experiments relating to the transmission of the disease by *Pediculus humanus*, var. *corporis*, as well as a number of other healthy volunteers who were employed as controls. Twenty-six of the men were employed in the first group of louse experiments and 12 in the second. ..... In the first group of experiments the object particularly in view was to demonstrate whether *Pediculus humanus*, var. *corporis*, does or does not transmit trench fever. In the second group the experiments were performed particularly with the idea of giving further evidence of, first, whether the louse may transmit the disease in nature by its bite alone, as well as by its bite when living under artificial conditions; second, the length of time the louse is infective in this respect; and, third, the infectivity of filtrates of suspensions of louse excrement known to contain the virus before being filtered."

In a majority of the experiments a pure-bred strain of lice obtained from the Lister Institute was used. A plan was adopted by which the lice lived as naturally as possible upon the experimental subject, confined in a chamber or cell in which they bred and laid ova.

"*Transmission by infestation.*—Of the 26 men employed in the first group of experiments 20 were exposed in this manner to lice that had bitten trench fever cases in the febrile stages of the disease, while four others were exposed for the same or a longer period of time to normal, uninfected lice which had only fed upon healthy individuals. After a period of over three months, in order to show whether the men who had been exposed to the normal lice were or were not naturally immune to trench fever, three of them were subsequently exposed by other methods to trench fever infection. All of them contracted the disease. Of the 20 men in the first group and six in the second group who were exposed to lice that had fed upon cases of trench fever, 20, or 76 per cent., developed this disease. On the other hand, the two exposed to many hundred lice newly hatched from eggs laid by lice which had fed on trench fever cases did not contract the disease. Thus no evidence was obtained of hereditary transmission of the virus of trench fever in the louse. In the three instances in which lice taken from the clothing of trench fever cases were employed for infection, two of the individuals exposed to such lice contracted the disease."

Experiments were also successful in showing that the louse may transmit trench fever by the bite alone through the normal skin.

In five instances lice which had not been in contact with a case of trench fever for from 48 to 60 hours were shown to be capable of causing trench fever in healthy men. The lice may transmit the disease after they have been taken away from a case of trench fever for as long a time as 13 days, which points to a multiplication of the virus, or an intermediate cycle of the organism within the louse.

The next question was whether the disease was spread in any other way than by biting. Infection may follow the rubbing into the scratched or abraded skin the crushed louse or the contents of the alimentary canal; but whether the virus is introduced in material from the salivary glands, or the cœlomic fluid or the material from the alimentary canal was not determined. Eight of the volunteers free from lice and living with and sleeping under exactly similar conditions to the other volunteers who were contracting and had contracted trench fever from the infected lice confined upon them in covered cells remained healthy, as did four other control volunteers living under the same conditions, except that normal lice were confined upon them.

Chapters VII.–XII. give full details of the blood transmission experiments, the bacteriological studies, the agglutination reactions, the lice-feeding experiments, the filterability and thermal death-point of the virus, and the infectivity of the excreta.

Clinicians will turn with interest to Chapter XIII., in which the features of the experimentally induced disease are described. This part of the work has been prepared in great detail, and the full reports, with temperature charts, of 80 cases are given, two of which are reproduced in the note at the end of this article. Practically the artificially and naturally acquired disease present the same features, now too well known to describe again; but one or two points may be emphasised. Nystagmus was found in 85 per cent. of the patients, associated, it is thought, with the general muscular weakness and not a specific feature. A macular rash was present in a majority of the cases, chiefly on the chest and abdomen, and the spots may recur with each "spiky" relapse. This percentage of cases, a rash 50 to 70, is much higher than we have seen in the relapses in this country. The spleen was enlarged in 85 per cent. Shin pains and tenderness were not so common or so severe in the artificially induced disease. The effort syndrome, so marked a sequel of the natural disease, was not met with.

V.—*Conclusions of the Commission.*

The following conclusions were reached by the Commission:—

"1. That trench fever is a specific, infectious disease; that it is not a modified form of typhoid or paratyphoid fever, and is not related, from an etiological standpoint, to these diseases.

2. That the organism causing the disease is a resistant filterable virus.

3. That the virus causing trench fever is present particularly in the plasma of the blood of trench fever cases, and that such plasma will produce the disease on inoculation into healthy individuals.

4. That the disease is transmitted naturally by the louse *Pediculus humanus*, Linn., var. *corporis*, and that this is the important and common means of transmission; that the louse may transmit the disease by its bite alone, the usual manner of infection, or the disease may be produced artificially by scarifying the skin and rubbing in a small amount of the infected louse excrement.

5. That a man may be entirely free from lice at the time he develops trench fever, the louse that infected him having left him some time previously as its host, and that the louse need only remain upon the individual for a short period of time in order to infect him.

6. That the virus of trench fever is also sometimes present in the urine of trench fever cases, and occasionally in the sputum, and that the disease may be produced in man by the introduction of the virus in the urine or sputum through the scarified or otherwise abraded skin.

7. That since the urine and sometimes the sputum of trench fever patients are infective, these should be sterilised in order to avoid the possibility of accidental infection from them.

8. That in order to prevent trench fever or limit its spread, and thus save man-power for the armies, greater efforts must be made to keep soldiers in general from infestation with lice.

On account of the great importance of the matter the following sanitary regulations are advised: Exceedingly great care should be taken to completely disinfest all patients as soon as practicable, and particularly upon their entering the hospital. Patients on entrance should be carefully bathed, and subsequently sponged with alcohol. Their clothing and blankets should be removed, and, whether or not lice or ova are found upon them, should be carefully sterilised by moist heat at a temperature not below 70° Centigrade for half an hour, since it is possible for the virus to be still present on the clothing. It should be borne in mind that a man with trench fever may be entirely free from lice at the time that he develops symptoms of the disease. Trench fever patients should at all times be carefully protected from louse infestation, and inspection of them for lice should be made daily. They should be treated in separate wards. As the urine contains the virus and is infective it should be sterilised during the active stages of the disease. Sputum cups should be provided for patients, and any expectorated sputum and saliva from them sterilised. Officers should regard the systematic destruction of lice as one of the most urgent of their duties, and should exercise every effort to prevent louse infestation among soldiers and to see that any of them infested with lice are promptly disinfested and their clothing sterilised."

Remarks.

One of the shocks of the great war has been that lousiness and the itch have had such an innings. We had become clean enough, at least in this country and America, to forget the enormous capabilities of the louse. The fate of armies has been decided through the devastations of diseases transmitted through it. The truth is that the "sparrow hawks of Montagu College," as Rabelais called lice, have always been terrible pests. In a MS. note-book of John Locke is a memorandum of the placards on the walls of streets of Paris giving directions against the prevailing lousiness. Many persons have a curious tolerance of their presence. An Austrian soldier under my care at the Johns Hopkins Hospital assured us that he was never in the best of health unless he was verminous. There is a famous seventeenth-century tractate, *Laus pediculi* (addressed Ad Conscriptores Mendicorum Patres), which begins: "Sacrum morbum esse opinionem vere positer ac eliganter Patres Mendicorum, ab antiquis proditum memoriæ est." The idea of harmlessness was widespread, and is expressed in the Beggar's Song in Izaak Walton's "Compleat Angler":—

> A hundred herds of black and white
> Upon our gowns securely feed,
> And yet if any dare us bite,
> He dies therefore as sure as creed.

Burns puts a truer feeling in his famous poem "To a Louse"—

> Ye ugly, creepin', blastit wonner,
> Detested, shunn'd by saunt an' sinner.

The reports of the English and American Commissions should help enforce effective regulations—not in warfare always easy to carry out—against the "crowlin ferlie's" that have done so much damage.

In supplementing in this way the work of the Army the American Red Cross has done a splendid service. The report is a good illustration of the value of team-work. Without the active coöperation of all the members, so laborious an undertaking could not have been accomplished in so short a time. We may join heartily in the thanks which the Commission offers to the men who endured so patiently the many trials of the experiment. To Major Strong and his able colleagues we may offer our warmest congratulations; and our thanks are due to Mr. Frederick Hall, of the Clarendon Press, for the prompt production of a beautiful volume.

AMERICAN RED CROSS REPORT ON TRENCH FEVER.

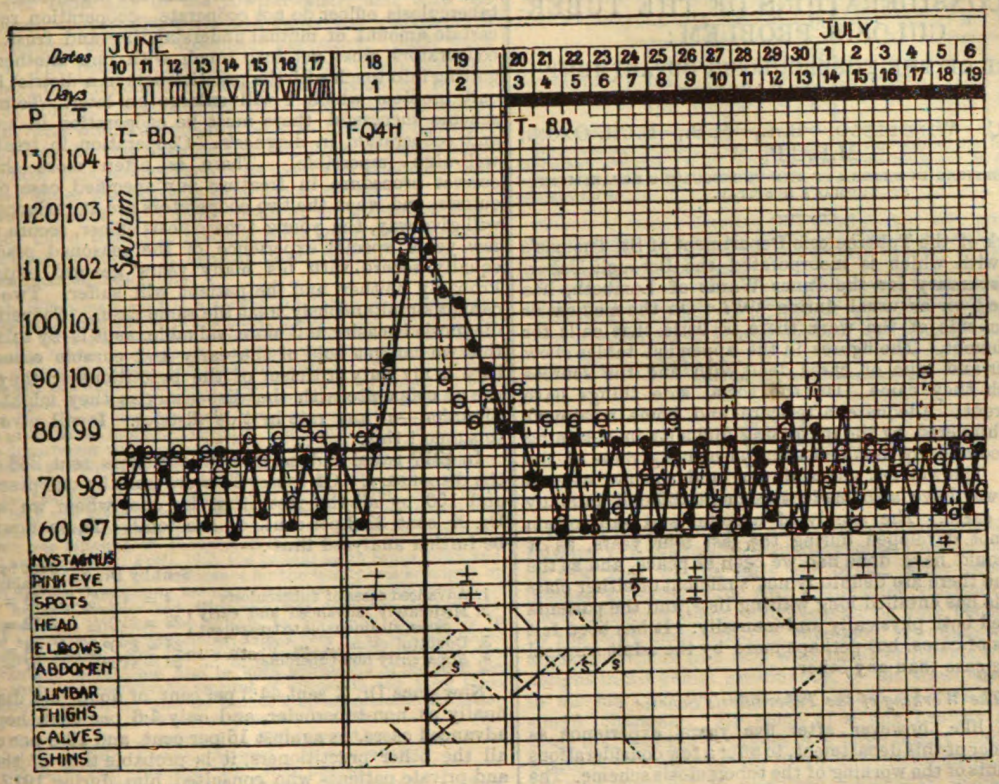
SAMPLE CASE REPORTS (WITH CHARTS).

Out of the 80 case reports presented in detail in the volume under notice we have selected for reproduction two which are fairly typical of the research as a whole, giving in the first only the actual notes of the case.

Key to Charts.

The temperature is indicated by solid dots and continuous line; the pulse-rate by circles and broken line; spleen palpable by the black stripe at the top of the chart; nystagmus, pink eye, and spots by a + or ± in the respective file. Under the various regions of the body a sloping line \ indicates pain, / tenderness, and X both, dots showing less severity. T = temperature. B.D. = twice a day. Q4H = every four hours. P.X. = physical examination.

CHART 1.



(For Key to Charts see previous column.)

Fig. 1 is the chart of a sergeant in the American Expeditionary Force who voluntarily submitted to inoculation with trench-fever-infected material. On Feb. 25th he was injected intravenously with filtered plasma from a well-marked case of trench fever in a man of 21 on the second day. He was then under observation until June 10th without evidence of trench fever. On June 10th his arm was scarified, and combined dried sputum sediment from four cases of trench fever was rubbed in. The result is summarised as follows:—

Local reaction slight. Incubation period, eight days. Prodromata: none. Onset sudden, with dizziness and pain on rotation of eyes. Course: initial two-day bout of fever, with pains and corresponding tenderness. Very slight cough and a few râles accompanied this. On the ninth day a small crop of spots; no fever or symptoms. On the twelfth day, headache and fever of 99·2° F. On the thirteenth day, a small crop of spots. On the fifteenth day, fever of 99·1° F. and slight lumbar and shin tenderness. Spleen continuously palpable from third to nineteenth day. A mild course. NOTES.—*June 10th:* Arm scarified and dried sputum sediment rubbed in. *June 18th*, 7 P.M.: At 2 P.M. began to feel dizzy. Dizziness intermittently during the afternoon. No headache. Pain on rotation of eyes. Slight soreness of muscles above crest of ilium. Does not feel sick, but nevertheless does not feel entirely well. No sore throat. Very occasional dry cough. No appetite for supper. Has felt chilly for past hour (has been in bed). P.X.: Pink eye +. Nystagmus 0 (pain on deviation of eyes). Tongue: Slight furry brown coat. Lungs clear. Abdomen negative. Spots +. Spleen 0. Slight tenderness left shin. Looks toxic. *June 19th:* During night felt chilly. Did not sleep well on account of headache. No appetite for breakfast. Slight pains in thighs and calves. Still looks toxic. Tenderness as charted. The spots have practically disappeared. Musical râles throughout both lungs. *June 20th:* Much better this morning; cough almost gone, never marked. Lungs are clear. It would appear that the mild respiratory symptoms are simply a part of the general picture. The spleen is easily palpable this morning. The condition looks like trench fever. *June 26th:* Since last note has felt quite well. With the character of the first bout of fever a relapse might be expected if the condition is trench fever. The spleen is still distinctly palpable, and this morning a few spots appeared. *June 27th:* Feels quite well. The spots, which were quite distinct yesterday morning, had disappeared at 5 P.M. There are none this morning. *June 30th:* Yesterday evening had "tired" feeling in calves and shins, not amounting to pain. Headache. Appetite poor. This morning feels well. P.X.: A few spots. Spleen persists. Tenderness: Lumbar and left shin, slight. *July 1st:* Feels well. Spots gone. *July 2nd:* Slight fever last night, unaccompanied by symptoms except a "tired" feeling in back of neck. *July 4th:* Headache last night. *July 7th:* Spleen not palpable to-day. *July 18th:* Has felt well since last note. Now up all day. P.X. negative.

CHART 2.

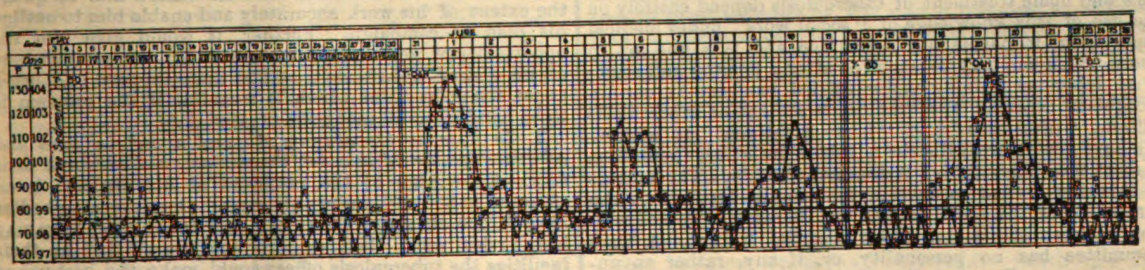


Fig. 2 is the chart of a private soldier, aged 20, inoculated with urine sediment from another experimental case of trench fever, and therefore at second remove from the spontaneous disease. The summary is as follows:—

May 3rd: Arm scarified and urine sediment from No. 30 (collected on second day of disease) applied. *May 13th:* Repeated with urine of the eighth, tenth, eleventh, and twelfth days of the same case. No. 30 had contracted the disease following similar urine sediment inoculation. Incubation period 28 or 18 days. Prodromata: Slight headache the day of onset. Onset sudden, with a chill, followed by severe headache. Course: Four two-day cycles of fever, the peaks of the first three separated by four-day intervals, while the last one occurred nine days after the third, as though one relapse had been skipped. All were marked by severe prostration, but by a dearth of pain and tenderness.

SOME CONSIDERATIONS OF THE TUBERCULOSIS PROBLEM:

REPORT OF THE TUBERCULOSIS DEPARTMENT, ST. THOMAS'S HOSPITAL.

BY R. C. WINGFIELD, B.A., M.B., B.CH. OXON., M.R.C.P.,

MEDICAL OFFICER IN CHARGE OF THE TUBERCULOSIS DEPARTMENT, ST. THOMAS'S HOSPITAL.

THE work of the Tuberculosis Department of St. Thomas's Hospital, with which is incorporated the Borough Tuberculosis Dispensary for the Inner Wards of Lambeth, has been carried on as usual during 1917. On the medical or therapeutic side of the work there is little that calls for special comment. The figures in the appended tables show the number and type of cases dealt with and the sources from which they came. On the social side things have been different. Adequate after-care and home treatment have been hindered by the increasing difficulty in obtaining suitable food and by the decreasing purchasing value of the sovereign. The worries, uncertainties, and sorrows attendant on the war have also made treatment difficult in many individual cases. The supply of hospital and sanatorium beds has not developed during the last four years, as it probably would have done had we been at peace, and at the present time there are definitely not sufficient of either class of bed. This has entailed long waiting lists, and the patients have suffered both physically and mentally. It has been felt by all types of cases, but perhaps more by the adult surgical tuberculosis case than any other.

The Working of the Tuberculosis Scheme.

I should like, however, after five years' experience as medical officer of this department, to offer a few considerations on some points of the working of the tuberculosis scheme. The scheme is that in each district practitioners shall treat their panel and private patients for tuberculosis, and that in the district there shall be a tuberculosis dispensary with its tuberculosis officer, whose services they can demand, for help in diagnosis and advice and help in the treatment of these cases. That this tuberculosis officer shall supervise the treatment and that the practitioner and the tuberculosis officer shall coöperate in this work. This scheme does not, and cannot, work satisfactorily. The reasons are many, but I intend to deal with only two.

First, the general practitioner cannot treat his cases of tuberculosis. Second, he and the tuberculosis officer do not (and perhaps cannot) satisfactorily coöperate. This looks, at first sight, like a vicious attack on the general practitioner, but it is not so, as I hope to be able to show.

To take the first point: The satisfactory treatment of tuberculosis needs expert medical knowledge, and also expert knowledge of what I may call "social work among the working classes," and very few people in England have this double expert knowledge—certainly not the overworked general practitioner—and had he got it, the tremendous amount of pure medical work which he has to get through in the 24 hours would prevent him from using his knowledge of "social work" on any but a very few of his cases. After-care and home treatment of tuberculosis depend entirely on the use of this knowledge of "social work" under medical supervision, it has its own technique and is a fine art in itself, which can only be acquired after a lengthy and somewhat laborious training under skilled teachers at certain recognised centres; and medical treatment of tuberculosis without "after-care" and "home treatment" is useless. We have now in every district a Tuberculosis Care Committee to meet this difficulty, but it does not meet it. The success of this side of the treatment of tuberculosis depends on the personality of the social worker and the very close coöperation between the doctor and the social worker. A Care Committee has no personality, or, if any, rather an unpleasant one. The Care Committee meets once a week or once a fortnight, and the whole aspect of a difficult case may have changed once or twice during that time; it never sees the general practitioner, and only very occasionally communicates with him, this is not close coöperation. Hence my contention that the general practitioner cannot treat his cases of tuberculosis

As to the second point—viz., that the practitioner and the tuberculosis officer do not coöperate—coöperation requires a certain amount of mutual understanding and trust, the two coöperators must get into touch with one another. This getting into touch with the practitioners in a district is a difficult problem which I will enlarge on later. To make the scheme successful there must be coöperation in treatment and coöperation in diagnosis. Coöperation in treatment is well-nigh impossible. There is often more than one correct procedure in treating any specified case of tuberculosis, and when the two coöperators are at variance, which will give way, the young tuberculosis officer, secure with his few years' special experience, or the seasoned practitioner equally secure with his many years' general experience? Probably neither, and the patient will suffer. Two doctors cannot simultaneously treat the same case. Coöperation in diagnosis is easier and more valuable, as it is by this means that we can get hold of the early and curable cases. And here is my only criticism of the practitioners: they do not use or coöperate with the dispensary as they might in this direction—at any rate in this district. I will give figures to support this.

In 1917 panel and private practitioners sent 268 cases to the dispensary. Of these, 88 were sent by one practitioner and 180 by all the rest; that is, one, whom we will call Dr. X, sent 32·8 per cent. of the total. These figures may be further analysed thus:—

	Sent by Dr. X.	Sent by all other practitioners.
1. Advanced cases of tuberculosis ...	4 = 4·6%	33 = 18·3%
2. Moderately advanced and early cases, all amenable to treatment	22 = 25·0%	72 = 40·0%
3. Doubtful cases	23 = 25·0%	48 = 26·6%
4. Apparently non-tubercular	39 = 44·3%	27 = 15·0%

Now since Dr. X sent 44·3 per cent. of doubtfuls, diagnosed finally as non-tubercular, and only 4·6 per cent. hopelessly advanced cases, as against 15 per cent. and 18·3 per cent. of all the other practitioners, it is probable that of the panel and private patients who consulted him during 1917 Dr. X, making full and proper use of the tuberculosis dispensary, missed or failed to adequately deal with very few treatable cases of tuberculosis—and if he did, seeing the high percentage of "doubtfuls" and "apparently non-tuberculars" sent by him, the onus rests very properly with the tuberculosis officer.

Suggested Modifications of Tuberculosis Scheme.

So much for destructive criticism of the tuberculosis scheme as it stands to-day; I should like to add a few points of a constructive nature.

1. *That the tuberculosis officer should be given certain facilities (to be enumerated below) and be held responsible for the health of his district as regards tuberculosis.*—By this means his work could be judged by his results, and it would provide more incentive to thorough work and scope for personal initiative than is at present experienced by this full-time public official, who in his present position feels that he is unable to do more than nibble at the edge of a large area of useful work that is waiting to be done, a position so disheartening that sustained and conscientious effort is very difficult.

2. *To have all cases of tuberculosis in the district notified direct to him.*—This innovation would allow him to gauge the extent of his work accurately and enable him to outline his plan of campaign. Further, it would give him the opportunity of getting into touch with all the practitioners of his district, gain their trust and their support, and bring about the coöperation which is essential if the problem is to be handled at all along the present lines.

3. *To have at his absolute disposal a certain fixed and adequate number of hospital, sanatorium, and advanced home beds.*—Knowledge of the resources at his disposal is an essential in the conduct of this work. Our governing bodies have it, but they can never tell how many cases they may have to deal with—their scope is too large. Had he their facilities the tuberculosis officer could make the best use of these beds and their value to his district would tremendously increase. At present he does not know how many or what type of case he may have to deal with, nor what, if any, beds he will have for their treatment.

4. *To have attached to his dispensary a whole-time social worker with an adequate staff.*—The working man who has once completely gone down with tuberculosis can seldom if

ever be got back to and kept at suitable work without help. This applies especially to the town-dweller, and here the social worker, coöperating with, and under the guidance of, the tuberculosis officer is absolutely necessary. Such work needs: (*a*) The personal factor. Sympathy, discipline, and leadership. (*b*) Thorough knowledge and training in the work. (*c*) Money. State aid for after-care would be money well spent and would save many beds at institutions in the long run. As in the case of the facilities of the tuberculosis officer this money should be fixed and adequate, and completely under the control of the social worker.

This work cannot be properly done by an after-care committee any more than the medical side could be done by a committee of doctors. A typical case, one of many, will help to emphasise this point.

In March, 1914, a man, aged 33, attended the tuberculosis dispensary of the hospital on the advice of his panel doctor. He was found to be suffering from phthisis, and sanatorium treatment was recommended. His former employment had been that of a machine-hand in a mill, a very unsuitable and dusty occupation. The family consisted of a wife and child aged 11. When her husband ceased to be a wage-earner, the wife had gone to work, but as she was only able to earn about 12*s.* a week and her food, it was necessary that some help should be given to the family. Through the coöperation of the lady almoner's department with the local office of the Charity Organisation Society this was done, and finally the patient went to a sanatorium under the National Insurance Act in May of 1914 and was discharged in October of the same year fit for light work only. Financial help was given from the sources already alluded to until the patient got a job as auxiliary postman for a few weeks at Christmas-time. This was followed in January, 1915, by a post as timekeeper in a small restaurant. In April, 1915, the patient again broke down and had to give up his work, and assistance for the family was arranged by the Social Service Department for many months. Towards the end of the year he had another bad turn and was admitted to hospital. Until September, 1916, he was unable to work and constantly in receipt of assistance. In September, 1916, a very light job was found for him, which he still holds. His duties are light, and offer the very great advantage of enabling him to work practically in the open air. Although there is a considerable amount of disease in the lung there is no reason to anticipate that he cannot keep his present occupation for an indefinite period. This case may be tabulated thus:—

March, 1914–Dec., 1914—9 mths. Ill. Help needed.
Dec., 1914–April, 1915—4 mths. At work. No help needed.
April, 1915–Sept., 1916—16 mths. Ill. Help needed.
Sept., 1916–present—20 mths. Well. At work; permanent conditions.

Remembering that this case is that of a self-respecting working man, it will be readily granted that he could not have been tided over these 25 months of illness without the personal encouragement, sympathy, and conscientious endeavour of a whole-time social worker.

5. *The tuberculosis officer to actually treat all cases should they so desire, and to coöperate with the practitioner, if possible, in the treatment of those who did not wish for dispensary treatment.*—The necessity for the tuberculosis officer to do the actual treatment at the dispensary is my great point. He has the social worker behind him and he should, if properly qualified, know best how to treat the disease. It saves work and frees the practitioner for his other important duties and prevents the evils of coöperative treatment and overlapping.

These are a few points which I think would help to improve our present tuberculosis scheme. Different difficulties come to different tuberculosis officers in different districts, and I have tried here to enlarge upon some of mine and to suggest remedies for them in bare outline.

Total Number of Cases Dealt With.

—	M.I.	M.N.I.	F.I.	F.N.I.	C.	Totals.
New	446	44	248	265	486	1489
Old	205	30	145	212	339	931
Totals	651	74	393	477	825	2420

Of these there came from Lambeth: New, 748; Old, 476. Total, 1224.

Diagnosis.

—	New.	Old	Totals
Pulm. tub.	325	300	625
Non-pulm. tub.	300	300	600
Suspect.	274	332	606
Non-tub.	590	—	591

Detail Diagnosis of New Cases.

—	Pulm. tub.	Non-pulm. tub.	Suspect.	Non-tub.
M.I.	165	39	65	177
M.N.I.	18	5	11	10
F.I.	64	48	43	93
F.N.I.	59	34	63	109
C.	19	174	92	201

M.I., males insured. M.N.I., males, non-insured. F.I., females insured. C., children.

Classification of those Suffering from Pulmonary Tuberculosis.

	—	A.	B.	C.	D.		A.	B.	C.	D.
New cases...	In_1	3	0	75	29	Old cases ...	0	1	8	43
	In_2	5	1	17	10		9	7	10	13
	In_3	117	20	32	16		157	14	13	25

In_1, resting febrile; In_2, resting afebrile, ambulant febrile; In_3, ambulant afebrile. A, fit for work and remaining so; B, fit for work, becoming unfit; C, unfit for work, becoming fit; D, unfit for work, remaining so.

Sources of cases.—Hospital, 467; panel doctor, 184; privately, 128; recruiting office, 97; private doctor, 84; charitable society, 40; London Insurance Committee, 13; London County Council, 11; affiliated dispensaries, 45; contacts, 450.

Results of contact examination.—Pulmonary tuberculosis, 11; non-pulmonary tuberculosis, 28; suspect, 76; non-tuberculous, 335.

Number of cases sent to sanatorium in 1917.—Males insured, 37; males non-insured, 6; females insured, 25; females non-insured, 6; children, 36.

Attendances.—7671.

Obituary.

ROBERT DONALD KEITH, M.A., M.D. ABERD.

Dr. Robert Donald Keith, formerly principal of King Edward VII. Medical School, Singapore, died at Turriff, N.B., on Oct. 2nd, at the early age of 41, after prolonged and intense suffering borne with astonishing fortitude. Even in these troublous times, when sensations have become blunted by the daily destruction of manhood, his death will come as a genuine shock to a very wide circle of friends who found a delight in his genial personality, in his transparent honesty in all his dealings with his fellow creatures, and in his simple character. He came of a fine healthy agricultural stock and was the youngest of a large family, notable among whom is Professor Arthur Keith, the distinguished anatomist. He was educated at Aberdeen University, passing through arts and medicine with distinction. Subsequently, as Carnegie Fellow, he studied pathology and bacteriology in Leipsic, Tübingen, and the London Hospital. He had originally intended to specialise in some branch of clinical medicine, but at about the age of 30 he was elected teacher of anatomy and physiology in the Medical School at Singapore, where he spent 10 years. He soon made his presence felt, and was raised to the important positions of Principal of the Medical School, lecturer on clinical medicine, consulting physician to Tan Tock Seng's Hospital, and his opinion was widely sought by the English residents in the Straits Settlements. At the outbreak of war he became captain and officer commanding the Singapore Field Ambulance, medical officer in charge of the Military Hospital, Singapore, and actively participated in quelling the mutiny in that city in the early days of the war. There is reason to believe that overwork and devotion to duty told on a constitution which had not been robust for some years and which had been undermined by residence in the tropics. On arriving home about the end of 1916 he was seriously ill and underwent an operation, which afforded such relief that he was able to take a military appointment of importance in a large hospital for cases of shell-shock. Some months ago, however, his health completely broke down. Despite great suffering he was able to complete an excellent book on clinical case-taking which is likely to be widely appreciated by medical students. Dr. Keith is survived by his wife and three sons.

MEDICAL MAGISTRATES.—Sir Arthur William May, K.C.B., of St. Tudy, Cornwall, formerly Director-General, Medical Department, R.N., and Mr. Thomas Mitchell Bonar, M.B., C.M. Glasg., D.P.H. Bristol, of Truro, have been placed on the Commission of the Peace for the County of Cornwall.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.—The following entrance scholarships have been awarded:—University Scholarship of 50 guineas: R. Y. Paton, Trinity College, Cambridge. Open Scholarships: £100, R. M. Fry, Merchant Taylors' School; £50, D. Levi, Marylebone Grammar School. Palmer Scholarship: £25, R. W. Scarff, City of London School. Epsom Scholarship: £52 10*s.*, J. A. Walker, Epsom College.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Killed.

Major T. F. P. Breen, R.A.M.C., was educated at Stonyhurst and at Trinity College, Dublin, and qualified in 1912. After holding an appointment at the Mater Misericordiæ Hospital, Dublin, he joined the R.A.M.C., and went to France on the outbreak of war.

Major C. McN. McCormack, M.C., R.A.M.C., qualified at Belfast in 1914. The award of the M.C. was recorded in THE LANCET of Sept. 30th, 1916, p. 620.

Capt. J. T. Kirkland, M.C., R.A.M.C., qualified at Glasgow in 1909, and held appointments at the Maternity and Women's Hospital, and at the Royal Infirmary, Glasgow. The award of the M.C. was recorded in THE LANCET of Jan. 22nd, 1916, p. 215.

Lieut.-Col. F. H. Bradley, D.S.O., R.A.M.C., qualified at Edinburgh in 1906, and joined the R.A.M.C. in 1910. The award of the D.S.O. was recorded in THE LANCET of Jan. 12th, 1918, p. 78.

Died of Wounds.

Temp. Surg. F. P. Pocock, D.S.O., M.C., R.N., was a student at Westminster Hospital, and qualified in 1913. Prior to joining the Royal Navy he was in practice at Ealing. He took part in the operations against Zeebrugge and Ostend in April this year, for which he was awarded the D.S.O. (THE LANCET, August 3rd, 1918, p. 155).

Capt. G. M. Cowper, R.A.M.C., was educated at Cambridge University and at St. Bartholomew's Hospital, London, and qualified in 1914. He joined up on the outbreak of war, and was latterly attached to 35th Field Ambulance.

Lieut. W. L. Dandridge, R.A.M.C., attached 103rd Field Ambulance, qualified in November, 1917, and joined up early in the present year.

Lieut. M. J. O'Flynn, R.A.M.C., attached to the Northampton Regiment, qualified in Ireland in 1903, and held appointments at the Wolverhampton Eye Infirmary and at the Salisbury Hospital. Prior to joining up he was in practice at Neath, Glamorganshire.

Died.

Capt. J. Wood, R.A.M.C.

Wounded.

Lieut. H. A. Chodak, R.A.M.C., attached London Regt.
Lieut. F. Cameron, R.A.M.C., attached Welsh Regiment.
Major A. R. Dale, M.C., R.A.M.C.
Major C. B. Davies, M.C., R.A.M.C.
Capt. R. H. Fleming, R.A.M.C., attached R. Sussex Regt.
Capt. H. K. Ward, M.C., R.A.M.C., attd. Northampton Regt.
Capt. E. C. Bowden, R.A.M.C., attached London Regiment.
Capt. N. F. Graham, R.A.M.C., attached London Regiment.
Capt. W. H. Johnston, R.A.M.C., attached R.F.A.
Capt. D. R. Wark, Canadian A.M.C.
Capt. G. A. C. Gordon, R.A.M.C.
Capt. D. Barlow, M.C., Australian A.M.C.
Capt. R. Goulden, Canadian A.M.C.
Capt. C. L. Driscoll, R.A.M.C., attd. R. Welsh Fusiliers.
Major W. Vickers, Australian A.M.C.
Capt. J. E. Barry, Canadian A.M.C.
Capt. H. M. Cameron, Canadian A.M.C.
Lieut.-Col. A. S. Donaldson, D.S.O., Canadian A.M.C.
Capt. A. H. Veitch, Canadian A.M.C.
Capt. M. K. Acheson, M.C., R.A.M.C.
Major T. J. Kelly, M.C., R.A.M.C.
Capt. R. J. Snider, R.A.M.C.
Lieut. G. P. W. Staunton, R.A.M.C.
Capt. W. C. Morgan, Canadian A.M.C.

Injured.

Surg. J. S. L. Roberts, R.N.

Missing.

Capt. A. La B. Clark, R.A.M.C.
Capt. W. C. D. Wilson, R.A.M.C.

Previously reported Missing, now reported Prisoner in German Hands.

Major E. J. Tilbury, R.A.M.C.

THE NEW SURGEON-GENERAL, U.S.A.—Major-General Merrite W. Ireland, who has been nominated to succeed Major-General W. C. Gorgas as Surgeon-General of the United States Medical Corps, is still a young man, having been born in 1867, and is 13 years junior to his predecessor. He graduated in 1890 at Detroit College, Michigan, and in the following year at Jefferson Medical College, Philadelphia. In the early days of the war General Ireland was stationed at Fort Sam Houston, Texas.

OBITUARY OF THE WAR.

JAMES STEEL, M.B., CH.B. GLASG.,

MILITARY CROSS;
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain Steel, who met his death in France on Sept. 2nd, at the age of 25 years, was only son of D. F. Steel, of Dennistoun, Glasgow. Educated at Whitehill School and Glasgow University, he graduated M.B., Ch.B. in 1916, during his final year acting as resident assistant at the Glasgow Eastern Hospital. On leaving the University he received a commission in the R.A.M.C. and was sent to France, where he was promoted Captain after one year's service. In March of the present year, while serving with the Royal Sussex Regiment, he was awarded the Military Cross for conspicuous gallantry and devotion to duty. The award ran:—

"This officer was one of the few regimental medical officers who were with their unit during the whole period of withdrawal. He was indefatigable in dressing the wounded, often under fire, and when he had to move invariably assisted himself in evacuating the worst cases. Although twice wounded himself, he refused to leave his work, except to have his wounds dressed."

A few days before his death he was transferred to the Somerset Light Infantry, and it was while marching with his regiment to the fighting line that he was killed by a shell.

An old medical friend writes: "His scholastic and University career, coupled with his attractive and engaging personality, assured him success in the profession he had chosen and loved so well."

CHARLES DEVEREUX MARSHALL, F.R.C.S. ENG.,

STAFF SURGEON, ROYAL NAVY.

WE can now supplement the bare account of Staff Surgeon C. D. Marshall which appeared in THE LANCET of Sept. 28th with a portrait of this officer taken from a group and enlarged, and with some personal details given by his friends. He was at one time sub-editor of the *Ophthalmoscope* and his own writings cover a wide field, including papers on glioma of the retina, sarooma of the uveal tract, and researches on colour vision in collaboration with Dr. F. Edridge-Green. A fleet-surgeon writes of him: "The death of Staff Surgeon Marshall will bring a feeling of bereavement to his former shipmates. I have never met any man who so completely won the esteem and affection of everyone in his ship. It was to Marshall whom we naturally turned when down on our luck. His religious convictions influenced his whole life; he was a tender-hearted doctor; he loved his life at sea; he was father and mother to every youngster on board and he had a very real influence on all who knew him. On that ghastly night following the landing at Gallipoli he heard that an attempt was to be made to evacuate the wounded from the *River Clyde*, which was at the time under musketry fire from both sides, and though he had been at work continuously for 18 hours and was quite exhausted he at once volunteered to go, and went."

GRAHAM ROBERTSON COWIE, B.M., B.CH. OXON.,

CAPTAIN, SOUTH AFRICAN MEDICAL CORPS.

Captain G. R. Cowie, who died of wounds on Sept. 3rd at the age of 27, was elder son of J. Cowie, formerly of Johannesburg. He was educated at the Lyceum, Hanover, and Loretto School, Musselburgh, going on to University College, Oxford, where he won the Welsh memorial prize in 1911, and graduated two years later. He rowed in Eights and Torpids, played Rugby football and hockey for his college, and was a member of the University Corps of King Edward's Horse. At the outbreak of war he re-enlisted in that regiment; in December, 1914, obtained a commission in the Royal Field Artillery, and went out to the Western front in May, 1915. He was mentioned in despatches for his services at the battle of Loos. Returning to England in January, 1916, to complete his medical studies at the Middlesex Hospital, he graduated last year B.M., B.Ch. Oxon., and M.R.C.S. Eng., and was given a commission in the South African Medical Corps, and returning to the Western front attached to the 1st S.A. General Hospital. At his own desire he was transferred to a South African Brigade R.G.A. as M.O., and was so engaged when he was wounded on Sept. 1st by a shell, dying of his wounds two days later. His commanding officer, writing of his loss, adds: "Captain Cowie was always loved by his patients, and anything that he could do for them was never too much trouble," and the dean of his hospital records the good influence exerted by him in everything connected with the medical school.

ALFRED ROBINSON MACMULLEN, M.R.C.S. ENG.,

SURGEON, ROYAL NAVY.

Surgeon A. R. MacMullen, who died of wounds in France on Sept. 7th at the age of 29 years, was third son of the late William F. MacMullen, of Rockcliffe, Cork. He was educated at Clifton College and Caius College, Cambridge, going on from there to the London Hospital, where he was acting as house surgeon at the outbreak of war. He volunteered at once for the Navy and served first with the Royal Naval armoured cars in German West Africa and East Africa for a period of nearly two years, during which time he was awarded the Distinguished Service Cross for conspicuous bravery in searching for and rescuing a severely wounded officer under heavy fire. In August, 1918, he was appointed surgeon to the Royal Naval Division serving in France, and had only been out one month when he was dangerously wounded on Sept. 4th and died of his wounds three days later.

Captain JOHN SIDNEY WILSON, A.A.M.C., who died of wounds on August 9th, was educated at the Church of England Grammar School, Sydney, N.S.W., and entered the medical school there in March, 1912, graduating M.B., Ch.M. four years later. As a student he took a keen interest in field sports, and had considerable success in rowing in University and college races. After qualifying he was for six months R.M.O. at the South Sydney Hospital, before joining the Australian Imperial Force in November, 1916. He was attached to various training units in the United Kingdom, and then joined a field ambulance in France, performing the duties of bearer captain from Nov. 13th, 1917, until August 9th last, when he was hit by fragments of shell while supervising the evacuation of wounded, and died from shock the same afternoon. Captain Wilson's character impressed all with whom he came in contact, and his loss is felt by every officer in the unit.

Major JOHN CLARENCE WELLS, A.A.M.C., who was killed on the same day as Captain Wilson, was educated at St. Peter's Collegiate School, Adelaide, graduating in medicine at the University two years prior to the outbreak of war. He then held the appointment of resident surgeon at the Adelaide Hospital for 18 months. In January, 1915, he enlisted in the Australian Imperial Force, serving with the 1st Australian General Hospital, and later with the 1st Light Horse Regiment as regimental M.O. in Egypt and Gallipoli. In April of the present year he was transferred to an infantry battalion as R.M.O., and served with this unit on the Somme. On the second day of the advance from Villers-Bretonneux he was wounded by a shell fragment and died on the same day. A brother officer who knew him well writes of Major Wells's studious and retiring disposition and of the fine impression made by his gallant and soldierly conduct.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. R. L. I. Arnott, Indian Infantry, killed in action, younger son of Col. J. Arnott, I.M.S., of Edinburgh and Wyselty, Dumfriesshire.
Major M. Staveley, M.C., R.F.A., died of wounds, second son of the late Mr. W. H. C. Staveley, F.R.C.S.
Major T. F. P. Breen, R.A.M.C., killed in action, elder son of the late Inspector-General T. J. Breen, R.N.
Lieut. E. G. Shepherd, Canadian Infantry, killed in action, only son of Dr. F. J. Shepherd, of Montreal, Canada.
Second Lieut. R. F. Higgs, Queen's Regiment, killed in action, youngest son of Dr. A. W. Higgs, of Chelsea, London, S.W.
Lieut. C. O'N. Daunt, South Lancashire Regiment, attached R.A.F., killed in action, younger surviving son of Dr. F. E. H. Daunt, of Clapham, London, S.W.

EXEMPTION FOR MEDICAL PRACTITIONERS.

Cases have occurred in which applications for the grant of exemption to a duly qualified medical practitioner have been made to the ordinary tribunals. As stated in the Memorandum of the Local Government Board of May 22nd last (R. 198), any such application must be made direct to the Medical Tribunal at 429, Strand, W.C. 2. Each practitioner is notified by the Ministry of National Service when his case comes under consideration by them as to the time within which an application for exemption may be made, and the application cannot be lodged until the notification has been received. A special form of application has been prepared for the use of medical practitioners which may be obtained by them from the Medical Tribunal.

AN Exhibition is being held at the Whitechapel Art Gallery illustrating women's war work. The Exhibition will be open free daily, from Wednesday, Oct. 9th, to Wednesday, Nov. 20th, from noon to 7 P.M.; Saturdays and Sundays, noon to 8 P.M.

ELSIE INGLIS LONDON MEMORIAL FUND.—Recent events in Serbia are rapidly bringing nearer the day when the Chair of Medicine in the University of Belgrade can be inaugurated in memory of Dr. Elsie Inglis's work in Serbia. The Elsie Inglis London Memorial Fund has been founded expressly to endow this Chair. On the General Committee are the names of Miss Aldrich-Blake, M.D., Dr. M. Curcin, Sir Walter Fletcher, and Sir Alfred Keogh. Of the £12,000 required over £2500 have already been promised or subscribed. Donations may be sent to the Elsie Inglis London Memorial Fund at 66, Victoria-street, London, S.W.1.

Correspondence.

"Audi alteram partem."

MEDICAL MEN IN PARLIAMENT: MEDICAL RECONSTRUCTION.

To the Editor of THE LANCET.

SIR,—There are two important points to which I should like to call attention.

Medical Men in Parliament.

(1) I am afraid that I did not make my meaning clear at the meeting at Steinway Hall on Oct. 1st,[1] and as the matter is a very important one I shall be glad if you will allow me to explain it further. The chief point which I wished to emphasise was that, whether the medical representatives in Parliament were many or few, it was most important that the profession should keep them thoroughly informed of the views of practitioners following different lines of practice and practising under different circumstances (e.g., country or town), and of the reasons for those views. In this way their representatives in Parliament would have before them the various sides of the problems, and would therefore be able to decide with some degree of certainty and unanimity, after consideration of the various points, what is the most suitable line to take when these matters come before Parliament, and what lines will most closely represent the considered experience of the various classes of practitioners.

During the year that I have been in Parliament I have only twice had views brought before me in connexion with medical subjects which were under discussion. This is not the way in which other professions or trades manage their business; there is no important subject, with the single exception of medicine, which has come before Parliament in my short experience with regard to which we have not received many reasoned letters and leaflets from the parties concerned. To keep the medical Members in Parliament fully informed as to facts and views is really as important a matter as, and possibly more important than, that of the actual number of members of the medical profession in Parliament. I hope, therefore, that during this reconstructive period men in different branches of the profession and practising in various parts of the country will come together and place their views and experience before the medical Members in Parliament in connexion with any medical subject which is under discussion.

Medical Reconstruction.

(2) The time is approaching when civilian medical men who have been serving for a long time abroad will be coming back, and it behoves those of us who have remained in England to do our best to help them out of the difficulties in which their long absence from their practices may have placed them. This matter was, I believe, discussed some considerable time ago by the British Medical Association but was dropped for a time. I think, however, that it must be taken up again without further delay. The needs of these men will be various. Some who have partners who have been keeping things together may be able to resume their practices without requiring any help and the same applies to those who have some private means. There are many others, however, who, if they are not helped to re-establish themselves, will be in very serious trouble. Such are:—

(*A*) Men without partners who have been absent for a long time and who may find that, in spite of the best services of their neighbours, their practice has more or less disappeared, at any rate for a time; but still if they can settle down again in the same place a good deal of it may return and a fresh practice may be established. But I fear that a good many of the men of this class will find it difficult to wait long enough and may require some temporary financial assistance to enable them to regain their position.

(*B*) A good many will have lost their practice altogether and will have to start afresh. Two things may be required for such men: in the first place information as to suitable places to settle in—e.g., where doctors are most needed, and in the second place temporary financial assistance.

(*C*) Men who have not previously been in practice will require advice and guidance on the same lines as *B*, but I hardly think that they have the same lien on the medical profession for financial assistance as men who have been taken away from their practices. (Incidentally it may no doubt be said with truth that it is the State who ought to help financially to reinstate the medical men whom they have taken away, but the time for action would probably have passed before any tangible result could be got in that direction.)

As to the body or bodies who might undertake this work, it seems to me that, as all the information as regards practices is already in the hands of the various war selection committees or can be most readily obtained by them, they would be the natural bodies to take up the matter of medical reconstruction. There would be no charity in what I am suggesting; no doubt, funds for expenses would need to be collected, but beyond that all that would be required would be a large guarantee fund for the loans. This fund would probably never be called on or only to a small extent, as I believe that those who received loans would look on it as their first duty to pay interest punctually and to repay the loans by instalments as soon as possible. If this suggestion is taken up, I for one, and I am sure many others, would be glad to join in forming a guarantee fund and in subscribing towards the expenses.

I am, Sir, yours faithfully,

Oct. 7th, 1918. W. WATSON CHEYNE.

[1] See report in THE LANCET of Oct. 5th (p. 465).

MEDICAL MEN IN PARLIAMENT.

To the Editor of THE LANCET.

SIR,—In accordance with the voting of those who attended the meeting of the profession at Steinway Hall on Oct. 1st, the following have been invited to serve on the committee appointed for the purpose of "taking such steps as may be possible to further the election of medical men to the House of Commons." Representatives of the Royal College of Physicians, Royal College of Surgeons, Royal Society of Medicine, Medical Department of the Royal Navy, Royal Army Medical Corps, Royal Institute of Public Health, British Dental Association, British Medical Association, Incorporated Society of Medical Officers of Health, Medical Society of London, Medico-Political Union, Medical Women's Federation, National Medical Union, Poor-law Medical Officers' Association, State Medical Service Association, the Editor of *The Lancet*, the Editor of the *British Medical Journal*, the Editor of the *Medical World*, Mr. Ernest Clarke, Dr. W. F. H. Coke (Ashford), Dr. R. A. Gibbons, Dr. Wm. Hodgson (Crewe), Sir Thomas Horder, Mr. Lockhart-Mummery, Dr. Arthur Latham, Dr. R. R. W. Logan (Ashby-de-la-Zouch), Dr. J. C. Lyth (York), Dr. H. Moreland McCrae, Dr. J. A. MacDonald (Taunton), Dr. Howard Marshall (Cirencester), Sir Henry Morris, Bt., Dr. E. H. M. Stancomb (Southampton), Dr. Barbara Tchaykovsky, Mr. E. B. Turner, Dr. Jane Walker, Colonel A. S. Woodwark, C.M.G.—I am, Sir, yours faithfully,

Portland-place, W., Oct. 8th, 1918. ARTHUR LATHAM.

To the Editor of THE LANCET.

SIR,—At the meeting held on Oct. 1st I ventured to suggest that some society, which included those who are interested in the care of the insane, should be among those nominating representatives to the proposed committee. This met with a very unfavourable reception from Sir Henry Morris, the chairman, who did not appear to regard the matter at all seriously. With all due deference to him, I do not think this suggestion should be brushed aside lightly. The consideration of the welfare of the insane has been frequently before Parliament in the past, and judging from the last report of the Board of Control is likely to be shortly before it again. The questions of earlier voluntary treatment for the poor without certification, the prospect of the foundation of psychiatric clinics in association with the universities are matters of vital public importance.

The Medico-Psychological Association has a membership of about 700, numbering among them practically all who are engaged in this branch of medicine, together with many neurologists, school medical officers, and others who are interested, and should, I think, be in close relationship with those representing the profession in Parliament.

I am, Sir, yours faithfully,

M. A. COLLINS, M.D.,
Lieutenant-Colonel, R.A.M.C.

Ewell War Hospital, Epsom, Oct. 7th, 1918.

HYPNOSIS IN HYSTERIA.

To the Editor of THE LANCET.

SIR,—It is pleasing to find that Captain D. E. Core is so closely in agreement with my theoretical views. But from the standpoint of practice there seems to be justification for me to add one or two brief remarks:—

(*a*) In my form of the hypnotic method I dispel the hysterical symptoms, not by suggesting them away, but by producing "abreaction" of the emotional state which was responsible for their production. In other words, I make the patient live again through the original emotional occurrence with hallucinatory vividness. In this way I not only clear up the amnesia which is almost invariably present as a symptom in hysterical cases fresh from the firing line, but I also obtain for the patient a strong re-synthetising factor in the liberated emotion. In *every one* of the 121 cases of hysterical mutism that passed through my hands in France, this method restored the power of speech within a few minutes. Other symptoms were cleared up in the same way.

(*b*) I find as a result of practical experience of hysterical cases that the concepts "dissociation" and "repression of emotional states" are of more help in explaining both hypnosis and hysteria than the vague concept of "suggestibility." In fact, they are needed by anyone who wishes to understand the manifestations of suggestibility in concrete instances.

(*c*) Captain Core says that the rational method of cure is "the resolution of the symptoms through the patient's own consciousness." With this I entirely agree. But I find from experience that in a certain proportion of acute cases, where amnesia is present, it is essential to bring the repressed emotional experience back from the unconscious into clear consciousness if the rational method of persuasion is to produce a permanent cure. And my method of hypnosis is both an expeditious and a safe way of doing this.

(*d*) In many cases of hysteria, and in all cases of neurasthenia, the method of hypnosis can be entirely dispensed with. Close inquiry into the patient's past history, the recall of dim memories by the method of free association, and the careful explaining to the patient as to how his symptoms have originated, together with the arousal of sthenic emotions, such as an enthusiastic expectation of cure, will suffice in these cases. To sum up the whole method I have suggested the term "autognosis," since it is a thoroughgoing theoretical and practical knowledge of self which makes a psychoneurosis or a psychosis impossible.

I am, Sir, yours faithfully,

WILLIAM BROWN,
Major, R.A.M.C.

Craiglockhart War Hospital, Edinburgh, Oct. 5th, 1918.

THE PROPHYLAXIS OF VENEREAL DISEASES.

To the Editor of THE LANCET.

SIR,—Such a stirring letter as that which appeared in your columns of Oct. 5th over the signature of "M.D., F.R.C.P., F.R.S." is worthy of the hearty and prompt support of all members of the medical profession who recognise the truth urged by your correspondent that medical prophylaxis is the most potent weapon against the spread of venereal diseases. It is to be hoped that the medical profession, as well as the general public, will assist in promoting in every possible way the proposed active propaganda for staying that plague which is still infecting, disabling, and ultimately destroying more men and women in this country than at any previous time.

Much has been done, though very recently, towards compassing the definite object of preventing venereal infection rather than relying on early treatment of the contracted or suspected disease; but it is none the less true that every move in this direction has been strenuously opposed either by public denouncements or by far more effective influences brought to bear on it by other ways and means. True though it is that many medical men have spoken out very clearly on this subject, and not without a large measure of successful effect, it is equally true, as your correspondent says, that no active steps have been taken by the medical profession as a body to urge the necessity of the earliest possible preventive disinfection in the case of venereal as in all other kinds of infectious diseases. This omission to act is largely due to the fact that many of those who are best instructed and feel most strongly regarding the extent and urgency of this evil have been, and are, greatly hampered by the positions held by them in the Army and Civil Service, and, though to a less extent, in the Navy. It is within my own knowledge true that numerous officers in all these services are prevented from acting and speaking out by official restrictions alone. Nor can it be doubted that, such restrictions apart, the influence of the great body of our medical officers of health, whose leading function it is to bring medical science to bear on the prevention of infection, would have made itself powerfully felt throughout the community.

Rather than to cast any blame whatever on those who have been thus prevented from taking combined action, the occasion now once more presents itself for the medical profession, and with their guidance for the public generally, to exert themselves to the utmost in insisting that the present scientific knowledge of the prevention of venereal infection should be duly and promptly utilised in practice. Though much has been accomplished, much more effort is needed before a sufficiently great and effectual barrier can be put up against the instant mass of disease now oppressing this country, and spreading thence into other lands. Both nationally and politically the seizure of the occasion is of high practical importance.

I am, Sir, yours faithfully,

London, Oct. 6th, 1918. H. BRYAN DONKIN.

PS.—Please allow me to say that I have no knowledge of the identity of your correspondent.

NOTIFICATION OF INDIGENOUS MALARIA.

To the Editor of THE LANCET.

SIR,—It has been obvious for some time that, owing to war conditions, cases of indigenous malaria would sooner or later occur in this country. This anticipation has now been realised. To what extent cases have arisen in other districts during the last few weeks I do not know; but last week I had the opportunity of seeing an undoubted case in a member of the civilian population in this neighbourhood. The following history was given by his medical attendant:—

A middle-aged gentleman, of active business habits, he was in excellent health until Sept. 21st, when he began to shiver soon after going to bed. He thought he was beginning an attack of influenza. In a few hours, however, it passed off, and he felt quite well until the third day when the shivering attack recurred. Briefly, he has had recurring typical malarial attacks every alternate day since. Latterly they have become more severe. Each lasts about six hours. They anticipate by a few hours. I saw him on Oct. 2nd, in the late afternoon, when his attack was coming to an end. His appearance was typical, and a blood film showed numerous parasites of benign tertian malarial fever. This patient has not been out of England since the war began. Whether he has ever been abroad in his life or not I cannot say, but he has certainly never lived in a malarial country or suffered from malaria before. He has therefore been infected in England, probably during the month of September, 1918. During that month he has made short visits to one or two large towns in various parts of the country, occasionally staying the night. It is thus uncertain whether he has received his infection there or at home.

My object in writing this letter is not merely to record this, the first indigenous case I have seen in a civilian, but to call the attention of those who control our public health affairs to the importance of making these cases notifiable as soon as possible. With the end of the war thousands of our troops will be returning from the East, many infected with malaria, and the likelihood of indigenous cases arising on a much larger scale is very great. We ought to be obtaining such information as will enable us to advise simple precautions in those areas in which they may be necessary. The first step towards this is compulsory notification.

I am, Sir, yours faithfully,

Sheffield, Oct. 8th, 1918. ARTHUR J. HALL.

CHRONIC INTESTINAL STASIS.

To the Editor of THE LANCET.

SIR,—Much evil has been laid at the door of man's supposed rise from a quadrupedal posture, and perhaps more at the door of chronic intestinal stasis. Now Dr. Leonard Williams, in THE LANCET of Oct. 5th, has declared that the first bogey is the "*causa causans*" of the second. The cause of chronic intestinal stasis, and therefore the origin of

such a multitude of human ills, is said to be found in the fact that man has departed from the "posture and gait of his quadrupedal ancestors." One would like to know what evidence can be furnished by clinicians in support of the thesis that man is descended from quadrupedal ancestors. Slowly, but surely, such a view of man's phylogeny is passing away. In the last issue of *Nature* (Oct. 3rd), Professor Giuffrida-Ruggeri himself admits that "it is evident that Hominidæ never passed through a quadrupedal stage." The clinician must abandon this much-abused solution unless he can provide some evidence in its favour far better than anything hitherto put forward by anthropologists or anatomists.

The second lesson that Dr. Leonard Williams deduces from a study of chronic intestinal stasis will not commend itself to zoologists. He tells us that our "damnable heritage of the colon would be infinitely less damnable if we treated ours" as the quadrupeds treat theirs. And he says that they treat their colons "to long periods of complete rest," and that they go "for several days without food." Some animals do these things from the necessities of their life-habit, and it will be admitted, I think, that those animals which make frequent fasts of necessity are those having the *shortest* and *simplest* colons. When an animal has a large colon it is generally a certain indication that the creature is one that spends most of its waking hours in feeding. Did we set ourselves to follow the examples of quadrupeds having large colons we should continually munch vegetable matter, and agree with Moses as to the limitation of fasts.

I am, Sir, yours faithfully,

F. WOOD-JONES,

Hunter-street, Oct. 5th, 1918. Captain, R.A.M.C.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Fleet Surg. J. C. Ferguson placed on Retired List at own request with the rank of Deputy Surgeon-General (Retired).

Placed on Retired List: Surg.-Gen. G. Welch, C.B.

To be Surgeon-General: Deputy Surg.-Gen. G. Wildey.

To be Deputy Surgeon-General: Fleet Surg. E. C. Lomas, C.B., D.S.O.

ARMY MEDICAL SERVICE.

Lieut.-Col. J. F. Martin, C.M.G., R.A.M.C., to be a temporary Deputy Assistant Director-General.

ROYAL ARMY MEDICAL CORPS.

Temp. Hon. Lieut.-Col. Sir J. Bland-Sutton (Major, R.A.M.C., T.F.) relinquishes his temporary honorary commission on re-posting.

Temp. Major J. A. Wait (Lieutenant-Colonel, R.G.A., T.F.) to be emporary Lieutenant-Colonel.

Major H. F. Shea relinquishes the acting rank of Lieutenant-Colonel on re-posting.

Capt. H. C. D. Rankin to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Capt. M. P. Leahy relinquishes the acting rank of Lieutenant-Colonel.

Lieut. (temp. Capt.) G. H. Haines to be Captain.

H. W. Doll, late temporary Captain, is granted the honorary rank of Captain.

Temporary Lieutenants to be temporary Captains: C. P. Strong, A. Mills, E. Macmillan, A. Lowndes, I. H. Lipetz, W. P. Lowe, C. H. Ripman, E. L. Holland, T. Drysdale. J. F. Allan, A. B. Waller, R. C. W. Spence, F. H. Whyte, J. T. Grierson, W. M. Thomson, C. W. Alford, T. C. Hynd, W. Bain, S. W. Green, W. Loke, G. Price, J. C. Ogilvie, F. C. Mason, J. Findlay, G. A. Crowley, W. P. Bonner, A. J. D. Cameron, R. H. Calvert, J. B. H. Beatty, S. K. Hutton, A. R. Moir, D. H. Trail, H. M. Johnston, T. F. Ryan, F. P. B. MacTavish, J. G. Lessey, J. Macnamara, J. Magner, W. Murphy, P. D. Maclean, R. W. H. Meredith, W. H. C. Patrick, H. E. Alexander, A. H. L. Thomas, S. M. Green, D. Wardrop. J. B. C. Brockwell, A. B. Fearnley, T. J. D. Quigley, G. R. Harcourt, S. E. Cathcart, T. A. Clarke, H. H. James, I. C. MacKenzie, C. Murray, S. Vosper, H. F. Powell.

G. A. Borthwick, late temporary Captain, is granted the honorary rank of Lieutenant.

Officers relinquishing their commissions: Temp. Majors C. B. Heald, F. F. Muecke; Temp. Capts. J. McIntyre, L. S. Hooper, H. P. Helsham, E. F. Thomas, J. R. Dick, W. Corbet (on account of ill-health contracted on active service and is granted the honorary rank of Captain), G. Munro (on account of ill-health and is granted the honorary rank of Captain), J. Muckart (on account of ill-health and is granted the honorary rank of Lieutenant); Temp. Lieuts. F. W. Maunsell and A. W. Musson (on account of ill-health and are granted the honorary rank of Lieutenant), J. S. Simpson.

Canadian Army Medical Corps.—Temp. Capt. (acting Major) F. C. Clarke to be temporary Major. Temp. Capt. H. C. Mersereau to be acting Major while specially employed.

SPECIAL RESERVE OF OFFICERS.

Major (Brevet Lieut.-Col.) (acting Lieut.-Col.) W. Butler relinquishes his acting rank on ceasing to be specially employed.

Capt. (acting Major) R. S. Taylor is granted the pay and allowances of his acting rank.

Capt. A. L. Flemming is restored to the establishment.

Capt. A. H. Habgood relinquishes the acting rank of Lieutenant-Colonel and reverts to the acting rank of Major (with pay and allowances of his substantive rank).

TERRITORIAL FORCE.

Major T. H. Ionides and Capt. E. R. Clarke are seconded for duty overseas.

Capt. (temp. Major) A. A. S. Skirving relinquishes his temporary rank and is restored to the establishment.

Capt. A. W. Harrington to be acting Major whilst specially employed and remain seconded.

General List.—Capt. (acting Major) J. Dundas relinquishes his acting rank on vacating the appointment of Deputy Assistant Director of Medical Services. Capt. J. R. Menzies to be acting Major whilst specially employed. Capt. (acting Major) J. A. Bell relinquishes his acting rank on ceasing to be specially employed.

ROYAL AIR FORCE.

Medical Branch.—C. D. H. Corbett (late Captain, R.A.M.C.) is granted a temporary commission as Captain, and to be temporary Lieutenant-Colonel whilst specially employed. Major C. H. S. Taylor to be temporary Lieutenant-Colonel whilst specially employed. The undermentioned are granted temporary commissions as Lieutenants: A. Parker, G. M. Wishart, W. J. Lytle.

Dental Branch.—L. Wigoder is granted a temporary commission as Lieutenant.

URBAN VITAL STATISTICS.

(Week ended Oct. 5th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 12·6, against 11·7 and 11·4 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 12·7, or 0·6 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 3·0 in Smethwick, 3·5 in Gillingham, and 4·4 in Lincoln, to 21·6 in Tottenham, 23·9 in Portsmouth, and 27·3 in Exeter. The principal epidemic diseases caused 278 deaths, which corresponded to an annual rate of 0·9 per 1000, and included 186 from infantile diarrhœa, 36 from diphtheria, 22 from whooping-cough, 13 each from measles and scarlet fever, and 8 from enteric fever. The deaths from diarrhœa, which had declined from 435 to 220 in the five preceding weeks, further fell to 186, and were 92 below the number registered in the corresponding week of last year; 55 deaths belonged to London, 14 to Liverpool, 7 to Birmingham, and 6 each to West Ham, Middlesbrough, and Newcastle-on-Tyne. The 1019 cases of scarlet fever and 1125 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 80 and 65 above the respective numbers remaining at the end of the previous week. Of the total deaths in the 96 towns 103 resulted from violence. The causes of 36 deaths were uncertified, and included 7 in London, 5 in Birmingham, and 4 each in Liverpool and Manchester.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 10·6 to 14·3 in the three preceding weeks, further rose to 19·0 per 1000. The 559 deaths in Glasgow corresponded to an annual rate of 26·2 per 1000, and included 12 from infantile diarrhœa, 5 each from whooping-cough and diphtheria, and 1 from scarlet fever. The 88 deaths in Edinburgh were equal to a rate of 13·8 per 1000, and included a fatal case each of whooping-cough, diphtheria, and infantile diarrhœa.

Irish Towns.—The 163 deaths in Dublin corresponded to an annual rate of 21·3, or 1·3 per 1000 above that recorded in the previous week, and included 11 from infantile diarrhœa, 3 from enteric fever, 2 from diphtheria, and 1 each from scarlet fever and whooping-cough. The 72 deaths in Belfast were equal to a rate of 9·6 per 1000, and included 5 from infantile diarrhœa.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Second Professional Examination in Anatomy and Physiology, held on Sept. 26th, 27th, and 30th, and Oct. 1st, for which 70 candidates presented themselves, 42 were approved, and 28 were rejected. The following are the names and medical schools of the successful candidates:—

Douglas Robert Ainsworth, Manchester Univ.; George Kilpatrick Arthur, St. Bart.'s Hosp.; William Beaumont, London Hosp.; Frans Bekker, Guy's Hosp.; John Ryther Steer Bowker, Sydney Univ. and Middlesex Hosp.; Georgie Geddes Brown, Aberdeen Univ.; Hitchon Seater Chadwick, Manchester Univ.; Agnes Eloise Murray Curlewis, Lond. Sch. of Med. for Women; Bernard John Devine and John Roy Dow, King's Coll.; Abdallah Jacob Dowek, Manchester Univ.; Thomas Annesley Eccles, St. Bart.'s Hosp.; Richard Tudor Edwards, London Hosp.; Mathieu Ernotte, Liége and King's Coll.; Ewart William Evans, Birmingham Univ.; Charles Edmund Fenton, London Hosp.; Eric St. Clair Gainer, Middlesex Hosp.; Kate Glyn-Jones, Lond. Sch. of Med. for Women; Leslie Walton Hamp, Birmingham Univ.; Basil John Hancock, Middlesex Hosp.; Sidney Estridge Harvey, St. Thomas's Hosp.; Edward Richard Hughes, London Hosp.; Janet Hughes, King's Coll.; Francis Joselin Jauch, Middlesex Hosp.; David Ellis Jones, Cardiff Univ.; James Trevelyan Jones, Guy's Hosp.; Edmund Oliver Lewis, Cambridge Univ.; Reginald Cyril Lightwood, King's Coll.; Charles Arthur Lindup, Univ. Coll.; John Nigel Loring, St. Thomas's Hosp.; Frances Mary Margerison, King's Coll.; John Kenneth Milward and Hubert Stanley Morris, Guy's Hosp.; Thomas Dallas Overend, Oxford Univ. and Univ. Coll.; Eric Finch Peck, Liverpool Univ.; Cyril Seymour Coode Prance, St. Bart.'s Hosp.; John Jenkin Rowlands, London Hosp.; Sobhi Riskallah Simaika, St. Bart.'s Hosp.; Margaret Charlotte Scrace, Lond. Sch. of Med. for Women; Maxwell Hamilton Summers, Middlesex Hosp.; John Phillip Traylen, London Hosp.; and Charles Paul Wilson, Middlesex Hosp.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the First Professional Examination for the Licence in Dental Surgery, held on Oct. 4th and 5th, the following candidates were approved in the subjects indicated:—

Mechanical Dentistry.—C. G. Atkinson, Guy's Hosp.; Fanny Henrietta Bachrach and E. Drayton, Royal Dental Hosp.; E. C. George and Eveline Mary Russell, National Dental Hosp.; and Winifred Hope Thomas, A. K. Wiggins, and Catherine Mabel Williams, Royal Dental Hosp.

Dental Metallurgy.—R. D. Amm, Guy's Hosp.; C. A. Moody, Pennsylvania Univ. and Guy's Hosp

Mechanical Dentistry and Dental Metallurgy.—C. P. Mist, Royal Dental Hosp.; and H. A. Spouse, Guy's Hosp.

Museum demonstrations will be given in the theatre of the College in Lincoln's Inn-fields by Professor Arthur Keith, Conservator of the Museum, at 5 P.M., on Fridays, Oct. 18th and 25th, and Nov. 1st. The demonstrations are open to medical students and practitioners, as well as to first-aid and ambulance students.

UNIVERSITY OF GLASGOW.—The following degrees were conferred on Oct. 7th:—

Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.).—William James Simon Cameron, Alexander Conner Connell, James Smith McLean Gray, Janet Whyte Hepburn, Humphrey Josh Hollis, James Patrick Kilty, Elizabeth Cochrane Loudon (with commendation), Patrick McDiarmid, Mary Jessie Macdonald, Maud Elizabeth Drysdale Mackinnon, Allan Watt McRorie, Margaret Gardner McVey, John Nicol (with honours), Isaac Ladipo Oluwole, Vida Johnston Perry, Marjory Mary Scanlan, Ralph Paterson Smith (with commendation), Archibald Sutherland Strachan (with commendation), James Churchill Vaughan, Hugh Wands, and William Young.

The Brunton Memorial Prize of £10, awarded to the most distinguished graduate in medicine of the year, is on this occasion divided between John Nicol and John G. Harrower (the last-named graduated in July).

A MEETING of the National Baby Week Council will take place at the Armitage Hall, 224, Great Portland-street, London, W. (by kind permission of the National Institute for the Blind), on Tuesday next, Oct. 15th, at 2.30 P.M.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The opening meeting of the thirty-seventh session of this society was held at the West London Hospital on Oct. 4th. The retiring President, Dr. A. J. Rice-Oxley, inducted his successor, Lieutenant-Colonel E. M. Wilson, R.A.M.C. The new President presented to Dr. Rice-Oxley the Keetley Memorial Medal, and expressed the appreciation of the society for his work during the past session. Colonel Wilson then delivered the presidential address on Ancient Physic. Beginning with trephining in the Stone Age, "to allow the escape of the evil spirit," he traced the development of medical art through the Chaldean and Egyptian epochs. Owing to the prohibition of the study of anatomy at this era clinical knowledge made far more advances than surgical methods, and a number of badly set fractures have been unearthed. Whether Egyptian surgeons removed cataracts is doubtful, although they seem to have operated for pterygium and pannus and frequently to have prescribed eye lotions and salves. The rudiments of public health are discoverable in the Mosaic Law, the connexion between mice and plague being suggested. Chinese and Indian medicine were then reviewed, Colonel Wilson mentioning the claim of the Hindus that Hippocrates derived his knowledge from India. The change from superstition to rationalism was initiated into Greek medicine by Pythagoras, who was the first to pay domiciliary visits.

THE CHADWICK LECTURES.—The first of three lectures by Dr. F. G. Crookshank, entitled the "Story of a New Disease," was given on Thursday, Oct. 10th, at the rooms of the Medical Society of London. Dr. W. H. Hamer, medical officer of health for the City of London, presided. The lecturer, after a tribute to the work and teachings of Sir Edwin Chadwick, gave a sketch of the present conception of the Heine-Medin disease, referring to the recent world-cycle of epidemics that commenced in New York in 1916, and passed to Australia, New Zealand, and Eastern Europe in 1917, reaching England and France in 1918. He then traced the synthetical process by which, since the days of Underwood (1784) and the youth of Sir Walter Scott (1773), our present views regarding epidemiology have been reached, and laid stress on the now-recognised association between many forms of encephalitis and poliomyelitis, &c., and the catarrhal epidemics. He adduced evidence to show that the affection has been present in Europe for centuries in association with similar epidemics and pandemics, and suggested that a key to its understanding might be found in Willis's notion (1661) of an "Epidemical Feavour Chiefly Infestous to the Brain and Nervous Stock." The second lecture will be given on Thursday, Oct. 17th, at 5 P.M., as announced in the Medical Diary.

UNIVERSITY OF BIRMINGHAM.—The Ingleby Lectures for 1918 will be delivered on Thursdays, Oct. 17th and 24th, at 4 o'clock, in the Anatomical Lecture Theatre, by Dr. Peter Thompson, Professor of Anatomy in the University, who has taken as his subject, "Some Problems in Embryology."

CENTRAL MIDWIVES BOARD FOR IRELAND.—The first meeting of the Board was held at the office of the Local Government Board for Ireland on Oct. 1st. The following members were present: Sir W. J. Smyly, Sir J. W. Byers, Dr. E. Coey Bigger, Professor H. Corby, Dr. H. T. Warnock, Mrs. M. Blunden, Miss Annie Michie, Miss J. H. Kelly, and Miss Genevieve O'Carroll. Dr. E. Coey Bigger was elected chairman, Sir A. J. Horne deputy chairman, and Mr. J. E. Devlin was nominated as secretary. The Board appointed a finance committee, and also a committee to draw up rules and regulations to be submitted to the next meeting.

Vacancies.

For further information refer to the advertisement columns.

Barrow-in-Furness, North Lonsdale Hospital.—Second H.S. £250.
Birmingham General Dispensary.—Res. M.O. £360.
Birmingham, Erdington Infirmary, House and Children's Homes.—First Asst. M.O. £325. Also Female Second Asst. M.O. £300
Bristol Royal Infirmary.—H.P. and H.S. £120.
Burton-on-Trent Infirmary.—H.S. £200.
Cambridge Borough Education Committee.—Asst. Sch. M.O. £400.
Central London Ophthalmic Hospital, Judd street, W.C.—H.S. £50.
Dorset County Council Education Committee.—School Dentist. £300.
Dudley, Guest Hospital and Eye Infirmary.—Asst. H.S. £120.
Dumfries and Galloway Royal Infirmary.—Asst. H.S.
Great Northern Central Hospital, Holloway-road, N.—H.S. £150.
Grimsby and District Hospital.—Res. H.S. £200.
Guy's Hospital, S.E.—Chief Clin. Asst. 1 guinea per attendance.
Huddersfield County Borough.—Female Asst. M.O.H. £400.
Jarrow Borough.—Female Sch. Med. Inspector. £350.
Leamington Spa, Warneford, Leamington, and South Warwickshire General Hospital.—Second Res. M.O. £200.
Leicester, Leicestershire County Council Education Committee.—School Dentist. £400.
Manchester, Ancoats Hospital.—H.P. £200.
Manchester Education Committee.—Two Temp. Asst. Sch. M.O. £400.
Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—H.S. £150
Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Surgeon. £200.
Middlesex Education Committee.—Temp. Asst. Sch. M.O. £400.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Res. M.O. Also Jun. H.P.
Northampton General Hospital.—Jun. H.S. £150.
Norwich, Norfolk and Norwich Hospital.—H.P., H.S., and Res. M.O. £400 each.
Nottingham General Hospital.—Female Cas. H.S. £250.
Paisley, Royal Alexandra Infirmary.—Res. Phys
Roll of Honour Hospital for Children, 688, Harrow-road, W.—Female Asst. Phys.
Sheffield Royal Infirmary.—Res. S.O. £200.
Southport General Infirmary.—Hon. Oph. Surg.
Swansea Hospital.—H.S. £250.
Winchester, Hampshire County Council.—Temp. Asst. M.O.H. £400.

Births, Marriages, and Deaths.

BIRTHS.

LAWRENCE.—On Oct. 1st, at Kenley, Gravesend, the wife of Stephen M. Lawrence, M.D., B.S., of a daughter.

LINDSAY.—On Oct. 4th, at 8, Oxford-road, Southport, to Colonel C. H. Lindsay, C.M.G., D.S.O., A.M.S., and Mrs. Lindsay—a son.

MAITLAND SCOTT.—On Oct. 7th, at "Shiplake," Bournemouth, the wife of Temporary Major Maitland Scott, R.A.M.C., of a son.

PRICE.—On Oct. 8th, to Dr. and Mrs. Clifford Price, Children's Infirmary, Cleveland-street, W. 1—a daughter.

MARRIAGES.

BELLINGHAM-SMITH—KENNY.—On Sept. 23rd, at St. James, Spanish-place, W., Eric Bellingham-Smith, M.D., M.R.C.P.Lond., temporary Major, R.A.M.C., to Barbara Mary, daughter of William Charles Kenny, of Freemantle House, Southampton.

MCENTIRE—PHILLIPPS.—On Oct. 2nd, at St. Martin-in-the-Fields, Trafalgar-square, Captain S. D. G. McEntire, R.A.M.C. (S.R.), to Mary Constance, only daughter of the late Major Robert Phillipps and of Mrs. Phillipps.

DEATHS.

BINCKES.—On Sept. 23th, at Woodville House, Gravesend, Frederick William Binckes, M.R.C.S., L.R.C.P., late house surgeon, Gravesend Hospital.

BREEN.—On Sept. 18th, killed in action, Major J. F. Pennefather Breen, R.A.M.C.

KEITH.—On Oct. 2nd, at Kinnermit, Turriff, Aberdeenshire, Robert Donald Keith, M.A., M.D. Aberd., late Principal of the King Edward VII. Medical School, Singapore, aged 41.

WALMESLEY.—On Sept. 23rd, at Malta, of influenza, John Joseph Walmesley, R.A.M.C., aged 42.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

CASES OF SOLANINE POISONING.

A CORONER'S inquiry has just been concluded at Worthing into the cause of the death of two little girls (sisters), aged 8 and 4, who died suddenly on August 11th, under somewhat unusual circumstances. The children suffered a few hours before death from sickness, headache, and diarrhœa, with high temperature. Being unable to trace any evidence of irritant poisoning three medical men were not prepared to express an opinion as to the cause of death. The contents of the stomachs were therefore submitted to Mr. Otto Hehner for analysis, who found in the case of the elder child a very minute trace—about 1/13th of a gr.—of a vegetable glucoside in a crystallised condition. He came to the conclusion that it was solanine and an alkaloid produced from it, solanidine. The contents of the other child's stomach furnished all the reactions which were yielded by the alkaloid solanidine. Almost all the plants belonging to the nightshade family contain the alkaloidal glucoside solanine, which in the body underwent decomposition into glucose and the alkaloid solanidine. Berries of "deadly nightshade," shoots of sprouting or shrivelled potatoes, Mr. Hehner said, contained as much as 7 per cent. of alkaloidal glucoside. That and the alkaloid had marked poisonous properties, and produced vomiting, diarrhœa, headache, lassitude, enfeebled pulse, and heavy breathing. Many cases of fatal results were on record. The symptoms recorded by the medical men agreed in every respect with those observed in cases of solanine poisoning. Mr. Hehner came to the conclusion that both children died from the effects of eating a poisonous substance containing solanine. They might have eaten berries of the woody nightshade, which were very plentiful in the hedges at the time; and it was an equal possibility that at dinner the children ate potatoes which might have been in a decomposed or sprouting condition. Neither solanine nor solanidine was a commercial article, and neither could be obtained by purchase by an ordinary member of the public. It was therefore certain, Mr. Hehner said, that the death of the children was quite accidental. A verdict of "Death from misadventure" was returned.

JOHN OF BURGUNDY.

SUPPLEMENTING the note on a Mediæval Medical Author in THE LANCET of Sept. 21st (p. 410), a correspondent writes: "John was probably an Englishman and was not improbably the same as Sir John Mandeville. I do not think that there were any MSS. of his treatise on the plague (i.e., the Black Death) in French. Nearly all the MSS. of this work are in English libraries (British Museum, Bodleian) and are written in English or Latin. The hypothetical connexion between John of Burgundy and Mandeville was the subject of a very interesting paper by Nicholson, the late Bodleian librarian."

EUTHANASIA.

THE August issue of *Scientia*, an international review of synthetic science published monthly at Bologna (London: Williams and Norgate), contains an article in French by Professor J. A. Lindsay, of Belfast, on the Moral Dangers of Euthanasia. He opens with the question:

En cas de maladie incurable et douloureuse, lorsque le malade demande à être délivré de l'existence et que ses amis y consentent, y a-t-il quelque bonne raison pour que le médecin ne fasse pas usage des moyens certains qu'il possède de hâter une issue inévitable, de mettre fin à des souffrances inutiles?

And after considering the answers given by the ancient Greeks and civilisations of different grades concludes that the modern reply must be:

Il semble donc que, même sans invoquer les sanctions de la religion, en se plaçant seulement au point de vue des intérêts supérieurs de la race, on doive faire une objection des plus sérieuses à l'euthanasie—et *a fortiori* au suicide et à toute forme d'infanticide; qu'elle implique des dangers moraux graves et subtils; que son adoption introduirait un élément sinistre dans la vie humaine et tendrait à l'appauvrissement moral de l'humanité.

FATAL ENTERITIS IN RABBITS.

RABBIT meat is now an important article of diet and had until recently the additional attraction of being unrationed. The fatal disease which is now carrying off young rabbits in great numbers has been shown by Dr. R. T. Leiper, who writes to the *Times* on the subject, to be due to a protozoal parasite, *Eimeria stiedæ*, which invades the gut wall and almost denudes its absorbent surface. Man is susceptible to infection, although but few cases are on record. Rabbit keepers will have to study hygienic principles both on grounds of public health as well as to ensure commercial success.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

Tuesday, Oct. 15th.

GENERAL MEETING OF FELLOWS, at 5 P.M.
Installation of new President: Sir Humphry Rolleston, K.C.B., M.D.
Ballot for Election to the Fellowship. (Names already circulated.)

MEETINGS OF SECTIONS.

Wednesday, Oct. 16th.

HISTORY OF MEDICINE (Hon. Secretaries—Charles Singer, Arnold Chaplin): at 5 P.M.
Presidential Address by Mr. D'Arcy Power.
Paper: Dr. Charles Singer: From Tradition to Observation—a Chapter in the History of Anatomy (with lantern slides).

Thursday, Oct. 17th.

DERMATOLOGY (Hon. Secretary—S. E. Dore): at 5 P.M.
Cases will be shown at 4.30 P.M.
Will Members please note that no Meeting of the Section will be held in December, or in February, April, and July, 1919.

Friday, Oct. 18th.

ELECTRO-THERAPEUTICS (Hon. Secretaries—R. Knox, W. J. Turrell): at 8.30 P.M.
Presidential Address by Mr. C. R. C. Lyster.
Demonstration: Sir James Mackenzie Davidson: Stereoscopic Technique, with practical demonstration.

CLINICAL SURGERY.—These Sections are specially invited to attend this Meeting.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.
MONDAY, Oct. 14th.—8 P.M., General Meeting. 8.30 P.M., Opening Address: Major A. F. Voelcker (incoming President). Demonstration:—Dr. T. B. Hyslop: Degeneration in Art, Music, Science, and Literature.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
FRIDAY, Oct. 18th.—5 P.M., Museum Demonstration:—Prof. A. Keith: Nerve Suture and Nerve Regeneration.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of Post-Graduate Course were given in issue of Sept. 27th.)

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.
Course of Lectures on Public Health Problems under War and After-war Conditions (each Lecture will be followed by a Discussion):—
WEDNESDAY, Oct. 16th.—4 P.M. Lecture II.:—Dr. C. W. Saleeby: Racial Reconstruction and the Proposed Ministry of Health.

CHADWICK PUBLIC LECTURES, at the Rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W.
Lectures on the Story of a New Disease (illustrated by epidiascope):—
THURSDAY, Oct. 17th.—5 P.M., Lecture II:—Dr. F. G. Crookshank: (1) The "Nervous Feavour" of Thomas Willis; (2) Spinal Typhoid; (3) Epidemic Encephalitis.

Communications, Letters, &c., to the Editor have been received from—

A.—Major G. F. Alexander, R.A.M.C.
B.—Capt. T. C. Bost, R.A.M.C.; Surg. E. Bayley, R.N.; Dr. W. A. Bond, Lond.; Prof. W. Bulloch, Lond.; Surg. S. S. Barton, R.N.; Surg.-Gen. R. Blue, Washington; Mrs. M. Breen, Dublin; Major W. Brown, R.A.M.C.; Mr. J. Burns, Edinburgh; Mr. W. Butterly, Liverpool; Capt. G. Bate, R.A.M.C.(T.)
C.—Sir W. Watson Cheyne, Bart., K.C.M.G., C.B.; Dr. S. D. Clippingdale, Lond.; Lt.-Col. M. A. Collins, R.A.M.C.
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The Treatment OF GUNSHOT WOUNDS OF THE JOINTS.

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PART II.[1]

TREATMENT OF WOUNDS OF THE INDIVIDUAL JOINTS.

Shoulder-joint.

WOUNDS of this joint are complicated by injury to the lung so frequently that a special examination should be made of the chest; this should never be omitted when there is only an entrance wound.

Early cases are treated merely on the lines already laid down, but when complicated by lung injury some hours should elapse before operation to allow of time for compensation of the heart and lungs to meet the new conditions. After excision of the wound every attempt should be made to close the joint cavity, but in most cases this is anything but easy. Should the head of the bone be severely fractured it is excised, by preference, through the original wound. If the fracture is not severe a partial excision is all that is required. In any case, every effort should be made completely to close the wound—nearly all cases so treated do very well indeed.

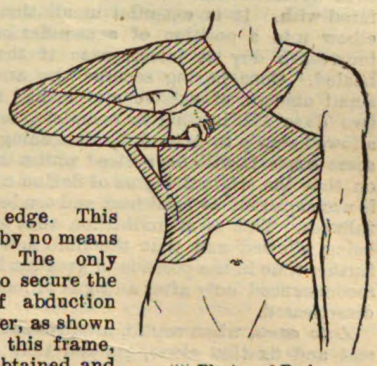
Late cases should be interfered with as little as possible unless a septic arthritis arises; quite a number of these settle down if the limb is efficiently immobilised and extended. In some, however, the infection breaks outside the joint and forms an extra-articular abscess—usually under the deltoid. Such an abscess may be drained behind at the posterior margin of the deltoid, either above or below the line of the circumflex vessels and nerve, according as the treatment necessitates the patient lying down or sitting up. These abscesses, if neglected, may track downwards on to the back under cover of the latissimus dorsi, less commonly forwards under the pectoral muscles, sometimes downwards in the arm, following the line of the brachial vessels and nerves or the musculo-spiral nerve.

Should the head of the bone be at all severely damaged and infection arise, excision is the only course left open. It is best carried out after enlarging the entry or exit, if either of these be of any size; otherwise the anterior route along the pectoro-deltoid groove offers the best advantages, combined with posterior drainage. When excising the joint care should be taken to remove as little bone as possible beyond the anatomical head on the inner side and to leave intact the long head of the biceps. Should it be necessary to interfere with the tuberosities, all available bone should be attached to the tendon insertions and not stripped off them even subperiosteally—otherwise a flail joint is liable to result.

Position of the joint during treatment.—After a wound the joint should always be carefully immobilised and as far as possible extended. In early cases a simple and more or less satisfactory method is to make the patient into a "sitting-case" and sling the arm by a narrow fold round the wrist; the weight of the arm alone secures a certain amount of extension. Fixation is secured by strapping the arm firmly to the chest and finally applying a tight bandage over all. At subsequent dressings the strapping is, of course, left untouched.

In later cases, and many early ones, too, better results are obtained by securing the arm in extension with a Thomas's arm splint at right angles to the side—but generally the ring of the splint is in the way of the wound. This disadvantage may be overcome as follows: the patient is treated lying on the back; the arm is secured by weight extension at right angles to the body and slung meanwhile from a Balkan frame lying crossways of the bed. In such a case dressings would only be infrequently changed (once every three to seven days), and then by sliding the bed to one side from under the patient, so that the back of the shoulder lies exposed over the edge. This method, however, is by no means really satisfactory. The only efficient method is to secure the patient in a sort of abduction frame for the shoulder, as shown in Figs. 2–4. Using this frame, good results can be obtained and dressings readily changed without any disturbance to the joint and consequent reactionary rise in temperature. Later on, when the patient is in a fit condition to get up, the frame is replaced by a suitable plaster jacket and support securing the arm in abduction. (Fig. 5.)

FIG. 5.



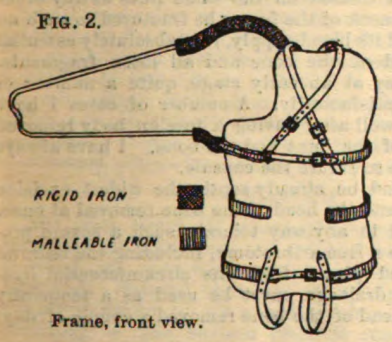
//// Plaster-of-Paris.

When extension is applied to the limb one of the great things to be guarded against is a stiff elbow; to avoid this the extension should be applied above the elbow and the joint bent up once every day.

The position for ankylosis varies according to the needs of the patient in after-life. If a freely movable arm is required ankylosis should be secured in abduction at an angle of about 80°, with slight external rotation and slight flexion. On the other hand, if a limb is required possessing more stability than mobility ankylosis should be secured in abduction at an angle of 40° to 45°. Every gradation between these two may be obtained. When ankylosis is secured in the abducted position the arm always readily falls in to the side, merely by the action of gravity and rotation of the scapula on the chest wall. Abduction of the arm from the side later on is secured in the same way by rotation of the scapula from contraction of the serratus magnus muscle.

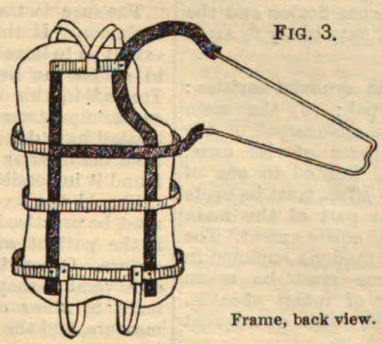
The practice, so often carried out, of treating cases liable to be followed by ankylosis with the elbow close in to the side cannot be too strongly condemned; an arm ankylosed in this position possesses no range of movement and requires subsequently a cuneiform osteotomy below the seat of ankylosis to secure abduction.

FIG. 2.



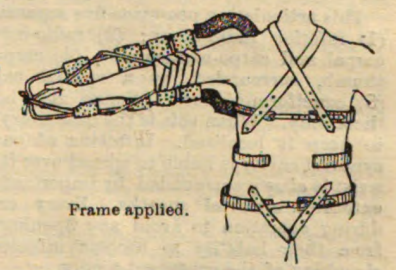
Frame, front view.

FIG. 3.



Frame, back view.

FIG. 4.



Frame applied.

Elbow-joint.

This joint is of special interest from the fact that it is comparatively uncommon to have to interfere with it drastically in cases of infection.

[1] Part I. was published in THE LANCET of Oct. 12th, 1918, p. 477.

Rest and fixation are best secured in all cases by fixed extension with the arm supinated in a straight Thomas's arm-splint. But this position must not be maintained for long, as a stiff elbow is so liable to result. An elbow that becomes stiff in extension is most difficult to get into a flexed position. It should be flexed as soon as possible.

Early cases treated efficiently, as previously described (under general treatment) yield most satisfactory results, in spite of the inability to close and isolate the joint cavity in the greater number of cases. This is particularly so after partial excision. Total excision is but rarely required—only for cases of comminution of the ends of all three bones forming the joint. The olecranon process, if anything like intact, is best left untouched; a better functional result is then obtained and the insertion of the triceps least interfered with. It is essential in all these cases to bend the elbow into a position of acute flexion by the twelfth or fourteenth day at latest, even if the wound is not yet healed. Once having secured the arm in this position a small amount of passive movement [2] is used every one or two days till healing is complete, and then the limb is allowed slowly to extend by slackening the sling daily. In some cases it will be noticed whilst this treatment is going on that the original degree of flexion cannot be obtained: it is accompanied by local heat and tenderness and sometimes fullness. This is an indication that too much movement is being allowed and that the limb must be kept at rest for a further time in the position of greatest flexion. Movement is recommenced only after all signs of local inflammation have disappeared.

Late cases, when septic, usually readily settle down with rest and fixation alone, granted that any retained foreign body and loose bone are removed. Sometimes drainage by lateral incisions may be required.

In a small number of cases the constitutional disturbances from toxic absorption are severe; under these circumstances, to allow of freer drainage and relief of tension, a partial subperiosteal excision of the joint should be used. Only the minimal amount of bone should be removed compatible with efficient drainage. It will depend on the injury as to which bone should be removed—naturally preference must be given in most cases to that already damaged; accordingly it would be part of the articular end of the humerus alone, or of the olecranon alone. Should the entire articular surface of the ulna require removal it is advisable to remove the articular part of the radius as well; by this means the risk of ankylosis between the two bones and consequent loss of pronation and supination in the forearm may be avoided.

As soon as the acutely septic stage has subsided, it is essential for the elbow to be slung in acute flexion and the position changed slightly every couple of days to try to avoid ankylosis.

Wrist-joint.

This articulation possesses five separate synovial cavities: (1) inferior radio-ulnar; (2) radio-carpal; (3) the main carpal and carpo-metacarpal; (4) carpo-metacarpal of the thumb, surrounded by a special capsule of its own; (5) cuneiform-pisiform. Sepsis may be limited to one of these only. When this is the case every effort must be made to keep it localised. Infection of one part of the main synovial cavity is liable to spread over its entire extent. The wrist is *closely* surrounded by important tendons enclosed in extensive synovial sheaths. Every care must be taken during operation to avoid any opening of intact sheaths, from their liability to become infected, with consequent sloughing of the contained tendon.

Early cases.—After excision of fleshy parts of the wound, any fractured carpal bones may be excised with gouge and mallet, preferably subperiosteally. The wound is then treated with B.I.P.P. and carefully packed with paraffinised gauze.

Late cases.—Here similar treatment yields the best results, and it is preferable to leave the case undressed for several days at a time to secure good rest and fixation. If the infection is severe and not localised to the site of injury, all the carpus should be removed subperiosteally as far as possible, save the trapezium—this must, if possible, be left intact to allow of movement of the thumb, especially as this carpo-metacarpal joint is separated by a special capsule from the main synovial cavity.

[2] Once only, not repeated to-and-fro movements; otherwise reaction may be obtained.

Rest and fixation.—The best method of mounting in all cases is in a Thomas's arm-splint, the extension bands being attached to dorsal and palmar aspects of the hand. Should this be impossible a Jones's "cock-up" splint, suitably applied to allow of the dressings being made, should be used.

When a Thomas's arm-splint is used it is important, as soon as the sepsis has settled down, to replace it by a "cock-up" splint. Dorsiflexion is most important, as then the grip of the flexor muscles of the hand is excellent. If ankylosis is secured with the wrist straight there is practically no power in the hand.

Hip-joint.

Gunshot wounds involving the hip-joint are amongst those with the highest mortality met with in the war. This terrible fatality is the result of a series of factors: 1. Shock and blood loss are usually marked. 2. It is usually associated with a fracture of either the femur or the pelvis, or both, each of these in itself being a grave matter. 3. There is often severe damage to the gluteal muscles, and these are particularly prone to gas gangrene. 4. The joint is so near the centre of the circulation that septic absorption is rapid and considerable. 5. The head of the femur is so closely gripped by the circumferential ligament, and the capsule so dense and inextensible, that with the onset of septic arthritis tension very rapidly becomes high and toxic absorption correspondingly great. 6. The joint is so deeply placed that the onset of arthritis is not readily indicated by physical signs. 7. Prolonged convalescence, with its exhausting effect on the patient, is required to ensure recovery. 8. Should amputation be required, disarticulation at the hip-joint is associated with a heavy mortality.

Early cases.—Shock and blood loss are such marked features that at first they entirely dominate the case. They must first be recovered from before the serious surgical measures required are resorted to. Resuscitation as usually carried out means at least a delay of several hours. To my mind, it is this delay that is the chief ultimate factor concerned in the high mortality—it allows of the establishment of a virulent sepsis that passes beyond the immediate limits of the wound.

Resuscitation, to be of real value, must be rapid and efficient. The patient must be quickly warmed up and large quantities of fluid (even as much as 4–5 pints) injected intravenously, combined, if need be, with blood transfusion. This should be immediately followed up by operation. As an anæsthetic gas-oxygen is essential to success. Only in this way can even moderately satisfactory results be obtained.

The case is then treated on the same lines as any other early one. If the neck of the femur be fractured to such an extent as to imperil its blood-supply, it is absolutely essential to excise the head of the bone and all loose fragments. Treated in this way at an early stage, quite a number of cases do progress satisfactorily. A number of cases I have treated have done well after having a foreign body removed from the interior of the joint and the bone. I have always found it impossible to suture the capsule.

Should the wound be already septic the widest excision must be practised and the head of the bone removed at once, if the patient will in any way tolerate such a severe procedure. Otherwise a free arthrotomy, including the removal of several V-shaped pieces from the circumferential ligament to allow of drainage, must be used as a temporary measure, and the head of the bone removed a couple of days later.

Late cases.—Amongst a series of cases that reached the base without operation or, having had an operation, without the head of the femur having been removed the mortality was something like 70 per cent. from sepsis, and this in spite of the utmost care in operation and after-treatment. Once the joint is septic to any degree, it is essential to remove the head of the bone. A small number of the slighter cases of septic arthritis do settle down completely if well immobilised and extended.

The onset of arthritis may be diagnosed, when the neck of the bone is intact, by limitation of movement in every direction. Should there be, however, a fracture of the neck the arthritis has to be diagnosed by the general symptoms and by fullness in Scarpa's triangle, accompanied by acute pain and tenderness on pressure over the head of the bone.

Excision of the head of the femur.—In *early cases* the best route, as a rule, is through the original wound, which may have to be enlarged. Sometimes, however, one or other of the *classical* routes must be used. In *later cases* the latter should always be preferred. The most suitable of these are (1) the antero-external, (2) the posterior trans-gluteal. The latter is not a good route, as a rule; it exposes too large a freshly-cut surface to infection.

In septic cases a route possessing many advantages, especially as regards after-treatment, is that which passes on the inner side of the sartorius, the straight head of the rectus femoris being drawn outwards and even partially divided. This allows of good access straight on to the capsule of the joint at the point where it is closest to the surface. If reasonable care be used there is no danger of damaging the femoral artery, but the ascending branch of the external circumflex artery usually requires to be ligated. Posterior drainage is usually not required if the case be treated with Carrel or B.I.P.P. Should it be required, however, it may be obtained by a partial transverse division of the outer part of the gluteus maximus muscle.

In connexion with the use of the Carrel-Dakin method in these cases whilst the patient is on an abduction frame, it is advisable to add a word of caution. If the liquid passes between the patient's back and the splint the most appalling pressure sores may result with amazing rapidity. For this reason I prefer to use it as seldom as possible.

Splinting.—There is only one satisfactory splint for these cases—Jones's abduction frame. Properly applied, after the head of the bone has been removed, it obviates shortening and allows the patient later to walk on an even keel. But the patient is particularly prone to pressure sores on the back unless the skin is carefully attended to. The only way of doing this is to keep the skin hard and perfectly dry. For this purpose a bandage impregnated with French chalk from a dredger is passed from side to side between the patient and the splint, from the shoulder right down to the thighs. This must be regularly done several times in the 24 hours.

Unfortunately, these cases, before reaching a general hospital, have already got an area of cyanotic and atrophic skin over the sacrum from lying for long periods on stretchers, &c., without being able to move owing to their helpless condition and without having had the skin attended to. It is essential, then, to pay particular attention to the skin over the back from the earliest possible moment. The insertion of pads of wool between the patient and the splint must be strictly forbidden; they are the best means of causing further sores. Should a sore develop, the best treatment is to nurse the patient for a time on his face, with a long Liston splint applied to the normal side and weight-extension to the injured limb in partial abduction.

Amputation at the hip-joint is attended by a frightful mortality in these cases. Should it be deemed necessary, the advantages of using an abdominal tourniquet far outweigh any possible disadvantages. There is practically no blood loss. It should never be applied till anæsthesia is well established, otherwise collapse may occur.

Knee-joint.

This joint, above all others, yields most excellent results with efficient treatment, and demonstrates the necessity for carrying out the fundamentals in treatment previously described. Granted these are efficiently carried out, it is quite uncommon to see a bad result. Its large size and proximity to the surface make it readily accessible for observation. The large surface it presents for toxic absorption renders sepsis here so dangerous to life that careful observation is required from the outset.

The risk from bone injury varies with the bone affected. Injuries to the patella, even when severe, usually progress favourably. Those to the femur are considerably more serious. Those to the tibia are most serious of all; indeed, when the damage to the head of this bone is at all severe and the case is not operated on within several hours it is usually best to sacrifice the limb at once. These cases above all are prone to give rise to a severe septic arthritis. This is probably due to several causes:—1. The cancellous tissue of the tibia is soft and very open, and so bruises readily and extensively. 2. The tibia is further removed from the centre of the circulation than the femur, and its blood-supply is partly recurrent. 3. The medullary cavity is nearer the joint, and so more liable to a myelitis than in the case of the femur.

Early cases are best treated on the general principles described. In this joint bony lesions may often be isolated from the general synovial cavity by using the extensive and loose synovial membrane for plastic methods. In severe fractures of the patella the whole bone may be removed and the synovial cavity closed up by dissecting up the subcrural pouch and turning it down and so closing the joint.

Where the bony damage is extensive, and can be eradicated by doing so, excision of the joint may be used. Every effort must be made to close the wound at once, as cases left open do not do satisfactorily. Excision must never be partial but always complete, in order to ensure bony union. It must be remembered that this is a very severe operation; unless the general condition is fairly good it is best to amputate as a primary measure.

Late cases require great care and skill in treatment; injudicious or over-zealous interference may be attended by disastrous results. When moderately septic it is surprising how many cases settle down with rest and fixation alone, accompanied perhaps by aspiration. When severely septic excellent results may be obtained by drainage, combined with the use of the Carrel-Dakin method.

Drainage by lateral or anterior incisions is only of use in that small number of cases in which the sepsis is limited to the anterior part of the joint. The turning up of a U-shaped flap including the patella is of little or no value. When either of these methods is employed the posterior part of the joint cavity forms a well in which pus accumulates. The patient rapidly emaciates, and sooner or later the infection breaks through the capsule, by way of one or other of the posterior synovial prolongations, into the popliteal space. Thence it spreads upwards into the hamstring region along the sciatic nerve or downwards into the calf along the posterior tibial vessels.

The only method of treatment that I have found satisfactory is to drain the joint by anterior and posterior incisions.[3]

The anterior ones are made in a coronal plane, far outwards and backwards from the margin of the patella, so that the knife enters the joint along the line of the synovial reflections; these incisions extend from the upper extremity of the subcrural pouch to the level of the lateral ligaments, but ending short of them.

The posterior incisions are made in the following way. A small pair of Spencer Wells forceps is passed under cover of the lateral ligaments and thrust forcibly backwards into the popliteal space; the point of the forceps then lies against the head of the gastrocnemius and near to the surface; the outer one lies on the inner side of the outer head of the muscle close to the popliteal vessels, the inner on the inner side of the inner head. The forceps have in their course passed through the two posterior synovial prolongations. The points of the forceps are then cut down upon by vertical incisions through the skin. The edges of these are then retracted and the respective margins of the muscle defined, and the heads divided half across. The capsule of the joint is thereby well exposed. This is next divided transversely outwards on either side from the middle line of the limb to avoid damaging the popliteal vessels. In this way a perfectly free and wide track is made leading from the surface to the back of the joint and allowing of free drainage of the posterior parts of the joint with their prolongations.

Covered Carrel tubes are then inserted as follows: anteriorly four from side to side, one at the uppermost extremity of the subcrural pouch, one under the ligamentum patellæ, and two others intermediate in position; laterally, one under cover of each lateral ligament and passing backwards through the posterior synovial pouches into the posterior wounds. These last tubes only carry two or three pairs of perforations. Other covered tubes are carefully laid on the surfaces of all the incisions. As a general rule no dressings need be done till the second day, when the covered tubes are removed under gas anæsthesia and replaced by uncovered ones, passed along the tracks occupied by the tubes that have been removed. The tubes must be carefully inserted so as not to break down the adhesions that have already formed. On the fourth day the anterior tubes are removed altogether and the lateral ones changed, these being retained until the sixth or occasionally the eighth day.

Using this method for severely septic cases it is surprising how many limbs can be safely saved from amputation.

Should an extra-articular abscess develop in the upper part of the calf, the best method for securing drainage is by an incision along the inner or outer margin of the gastrocnemius, exposing the fascial plane between that muscle and the soleus. The incision is continued along this plane till the abscess is freely opened up. Finally, an incision of ½ to ¾ inch is made crossways of the belly of the gastrocnemius.

Care must be taken in all septic cases to avoid the formation of a *genu recurvatum* during treatment; this is very liable to occur from softening of the ligaments, generally due to sepsis. It is a very crippling deformity.

[3] See THE LANCET, 1917, ii., 186, Figs. A and B.

When either one or both of the lateral ligaments is torn, and the case becomes at all severely septic, this method is useless. I consider that it is always advisable to amputate such a case without delay.

Excision cannot be advocated for severely septic cases owing to risk of septicæmia and the liability for fibrous union to occur as the end-result.

Amputation should be reserved in early cases for those with severe comminution of femur or tibia, or both; in late cases for those with severe septic arthritis or arthritis of moderate degres, accompanied by division of one or both lateral ligaments.

In septic cases it should, by preference, be performed above the knee-joint. Disarticulation is dangerous for two reasons: first, because of the liability to secondary hæmorrhage from the main vessels (in a number of cases that came under my care, and in which it had been done, this complication arose in 50 per cent.); and, secondly, because the subcrural pouch usually becomes shut off by fibrinous adhesions and distended by septic exudate, with the result that toxic absorption takes place to such an extent that the patient's life is imperilled. Should, however, an amputation through the joint be used, it is essential to remove the patella and lay open the subcrural pouch along its entire extent. The pouch in such a case should not be excised.

Preference, to my mind, should always be given to a supracondylar amputation. Should the sepsis be already outside the joint a higher amputation must be seriously considered.

The Ankle and Tarsal Joints.

These joints are characterised, like the carpal ones, by being chiefly made up of small bones. These latter are composed of light cancellous tissue that readily bruises extensively. They obtain their blood-supply from a relatively small extent of their surface, the larger being covered by articular cartilage. As a result, when any of these bones are involved in a gunshot wound that becomes septic, they are particularly liable to a septic osteitis over their entire extent. These facts suggest the necessity, where there is a fracture of any severity, for resorting to a subperiosteal resection of the entire bone involved—the os calcis is the only exception to this, and occasionally the astragalus. In septic cases X ray examinations made at intervals readily show the rarefying osteitis present and its progress, and yield precise information as to the bones requiring removal and the degree and extent of new bone formation.

The extent and relations of the synovial cavities have a most extensive bearing on sepsis and its treatment. Roughly speaking, the mid-tarsal joint divides the foot into two parts—posterior and anterior. Injuries to the bones of the posterior part are less serious and more easily recovered from, as joints of less extent are opened up; on the other hand, injuries to the anterior part are appreciably more serious, as infection is liable to spread over the full extent of the ramifications of the calcaneo-cuneiform synovial cavity, and then necessitate amputation.

It follows that efficient eradication of sepsis should be practised at the earliest possible time; and in order to allow of bone regeneration and maintenance of the length and, to some extent, the arch of the foot, *subperiosteal resection* of the damaged bones must be employed. Granted this is carried out, and the patient is under 35 years of age, bone regeneration takes place and a useful foot may be obtained that would otherwise have to be sacrificed. With efficient rest and fixation it is surprising how often sepsis remains localised. Should it spread, however, in the synovial cavity it may be necessary to remove subperiosteally one or more of the neighbouring small bones—cuneiforms or scaphoid. When operating on these tarsal cases care must be taken to respect those ligaments that separate adjacent synovial cavities.

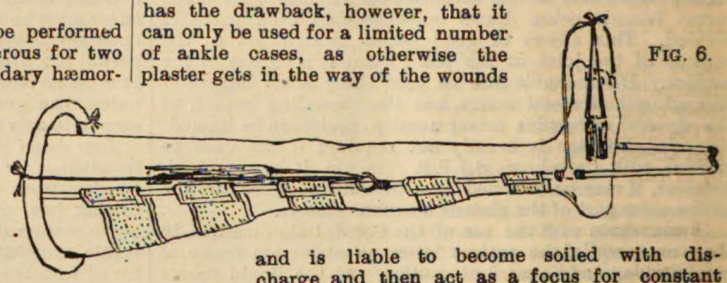
Before resorting to conservative measures it is essential to estimate the amount of concomitant damage to the adjacent tendons: if those of the sole are severely damaged, the foot is best sacrificed at once; but if those of the dorsum only are damaged, it should be remembered that a good deal can be done to remedy the defect at a later date.

The site and extent of any resulting scars, too, are important. Small scars on the outer weight-bearing part of the sole are much more important than those on the inner non-weight-bearing side; indeed, a case that results in a large scar over the weight-bearing surface not infrequently requires amputation later on for pain or recurring ulceration.

Methods of securing rest and fixation.—For the ankle-joint several methods may be used:—

1. *Sinclair's method.*—A Thomas's knee-splint is applied to the limb and extension secured by a plaque of plaster-of-Paris glued to the sole of the foot and secured by bands suitably applied and tied in the ordinary way round the end of the splint. This method is excellent, it allows of absolute rest and fixation with extension. It has the drawback, however, that it can only be used for a limited number of ankle cases, as otherwise the plaster gets in the way of the wounds and is liable to become soiled with discharge and then act as a focus for constant re-infection.

FIG. 6.



2. Probably the most useful method for universal application is that shown in the accompanying figure. (Fig. 6.) The entire limb is secured in a Thomas's knee-splint as follows: Bands of suitable material are glued to the sides of the lower part of the thigh and upper part of the leg and passed through loops of bandage fastened by strapping to the sides of the splint above the ankle, as shown; the bands are then brought up to the ring of the splint, suitably tightened, and fastened off; this secures the limb as a whole in the splint. The limb is supported by metal bands. An arch passing well above the toes is then attached to the sides of the splint and the foot slung from it by material glued to as much as possible of the sole of the foot (the least extent that is essential is only quite small). An effort should always be made to secure the foot in slight dorsiflexion to facilitate walking should ankylosis occur ultimately.

3. Another useful method is to secure the leg in a Jones's malleable iron splint for the ankle, as shown. The splint is first bent in such a way as to allow of free access round the foot and ankle for the application of dressings. It is then applied to the limb and the foot slung from the toe-piece, as described above. (Fig. 7.)

FIG. 7 A.

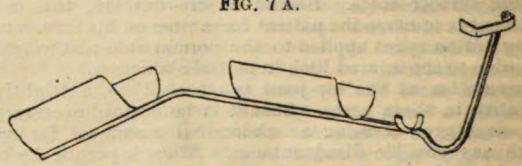


FIG. 7 B.

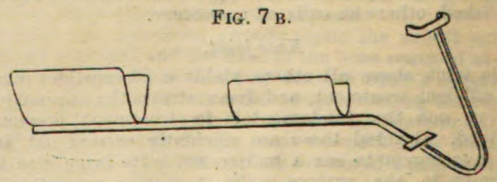
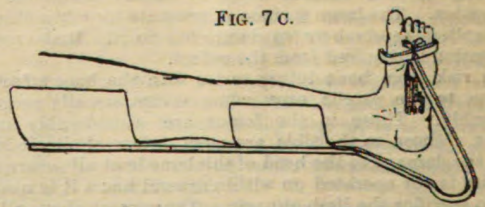


FIG. 7 C.



These last two methods are applicable to tarsal cases as well.

The use of a simple back-splint with a foot-piece cannot be too strongly condemned. Rest and fixation are *not* secured, however much care be exercised; movement always occurs with each dressing.

Treatment of Ankle-joint Cases.

Early cases are best treated on the general lines enunciated above and sutured early. Should the astragalus be widely damaged resection is best practised at once, but is a difficult procedure.

Fractures of the tibia and fibula secondarily involving the joint, if not too severe, do well if all loose and contused bone is carefully removed.

Late cases.—With a septic arthritis, when the astragalus is the fractured bone and is more than slightly damaged, it should be resected, arthrotomy being practically useless, save as a temporary measure to allow of some subsidence of the sepsis in the more severe infections. Where, however, either tibia or fibula is the bone involved and the bony damage is not too severe arthrotomy, with removal of all loose bone, often succeeds very well. When the lower end of the tibia is blown away and the joint involved the limb is best amputated at once; such a case is usually accompanied by extensive tendon damage.

Tarsal Joint Cases.

From what has been described above it is readily seen that the treatment of the gunshot wounds of the tarsal joints is inseparable from and dominated by that of the bones involved. For this reason their treatment will be described under the heading of the individual bones.

Os calcis.—Fractures of the os calcis into the neighbouring joints, even when severe, usually do well after removal of all loose and damaged bone. Any extensive resection is to be avoided as far as possible, otherwise the posterior arch of the foot is liable to be lost from collapse of the heel with, in consequence, considerable crippling of the usefulness of the limb.

Cuboid.—This bone, if severely fractured, yields good results after subperiosteal resection as the sepsis is localised to three small synovial cavities. During resection the tendon of the peroneus longus is liable to have its sheath opened and then slough. If this bone alone is removed regeneration is usually complete and the arch of the foot but little affected. Care must always be taken to prevent, as far as possible, any operation scar from extending on to the tread of the foot.

Fractures involving, either severally or collectively, the *three cuneiform, scaphoid and bases of the second and third metatarsal bones* are particularly important from the extent and ramifications of the synovial cavity that is opened up. They require to be treated with more respect than those of the remainder of the tarsus.

Treatment of early cases.—There is no doubt whatever in my own mind of the superiority of the use of B.I.P. paste in these cases over other methods of treatment, chiefly owing to the infrequency with which these cases need then be dressed.

Late cases.—B.I.P.P. here does very well, too, but I prefer to employ the Carrel-Dakin method—the cases appear to do better.

It is essential to success to have X ray plates taken at intervals during treatment so that any further bones requiring resection may be treated early. The plates are useful, too, as giving an idea of the progress of bone regeneration.

Amputation.—Should this be required Syme's operation or some modification of it is undoubtedly the best; should this not be practicable an amputation just below the middle of the leg must be practised. If a Syme's amputation is required for severe sepsis in the neighbourhood it is not infrequently of advantage merely to disarticulate and then leave the fibula and tibia untouched, with the flap fully open. Later on, when the sepsis has subsided, the operation is completed by sawing across the ends of the bones and suturing the flap in place.

CONCLUSION.

Of the operative measures described above I have no hesitation in saying that, efficiently carried out, they yield the best results. Different roads may lead to one town—in just the same way different methods of wound treatment, when used in hands specially trained in their respective employment, may lead to almost equally satisfactory results. Those advocated in this paper are the outcome of an extensive experience in war cases spread over a period of three years' close observation, and built up out of series of successes and, more especially in the earlier days of the campaign, out of not a few failures and disappointments. One thing, at any rate, is certain: no method of wound treatment can ever rectify defective surgical procedures or rectify mistakes arising from failure to follow out the fundamental surgical principles that should have been carried out. It is much more the efficiency of the primary operation than the use or not of antiseptics that is the chief factor in determining successful results.

Finally, I would like to thank Colonel C. H. S. Frankau, D.S.O., A.M.S., consulting surgeon, for the encouragement he has given me in the publication of this paper. In addition, I wish to acknowledge my indebtedness to Sister Miller, R.R.C., for the help she has most willingly given me; a number of the most successful results I have ever had are entirely due to her skilful help and scrupulous technique in the operating theatre.

REPORT ON AN

OUTBREAK OF SCURVY IN THE SOUTH AFRICAN NATIVE LABOUR CORPS.

BY HAMILTON W. DYKE, M.B. GLASG.,
CAPTAIN, R.A.M.C.

THE following report upon an outbreak of scurvy which occurred during the spring of the present year among the South African Native Labour Corps is presented, along with observations as to its causation and suggestions for the future prevention of scurvy in Native Labour Corps.

1. *The S.A.N.L.C.: Conditions of Life and Rations in France.*

The South African Native Labour Corps was brought to France for work on the lines of communication. The natives were recruited from all parts of South Africa, and included Basuto, Bavenda, Xosas, Zulus, and other tribes. They were formed into companies of about 450 men, each with its own interior economy. The conditions of living were, as far as possible, modelled on the system obtaining in the compounds of the South African mines. They were well clothed, well hutted, and the diet speaks for itself—an ample, substantial, and varied diet.

Kaffir Personnel.—Field Ration.

Frozen meat	1 lb.	Fresh vegetables	8 oz.
or Preserved meat ...	9 oz.	Margarine...	1 oz.
*Mealie meal	1 lb.	English tobacco or cigarettes (per week)	2 oz.
Bread	1 lb.	or Kaffir cigarettes (per week)	3 oz.
Coffee	1 oz.	Matches (once a week)...	1 box.
Sugar	2 oz.		
Salt	½ oz.		

* If the full ration is not obtainable, an equal quantity of rice may be issued in lieu.

The conditions of work were excellent, though in some instances, due to exigencies of the services, the hours were long; but as labourers they proved themselves equal to, if not superior to, any labour of its kind in France.

The health of the contingent has, on the whole, been very good. In 1917 I was for six months in medical charge of four companies of the S.A.N.L.C. on one of the country depôts; they were compounded, but given considerable liberty to go out for walks under supervision, and were thus able to obtain a certain amount of fresh fruit from neighbouring apple orchards. There was not a single case of scurvy in those companies during that period. At the end of 1917 I took over medical charge of four other companies of S.A.N.L.C. who had just arrived in France. These men were given work on the docks in one of the port towns. In order to be near the docks they were accommodated in a single large camp, but owing to the congested conditions of the area it was relatively smaller than the camp of the previous four companies, and being in the midst of surrounding docks and suburbs, the liberty of the natives was very much restricted; but as regards cotting, hutting, and diet the conditions were the same as in the previous four companies referred to.

Each company in the camp had its own separate cooking arrangements.

2. *The Outbreak of Scurvy.*

Towards the middle of March, 1918, two natives in "X" Camp (No. 1 Native Labour Camp), of which I had

medical charge, were admitted to the Camp Detention Hospital with symptoms suggestive of scurvy. A systematic inspection was therefore made of the gums of all the natives in the camp; it was found that 40 per cent. showed a tendency to scurvy, the distribution being equally divided in all four companies. Antiscorbutic measures (detailed below) were therefore instituted; these did not interfere in any way with the work of the companies. During the period from March 15th to April 15th 19 cases of definite scurvy were admitted to detention hospital, all four companies being more or less equally affected.

By April 15th, however, gum inspections showed the tendency reduced from 40 per cent. to 10 per cent. Since that date until August only two cases presented themselves, and the periodic gum inspections indicated a tendency to the condition in less than 5 per cent.

In another ("Y") camp (Nos. 4 and 7 Labour Companies) in this area, having the same number as "X" Camp and living under similar conditions, the outbreak was more serious. The diagnosis of scurvy was first made on May 3rd, though I am given to understand that previous to that date a certain number of cases, undiagnosed, had been evacuated to a base hospital. From that date until July 16th 142 cases occurred.[1] With the exception of two, the cases were derived from three of the four companies of the corps. The only difference ascertained in the conditions of the four companies was that the 33rd Company, in which only two cases occurred, was from time to time given prunes and fruit bought by the company commander from company funds. The reason for this large number of cases in "Y" Camp was that the condition had not been recognised when the first cases occurred, and therefore some time elapsed before antiscorbutic measures were instituted. Towards the middle of May these measures were rigidly enforced and by the middle of July the outbreak had practically ceased.

3. *Symptomatology of Cases.*

There was nothing new noted in the clinical aspect of the outbreak. To one who had not seen scurvy before the diagnosis of the early cases might have been missed owing to the absence of gingivitis.

(*a*) The first symptoms with which the natives generally reported sick, and which could easily be ignored, were indefinite *myalgic pains* in the chest, neck, back, and legs, associated with a certain amount of cramp (subjective) in the calf and hamstring muscles. On inquiry they generally admitted to being easily fatigued and breathless on exertion.

(*b*) *Gingivitis.*—This classical sign, though present in most of the cases to a greater or less degree, was in some cases entirely absent. It varied from a slight swelling of the gums and inter-dental processes, with a slight blueness of the gum border, to great hypertrophy of the gum tissue. In a few of the bad cases the gums protruded 1/3 to 1/2 inch. The gums were then very red, ulcerated, and septic, and bled freely on the slightest pressure. Bacteriological examinations of the gums were made by Lieutenant-Colonel C. J. Martin, assistant adviser in pathology, who found the material from the ulcerated edges teeming with spirochætes and *Bacillus fusiformis*. These, which are common denizens of the mouth, had, in Lieutenant-Colonel Martin's opinion, taken advantage of the lowered local resistance to invade the gums. At the weekly gum inspections of the companies one had to rely on the condition of the gums for a measure of the scorbutic taint in the individuals—every native showing slight gingivitis, with bleeding on pressure was considered a potential scorbutic.

(*c*) *Hæmorrhages into muscles.*—This was the most important and prominent feature in almost all the cases admitted to hospital, principally because it lamed the man and incapacitated him for work. In some of the cases it was the only sign present. These hæmorrhages occurred in certain definite muscles or groups of muscles—as a rule the muscles of the calf were affected; next in order of frequency were those of the thigh forming the inner border of the popliteal space. The part affected was swollen to a greater or less degree; pitting on pressure was frequently obtained over an adjoining bone. The swelling was hard and brawny and very tender; it caused the patient considerable pain on movement of the limb. As a rule, only one leg was affected, infrequently both legs, and then the second leg would only be slightly swollen. These swellings occurred at times with great rapidity, which one would expect from a hæmorrhage. A man would sometimes be at work one day, feeling pretty fit; the following morning he would hobble painfully to sick parade with assistance, and one would find the affected calf 2 to 3 inches bigger in circumference than the other. There was no further increase in swelling once the patient was put to bed, and it gradually subsided in five to ten days, but for two or three weeks there remained a certain amount of tender induration.

(*d*) Small *petechial hæmorrhages* into the hair follicles of the leg were almost constant in the cases.

(*e*) Another very constant feature was the roughness of the skin—coarse goose skin—over the upper end of the tibia, and on the legs between knee and ankle.

(*f*) *Anæmia* was present in over half the patients.

(*g*) Cardiac weakness with dilatation was not severe in any of the cases, though in some tachycardia occurred on exertion and a distinct mitral murmur at the apex was present. These disappeared as the patient improved.

(*h*) Subperiosteal and synovial swelling were each seen in one instance.

(*j*) *Fever.* This occurred only in cases where there was much gingivitis, but subsided very rapidly (3 or 4 days) once the oral sepsis was controlled.

The general condition of the patients when admitted to hospital varied; most of them looked ill and drawn, but very rapidly threw this off. In none of the cases did intestinal hæmorrhage occur.

4. *Treatment of the Cases and General Measures Taken.*

The treatment of those already affected consisted of:—

(i.) Full diet with an extra supply of fresh vegetables lightly boiled. When the gums did not allow mastication, solid food was passed through a mincing machine.

(ii.) Lime-juice, ½ oz., was given three times a day. In the last case under my charge I omitted the lime-juice and gave three fresh lemons per diem. The rapidity with which the patient improved was remarkable, notwithstanding the fact that he was well over 40 years of age and had very definite gingivitis and swellings of the legs; none of the previous cases that had been given lime-juice made such rapid progress as this one when the lemons were substituted.

(iii.) Iron in the form of mist. mag. co. c. ferro was exhibited to counteract anæmia and the tendency to constipation.

(iv.) Massage to the affected limb, first very gently but gradually more vigorously when the patient could bear the pressure; ordinary liniment. terebinth. was used as a lubricant.

(v.) The gums were treated three times a day with a mouth-wash of hydrogen peroxide, followed by gentle swabbing with pledgets of cotton-wool soaked in 1 to 60 carbolic solution. As a rule the condition had so much improved in five to seven days that the patients could masticate their food and use a soft tooth-brush.

As soon as the patient was able to hobble about the ward with the aid of a stick he was allowed "up" daily for an increasing number of hours, but he was not discharged until all the induration and tenderness of the affected limb had disappeared, nor until the heart had regained its normal action, tested by exertion. Most of the cases were discharged within five weeks of the onset. After discharge the patient was given light duty for a week, but continued to get his lime-juice and iron mixture. Men of under 40 years made a much more rapid and complete recovery than those over that age. To obviate further trouble the following measures were adopted and enforced, and they proved efficacious:—

1. Acting on instructions, particular attention was paid to cooking of fresh meat and vegetables (see paragraphs dealing with the cause of outbreak below). The time of cooking was not allowed to exceed 45 minutes; the food to be cooked was introduced into water already on the boil, and at the end of from 30 to 40 minutes the fires were drawn, but the food allowed to remain in the boiler until it was required for a meal. When necessary it was heated up again for a few minutes before use.

2. The vegetable ration was supplemented by the purchase of extra fresh vegetables, cabbages, carrots, &c., bought with company funds. The carrots were issued raw, and with a little persuasion the natives ate them willingly.

3. A ration of lime-juice, ½ oz., was issued daily to all natives who showed any tendency to scurvy.

Of these measures, the one that seems to have given the best effect was the reduction in the time of cooking fresh food. This statement is supported by the fact that in —— Company of "Y" Camp, in which the disease was most prevalent, and lasted longest, it was discovered that notwithstanding instructions (though extra vegetable and lime-juice were being issued), the boiling of meat, &c., was being carried on for two hours at least, thus keeping up the disease, which soon improved after the cooking was reduced to 40 minutes.

5. *Cause of the Outbreak.*

(*a*) Summary of knowledge of etiology of scurvy.

Scurvy is usually associated in one's mind with sailors on long voyages in sailing ships, living on salt meat; prisoners undergoing long sentences; expeditions of discovery to Arctic regions; and troops besieged for a long period. Recently it has been a problem with which the medical officer has been confronted in connexion with the employment of coloured labourers, removed from their normal home and surroundings. Scurvy is clearly due to lack of some constituent in a diet which is supplied more particularly by fresh vegetables, and is present in fresh meat to some extent. Scientific research in recent years by Holst, and his colleagues, Frohlich and Furst, of Christiania University, and by the Misses Chick and Hume, of the Lister Institute, have proven that an efficient diet must contain certain active principles which they term "antiscorbutic vitamines," and the lack of which in man and certain animals will produce scurvy. The experiments of Holst, Frohlich, Furst, Chick, and Hume have shown that all fresh fruits, vegetables, and roots contain this principle in varying amount, but that it is sensitive to prolonged drying and heat, so that in desiccated and tinned vegetables, and canned fruits, it is to all intents and purposes absent. The cooking of cabbage for 30 minutes was found by Chick and Hume to reduce its antiscorbutic value to less than half, and prolonged boiling to annul it. Seeds of cereals, pulses, &c., are devoid of antiscorbutic value, but attain it on germination, a discovery the practical importance of which will emerge below.

(*b*) Interpretation of the present outbreak in the light of the above facts.

[1] The number of cases in "Y" Camp are those that have come directly under my observation, and will no doubt vary from those eventually notified at headquarters.

As pointed out at the commencement of this report, these men were upon a liberal scale of rations, according to European Army Scale. Half a pound of fresh vegetables is not, however, any too much for a diet which is partaken of over long periods, and is sailing "near the wind" if no opportunity occurs for supplementing, as takes place in the natural circumstances of the natives. This ration of fresh vegetable probably allowed of no margin for reduction in antiscorbutic value by prolonged heating. On investigation it was found that all food was being cooked by boiling for at least three hours, and except in the case of the 33rd Company no fresh fruit was being obtained by the natives, so that their food was, not unlikely, seriously deficient in antiscorbutic vitamines, due to the destruction of these in the fresh potatoes, onions, &c., by prolonged exposure to boiling.

I attribute the outbreak to a combination of these two causes: (1) Inability in the case of certain companies to supplement the diet occasionally with extra fresh fruit and vegetables; and (2) reduction of the antiscorbutic value of the fresh vegetables supplied by excessive cooking. The marked improvement occurring directly in those companies in which measures were taken to supplement diet and enforce a reasonable period of cooking justifies this opinion.

6. *Suggestions for Prophylaxis in the Future.*

Before considering how to obviate scurvy in future it is well to consider further why natives not infrequently suffer from this disease when confined in camps or mines, &c., whereas there is very little scurvy among them living in their kraals in South Africa. Occasionally in spring one comes across a native who may show a slight tendency to the disease, generally in years when the previous kaffir corn (millet) crop has been a failure, but during the eight years I have been in practice in Basutoland I have never seen a single case of well-defined scurvy occurring among the Basutos living at home. During the summer the native has an abundant supply of fresh vegetables, roots, and fruits, but in his kraal, from April to November (the winter and spring months), the average native obtains no vegetables or fruit. He has meat once or twice a month, but his staple article of diet is a thick porridge made with maize or millet meal, and washed down with large draughts of kaffir beer.

One has frequently wondered why he did not develop scurvy by the end of those winter months. An explanation is, however, to hand in the discovery of Furst, verified and amplified by Chick and Hume, that during the germination of seeds the antiscorbutic substance is developed in large amount, for kaffir beer, of which natives partake largely, up to three gallons a day, is a thin fermented gruel made with a *germinated* millet. Thus in the gratification of his appetite for acid, alcoholic beverages, the native appears, unknowingly, to have protected himself from scurvy during the winter season.

Kaffir beer ("Leting" or "Joala") is made by germinating a small quantity of kaffir corn (millet) by steeping it in water for 48 hours; it is then dried in the sun for a day. The same day or the next it is ground coarsely between two stones. This meal is then placed in a large pot, and to it is added boiling water to make a very thin porridge, to which is added a small quantity of yeast (the residue of a previous brew). Fermentation is thus set up and allowed to continue for 36 to 48 hours, after which the whole is strained through a coarse straw strainer; the resulting opaque brownish fluid constitutes kaffir beer, which makes a very pleasant and satisfying drink. The points to be noted in the making of the drink are that only sufficient grain is germinated and ground for the one brew; never is it done with a view to provision for a future occasion. Again, boiling water is added to the meal, but there is no further boiling. Kaffir beer has been largely used in South Africa to arrest scurvy in prisons and mines. It has also been the practice on the Rand to give natives another acid, fermented beverage, "Mahew," and the natives have been supplied with this since landing in France. This is made from the meal of *ordinary ground maize or millet without previous germination*. The meal is stirred into boiling water and the process of boiling continued for an hour or so until a thin porridge is made; this is then evacuated into vats, and some wheat meal is added to cause fermentation. The porridge, after being diluted with a sufficient amount of hot water, is allowed to stand for 36 hours and is then ready for use. It is much more easily manufactured on a large scale than kaffir beer, and for this reason has been used as a substitute for the latter; but it is now clear why this substitute has been without influence to prevent scurvy.

To sum up, the danger of scurvy amongst South African native troops can be avoided by: (1) Seeing that the value of the limited supply of fresh vegetables is not dissipated by unnecessarily prolonged cooking; (2) supplementing this supply by the purchase of fresh fruit or vegetables from corps funds; (3) provision of mildly alcoholic native beer prepared from *germinated* grain of some sort.

In conclusion, I wish to express my gratitude to Lieutenant-Colonel C. J. Martin, F.R.S., A.A.M.C., for the bacteriology of the gingivitis and for the encouragement and advice he has given me in drawing up this paper.

A CASE OF

ABSENCE OF ALL SENSATION.

BY E. D. ROBERTS, M.R.C.S., L.R.C.P., M.D. LAUSANNE,
CAPTAIN, R.A.M.C. (S.R.).

THE remarkable case described below is that of a Breton sailor, aged 37, who emigrated to Canada eight years ago and enlisted in the Canadian Army in 1916. In June, 1918, he was admitted to the Military Isolation Hospital, Aldershot, for an attack of mumps, and it was then that the following observations were made.

The patient was a well-developed, powerful-looking man, of a very cheerful, even temperament, highly good-natured, and far removed from the neurotic or hysterical type as popularly conceived. Mentally he was perfectly sound, rather above than below the average level of intelligence. Questioned as to his family history, he would appear to be alone in presenting the peculiar characteristics here described. As a child he appears to have possessed a slight degree of cutaneous sensibility, and he dates its complete absence from the time when he had an attack of yellow fever in Senegal at the age of 17. This was his only previous malady, and he has always enjoyed robust health.

It will be convenient to describe the condition found under the heads of the different sensations.

Sense of touch.—There is complete absence of both superficial and deep tactile sense over the whole skin surface, and also over mucous membrane where attainable. There is no consciousness of deep vibration. A tuning fork not being available, a poker, the end of which was allowed to fall from the height of about a foot on to the tibia, the ribs, or the skull, produced no sensation of any kind—the patient, with eyes closed, not even knowing that he was touched. He does not feel the ground with his feet, and experiences difficulty when walking at night. He states that his inability to bring his heels together at the command "Attention" without controlling the movement with his eyes has frequently led him into trouble with his drill-sergeant. There is complete inability to recognise objects placed in the hand when the eyes are shut.

Sense of pain.—This is completely absent. In October, 1916, at the Hôpital de St. Louis at Quebec he underwent the radical cure of double inguinal hernia without anæsthetic of any kind, the patient being totally unconscious of any sensation either of pain or touch. His body is plentifully strewn with the scars of wounds and burns which he has inflicted on himself either for bets or to astonish the onlookers. I have myself seen him on more than one occasion hold a burning match against the skin of his arm for the space of 10 or 15 seconds, and then unconcernedly pick off the charred epidermis. He never suffers from headache, toothache, abdominal or other visceral pain of any description. The cornea, it may be noted, shares in the general anæsthesia.

Thermal sensation.—This is also absent. On placing the fingers in water so hot as to raise a blister, but well below boiling point (the eyes being closed), there was a slight convulsive movement of the hand, and he stated he was conscious of what he described as an electric shock, saying that he remembered feeling such a sensation when a boy. The feeling, he affirmed, was not a painful one. The placing of the hand in cold water evoked no sensation. There is no perception of temperature in food or drink. There is insensibility to atmospheric changes of temperature. The extremes of heat and cold encountered during sea voyages produced no corresponding changes of sensation. He states, however, that the great cold experienced on one occasion while rounding Cape Horn gave rise to vaguely unpleasant sensations. During the attack of yellow fever mentioned above he remembers the fact of his violent shivering followed by profuse sweating, but was unconscious of the feeling of cold or heat.

Muscular sense and sense of position.—The muscular sense appears to be completely absent. With the eyes closed, if asked to make any movement with his arms—the choice of movement being left to him—he is incapable of doing so, saying he cannot tell if his arms are moving or not, and all he can accomplish is a slight convulsive twitching of the hands and arms. On the other hand, if when standing upright with closed eyes he be told to walk

towards the observer he does so without trouble. He states, too, that he is a good swimmer. These two facts are difficult to reconcile with the apparent incapacity to move his arms with closed eyes. Again, if with closed eyes his arms and fingers are extended and any small light object be placed in one hand, and a much heavier object (such as a heavy iron bar or a solidly-made wooden chair) be placed in the other, and he then be told to close his fingers—a movement which he performs with apparent difficulty—he is incapable of saying which hand holds the heavier weight, he is quite ignorant of the nature of the objects, and most frequently he is unconscious of the fact of anything having been placed in his hands. If an object held in the hand be very bulky and if the fingers be closed very forcibly on it he is generally able to say that there is *something* in his hand without knowing what. He appears ignorant of the meaning of fatigue, and asserts that the only means by which he is made aware of his failing strength, under any intense or prolonged effort, is by his falling to the ground.

The sense of position is equally absent. With eyes closed he is unable to bring the tips of the index fingers into contact, to touch the tip of his nose with a finger, or to locate his hand when placed by the observer in any given position. If asked to raise his hand from its position resting on his knee and to touch his head, his eyes being closed, he appears completely nonplussed, and, as noted above, responds only by slight jerkings of the hand. With visual control all his movements are perfectly coördinated and in every way normal.

He exhibits the phenomenon of the fixation of the limbs in the positions in which they are placed. Thus, the patient is placed on his back with arms stretched out by the sides, and legs extended. The eyes are closed. If now the observer takes the patient's limbs and places them in any position (for example, both arms raised in the air above the head, and one leg raised with the thigh flexed and the knee bent), he is totally unaware of having been touched or of any change of position in his limbs, and the arms and legs remain fixed where they have been placed without conscious muscular effort on the part of the patient. On opening his eyes he manifests genuine surprise at his attitude.

Sense of taste.—Completely absent. The patient's eyes being closed, about half a drachm of such substances as sugar, salt, pepper, mustard, also a drop or two of an essential oil (oil of cloves), were in turn placed upon his tongue, and each in turn thoroughly insalivated, and finally swallowed, but all failed to produce any sensation of taste, the patient being unconscious of any substance in the mouth. It may be remarked that he eats anything, as the fancy takes him. On one occasion he was found to have consumed a lump of bath-brick about the size of a hen's egg that a hospital orderly had inadvertently left in his way. He states that he is in the habit of eating uncooked—when he can get hold of them—such animals as rats, mice, dog, or serpent.

It appears that he is never conscious of hunger or thirst. It was not practicable under the circumstances to put this statement to the test, but he relates that for a bet he once refrained from food and drink for eight days and nights. He felt no inconvenience beyond, towards the end of the period, an abnormal tendency to sleep. At the completion of the fast he asserts that he returned to work in no way harmfully affected, and not conscious of any special craving for food or drink. This is recorded without guarantee as to its truth, as it was related by the patient.

Sense of smell.—Practically non-existent. Such characteristic odours as those of the oils of cloves, cinnamon, peppermint, the tincture of orange failed to produce any sensation. Fuming nitric acid was equally ineffective when strongly inhaled. On the other hand, the fumes of the strong solution of ammonia and of pure hydrochloric acid produced a faint sensation of an odour which the patient remembered to have smelt in his youth.

Reflexes.—The only response on both sides to plantar irritation was slight abduction of the little toe. The patellar reflexes were present and normal. The orbicularis palpebrarum muscles contracted on touching the cornea, though no sensation was evoked. The pupils reacted to light and accommodation.

Defæcation.—The bowels usually act regularly once a day. There is no conscious desire to defæcate beyond what he describes as an occasional "rolling" in the abdomen. He never exerts any effort, nor is there knowledge of the passage of the fæces. Only when there is looseness of the bowels is there any incontinence.

Micturition.—Ordinarily this occurs during action of the bowels once in 24 hours at about 8 o'clock in the morning. He asserts that usually he does not again micturate till the same time on the following morning, but as a precaution he generally gives himself the opportunity to pass urine at about 4 o'clock in the afternoon as well, but often without result. Only in the event of his taking more fluid than usual and failing to take the precautions he has learnt by experience to be necessary is there incontinence of urine. There is never desire to micturate.

Finally, he seems to be without most of the common emotions. He is without family affection—the fact that he believed his mother to be dying in no way disturbed him. He makes neither friends nor enemies. He has no love of country or home. But he would appear to be a smart and efficient soldier and takes a pride in it. He was always very active, ready, and willing to help in hospital duties.

Diagnosis.—A few words may be said as to diagnosis. The most satisfying explanation of the thermic insensibility would be the existence of syringomyelia. The fact that the condition of the patient is practically congenital is compatible with the developmental nature of the spinal lesion in this disease. It may be objected that the motor system is so far unaffected, but the course of the disease is well known to be very slow. Osler, in his "Practice of Medicine," notes one of the types of syringomyelia described by Schlesinger in his monograph (1895), to which this case would in some measure conform—"with predominant sensory features, simulating hysterical hemiplegia, *or with general pain and temperature anæsthesia.*" At the same time there are certain inconsistencies in the clinical picture which point to a possible admixture of hysteria. He is a good swimmer, which implies the performance of regular coördinated movements of the legs without visual control. Yet on being invited to perform movements of the arms with closed eyes he was completely at a loss. He was also able to walk with eyes shut. The diagnosis of syringomyelia combined with hysteria is therefore suggested as one which seems to meet the case.

THE PREVENTION OF RELAPSE OF HYSTERICAL MANIFESTATIONS.

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THE first essential in the treatment of hysterical manifestations is accurate diagnosis, as has been pointed out by Fearnsides and others.[1] Without going over the debatable question of reflex paralysis described by Babinski and Froment, it is necessary to remember that many patients who present hysterical manifestations show signs of organic lesions also. In many whose chief symptoms have a psychological origin, readily removed by psychical treatment, a gross organic lesion is present, situated anywhere between the cerebral cortex and the periphery, giving rise to less prominent manifestations, and naturally remaining uninfluenced by psychical treatment. Putting aside these cases, and they form by no means a small percentage of the total admissions to every hospital at which cases of functional nervous disorder are treated, and dealing only with those patients in whom the manifestations are wholly of functional or "hysterical" origin, the question arises whether the removal of the obvious symptoms is the same as the "cure" of the patient; on clinical grounds it is certain that the two are not identical.

For the first few days after the removal of gross objective disabilities, patients, who have been admitted suffering from a functional nervous disorder, are usually genuinely pleased; they have a sense of increased well-being and are deeply grateful. Later, however, many complain that they are not feeling so well. If asked how they are, many will say "My head is bad," although headache may not have been a symptom previously complained of; or they may reply that they do not feel so well in general condition as when they were admitted. When making inquiries of this sort it is needless to say that care must be taken not to suggest to the patient any symptom, such as headache. But if the patient be asked in the most general terms how he is, especially if the question be put in a cheerful tone, in a manner which anti-

cipates a favourable reply, it cannot be said that any suggestion has been made. Now it is undoubtedly true that the majority of medical men who treat and rapidly remove hysterical symptoms by methods which depend on some form of suggestion alone, hold a contrary view. They teach that the "cure" of the symptom is usually followed by improvement in general well-being. From a study of the published works of those who hold this view it may be assumed that the explanation of this discrepancy is, that after the symptom has been removed, these authors do not apparently think it wise to question the patient further. Contrary to what is usually believed, if the neuropath be not questioned, the doctor will not be told much; these patients do not talk about their symptoms to those whom they do not consider interested. A recent writer[2] has even gone so far as to state that "there is no such thing as hysteria apart from hysterical symptoms." One holding this view could hardly be expected to probe far, after such symptoms were removed. In another work dealing with the rapid cure of hysteria by persuasion[3] the same author states that "so far as we know relapses have not occurred after discharge (from hospital) except during air raids among men living in London. This is an additional argument, if any are still necessary, for the removal of all patients, officers as well as men, suffering from war neuroses out of London." It is, however, more than possible that it is an argument that the method of persuasion which this author employs is inadequate, and indeed an argument that there is something in hysteria besides the symptoms.

The removal of hysterical symptoms in these war cases is not difficult. Any doctor who will take the trouble to listen attentively to the whole story which the patient tells, who makes a careful, complete clinical examination, who is able to make up his own mind definitely that the symptoms have a functional origin, and who then so expresses himself that the patient becomes aware of all this, will be rewarded by the speedy disappearance of these symptoms. Some doctors seem to be fortified by the use of aids such as electricity, hypnotism, or manipulations; others by making the patient half drunk. But none of these things are necessary, and in the end most of them are harmful. The simple explanation that it is want of confidence on the patient's own part which is keeping the symptom still in existence, and very quiet directions telling him what to do will suffice, provided that all the foregoing conditions are observed.

At this stage, however, the patient is not cured. He is not yet cured because that which underlay the hysterical manifestation has not yet been touched. Two undesirable happenings may ensue: either (*a*) the patient may begin, or continue, to complain of other symptoms, such as headache, or (*b*) during some time of emotional stress, such as an air raid in London, the symptoms may reappear. Much can be done for the latter contingency by prophylactic education. Every patient should be instructed that in the future, and at any time, his symptoms may return as an emotional reaction. Should this happen, and he recognises that it is analogous to a transitory flood of tears, it will not persist, and little inconvenience will be caused. If, on the other hand, he thinks that the dread disease has returned because he was not fully cured, the want of confidence which such a thought engenders may prolong the reaction indefinitely. Then his state will be as it was before the "cure."

G. R., after an attack of "trench fever," suffered from tremors so gross as to prevent him walking. He was treated for several weeks in France with rest in bed; then he was evacuated to England, and in a single hour the tremor and difficulty in walking were "cured" by persuasion, but no explanation was given. Two months later he returned to his depôt. There he immediately collapsed and remained in a state of complete astasia-abasia till he could obtain further treatment.

This case may be contrasted with that of D. McH., who was admitted to hospital suffering from a flaccid, hysterical paraplegia. He was cured by persuasion, and the nature of an affective response was explained. One night a few weeks later there was an air raid. The patient wanted to get up in order to go to the subway, to which any patient may proceed on such occasions. To his surprise he was unable to move his legs. Remembering what he had been told, he thought for five minutes of the explanation, which to him had been given previously; then he got up and walked to the subway.

An air raid and a return to depôt are both events associated with emotion; he who cannot stand the one is not likely to stand the other. For the success of the method, the means employed must be of the simplest. The man must be convinced that it was he himself who worked the "cure," or he cannot hope in future to "cure" himself. It is impossible to make use of this method if the man has been treated with electricity or manipulations, &c. For then he is certain to believe that it was the "agent" which effected the "cure." But if all that the medical officer did was to tell him that he was able to talk or to walk, and he thereupon did so, he can reasonably hope to repeat the "cure" by himself if necessary. Experience proves that he usually can do this. Care must be taken that the "cure" does not occur whilst the patient is being so much as touched. Thus a dumb man unfortunately recovered his speech while his throat was being examined with a laryngoscope. This patient relapsed, and was unable to "cure" himself because he believed that the mirror had been the instrument of "cure," and that the use of some objective apparatus was essential.

A better way to prevent relapse, better because it deals also with the concomitant symptoms, is to find out why the patient ever had an hysterical symptom at all.* There is something in hysteria besides the symptoms; there is evidently some special tendency for the patient to react in this abnormal way; there is always a series of other symptoms, such as headache, insomnia, &c. The individual is out of harmony with his environment, and inquiry will show that the mal-adaptation is psychical. He has some trouble, and this must be brought to the surface. The object of this is simple. When two people discuss a difficulty, a reasonable view of it is more likely to be taken than when it is brooded over alone. After such a discussion the patient looks at his trouble in a different and happier way. Moreover, some idea may be brought to light, some thought which had determined the form taken by the hysterical manifestation, and this will impress on him the more how he may become the master of his health.

A. D. had total paralysis of the right arm, which hung like a flail by his side. It had come on suddenly one morning at dawn eight months previously; he had been on duty all night in an observation post, and had just been relieved. He was climbing out of the post, using this arm to pull himself over a parapet, when the arm became paralysed and he fell back into the trench. He could not account for it in any way. By a process of thinking back he was soon able to recollect what had been in his mind at the moment the arm gave way—viz., that this morning was lighter than usual, and that he might be seen and sniped. The proof that the symptom had occurred, not as a result of disease, but as a pure "defence," was now made very clear to the patient, who returned to duty in a few weeks.

Not always will anything so striking as this be discovered, but with careful inquiry some point of psychical importance will be found, most often of a nature which has caused pain to the patient—fear that he has been a coward, that he will become insane, that he will suffer much disability in future—needing only discussion to be dissipated. To obtain this information time and patience are essential; most of it can be got by ordinary conversation, and the proper taking of the history. The best description of the way in which this should be done will be found in Déjerine and Gauckler's Psychotherapy.[4] Rarely will it be necessary to employ more difficult methods than those there laid down, for these matters have not as a rule been so pushed out of consciousness that ordinary conversation will not reveal them. With patience events that have not been thought of for as many as 20 or 30 years may be brought to light. Should, however, this simple method fail we need not be afraid of psycho-analysis. We shall not as a rule, unless we are looking for them, be troubled with distressing sexual matters, as Rivers has shown.[5] The method is, however, rarely needed; time and gentleness yield an amount of information incredible till they have been tried.

When we have relieved the patient's mind by getting him to see his trouble in a different light it will be found that his capacity to withstand emotional reactions, such as those brought about by air raids, thunder, or the return to duty, has so much increased that he no longer meets them by the feeble defence of an hysterical symptom.

I have to thank Major R. Worth, R.A.M.C., for permission to quote the cases mentioned in this paper.

References.—1. Proceedings Roy. Soc. Med., April, 1918. 2. Medical Diseases of the War, Major A. F. Hurst. 3. THE LANCET, 1918, ii., 140, Major Hurst. 4. Psycho-therapy, Déjerine and Gauckler. 5. THE LANCET, 1917, ii., Captain W. H. R. Rivers.

ON ABDOMINAL EVACUATION OF THE PREGNANT UTERUS BEFORE VIABILITY.

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THE appreciation of the fact that an incision through the uterine wall, provided the uterine cavity is not infected, can be stanched of blood, sutured, and got to heal with perfect security and safety has immensely enlarged the scope of hysterotomy.

Practically restricted in the older days to the timorous performance of Cæsarean section, it can now be employed not only for the abdominal delivery of a living child, but for the enucleation of fibroids, single or multiple, deeply embedded in the uterine wall, for the exploratory opening up of the uterine cavity in cases of menorrhagia or metrorrhagia of obscure origin, and for the extraction of the products of gestation before viability. It is with this latter application of hysterotomy that I now deal.

Conditions in which the Operation is Indicated.

What are the circumstances under which it is preferable before viability to empty the pregnant uterus through the abdomen? In the main there are three sets of circumstances, as follows:—

1. *When in addition to evacuation sterilisation of the patient is required.*—In certain cases of pregnancy in tubercular women the uterus should be emptied at once and further pregnancy prevented by ligaturing or removing the tubes. As a typical case of this sort I may instance that of a woman who, having had several children, developed acute phthisis whilst carrying the last one. Treatment in a sanatorium resulted in recovery sufficient enough to allow her to return to her home and household duties, when she promptly became pregnant once more.

Again, in valvular disease of the heart with compensation, already trembling in the balance, pregnancy should be arrested as soon after its initiation as may be feasible, and further conception rendered impossible.

Much rarer than these two instances are those cases in which pregnancy is habitually followed by some dangerous disturbance of the economy, as, for instance, by nephritis, diabetes, hæmolytic anæmia, or insanity. In all of these evacuation of the uterus should be combined with a sterilising operation. Finally, cases of physical deformity incompatible with continued pregnancy are sometimes met with, such as extreme kyphosis.

The older course in all these cases was to first evacuate the uterus through the cervix or to induce abortion, and then to open the abdomen and ligature or remove the tubes. I have abandoned this practice for some years, believing it to be faulty, more especially if the pregnancy has advanced beyond the third month, and, having opened the abdomen, I now deliberately incise the uterus through its anterior wall, shell out the pregnancy, close the uterine wound with three mattress sutures and a superficial continuous suture, and then ligature and cut off the outer halves of the tubes. By this means the proceeding is shortened and simplified, and, moreover, rendered absolutely aseptic, for the uterine interior is sterile to start with, and, for the rest, I have the factors that will keep it so entirely under my command. It is doubtful to my mind whether evacuation through the cervix can ever be carried out without introducing some organisms into the uterus whilst the commonly used means of inducing abortion, the bougie and tent, almost certainly act as organismal conveyers.

2. *When the pregnancy has advanced to the fourth month or over and its termination is urgent.*—The evacuation through the cervix of a pregnancy of five or six months' standing is a formidable operation. The extraction of a head of even four months' growth needs a degree of cervical dilatation which almost always splits the cervix. At five or six months sufficient dilatation cannot be obtained even by deep splitting, and the surgeon is obliged to incise the lower pole of the uterus along its anterior wall from the external os upward to the peritoneal reflection—the so-called vaginal Cæsarean section.

Vaginal Cæsarean section is an operation for the expert alone, particularly in women who have not previously borne children; but its greatest drawback is that it inflicts a wound in the uterus through a passage (the vagina) that cannot probably with certainty be rendered initially sterile, and certainly not kept sterile during an operation of some duration.

For these reasons I have for a long time now adopted the abdominal route for the removal of a pregnancy of four, five, or six months' standing in cases of gastro-hepatic or cerebro-renal toxæmia (pernicious vomiting and eclamptic nephritis) or such other gravely menacing complications of pregnancy.

3. *In certain cases of pregnancy complicated by fibroids.*—Every now and then one comes across cases of early pregnancy complicated by fibroids in which the tumour or tumours force surgical intervention. It should be a cardinal rule in the surgery of fibroids that whenever the uterus bearing them is also pregnant the removal of the organ should be avoided if possible—it has proved its domestic and national value.

Now the uterus nearly always can be spared. Pedunculated fibroids can be removed and the pregnancy left *in situ*, abortion only rarely following. But this is not so if the tumour or tumours be embedded, for then their removal alone will almost certainly be followed by abortion. Moreover, the suture of the cavity or cavities left in the uterine wall after the enucleation is not likely to be satisfactory if the organ be still distended and vascular from the pregnancy within it, and further, if the organ empties itself within the next 48 hours there is a considerable chance of intraperitoneal bleeding from the blood-stanching sutures becoming loose. For this reason it has been the custom to remove the pregnant uterus with the fibroids in such cases.

But why not treat the pregnancy like another fibroid, enucleate it too, and leave the patient with her still competent organ? She can, and will, become pregnant again *minus* the disability of concomitant myomatous growth. Fears may be entertained that the scarred uterus will not stand the strain. They are groundless. Of all tissues I believe the uterine muscle has the most perfect healing powers. You can never find the uterine scar of a previous Cæsarean section when you open the abdomen to perform the operation for a second time, and I have had two opportunities now of viewing a pregnant uterus on which I had previously done myomectomy, and the same was true.

Conclusion.

In conclusion, then, I feel sure that under the several circumstances I have detailed, the early pregnant uterus should be evacuated through the abdomen.

The technique is just that of a Cæsarean section, than which it is an even easier operation. The uterine incision needed is smaller, of course, the bleeding is less, and fewer mattress sutures are required to close the hole and stanch the blood-flow. I use silk (No. 4) for these sutures, and insert a continuous suture of No. 2 30-day catgut to bring into apposition the peritoneal edges: these stitches should pass deeply. One c.cm. of pituitrin should be given just before the operation and repeated during the suture of the uterus. The incision should always be made through the *anterior wall* for two important reasons: first, so that the uterine wound may present towards the bladder and thus avoid adhesion to the intestine; and, secondly, so that if persistent oozing goes on from the needle punctures the uterus can be fixed to the anterior abdominal wall by two or three silk sutures along the line of the uterine incision. Oozing from the uterine incision or needle punctures is dangerous, because the effused blood attracts coils of intestine to adhere to the uterus.

Before deciding that oozing from these sites is really persistent, put the uterus back into its place and watch it for a minute or so. So long as it is outside the abdominal wound it tends to bleed, because the venous return is interfered with by the traction on the broad ligaments and the nipping of the abdominal wound edges. In this regard the uterus is like the kidney pulled through a loin wound; moreover, no uterus will retract perfectly until it is back in its proper place.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF POLIO-ENCEPHALITIS TREATED WITH NOVARSENOBILLON.

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AND
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IN the following case the improvement in symptoms after N.A.B. treatment and lumbar puncture was very marked. It is difficult to say to which the patient owed most. The lumbar punctures relieved the pressure symptoms, but the progress might not have been so rapid without the N.A.B.

On June 27th a leading telegraphist, living ashore, was admitted to a naval hospital ship in home waters, suffering from headache, slight fever, and persistent vomiting of cerebral type. The optic discs appeared normal. Lumbar puncture was performed and 50 c.cm. of clear fluid under increased pressure were withdrawn. The fluid contained 400 cells per c.mm., nearly all small lymphocytes. No micro-organisms were discovered.

In the next few days further cerebral symptoms developed. Nystagmus, squint, retraction of head, Kernig's sign, absence of knee-jerks, and extensor plantar reflexes were noted. There were no signs of cerebral irritation, and apathy was a distinctive feature. Temperature never rose above 100° F. A second lumbar puncture carried out when these symptoms were at their height yielded a result identical with the first. The diagnosis at this stage was by no means clear. It rested between syphilitic or tuberculous meningitis and epidemic polio-encephalitis. Examination of the cerebro-spinal fluid had excluded cerebro-spinal meningitis.

Six months previously patient had acquired syphilis. The diagnosis was made by examination of exudate from primary sore by dark-ground illumination, and no secondary lesions were seen. He was treated with 1·9 g. of galyl given in six doses at weekly intervals, the last dose being given on March 12th, 1918. Grey powder, six grains per diem, was given from May 20th to June 20th, and, at the time of admission, the patient was suffering from severe mercurial stomatitis. No record of any Wassermann test was found in his service syphilis sheet. In view of this history the question as to whether syphilis was the cause of the present illness had to be carefully considered, particularly as several severe recrudescences of syphilis in patients treated with galyl had been seen by one of the writers during the last two years.

The blood serum and the cerebro-spinal fluid were therefore sent to Haslar for the Wassermann test, and in the meanwhile treatment with novarsenobillon (N.A.B.) was begun. Following the combined treatment by these injections and by lumbar puncture, there was decided improvement. The apathy cleared away, squint and nystagmus disappeared, and the speech, which had become slow and indistinct, rapidly improved. No difficulty in swallowing had been present at any time, nor had there been any salivation or dryness of mouth.

The report on the Wassermann tests was negative for both serum and fluid. Two interpretations could be attached to this report: either patient was free from syphilis, or so few spirochætes were present that insufficient reacting substance had been formed in his body to give a positive reaction.[1] If the latter hypothesis be adopted it may reasonably be supposed that such a slight syphilitic affection could not give rise to the severe symptoms exhibited by the patient. Syphilis may therefore be excluded except as a possible predisposing cause.

A third lumbar puncture, performed when patient showed signs of improvement, produced a fluid having only 60 cells per c.mm. The injections were then stopped as patient continued to make satisfactory progress. Recovery was uninterrupted and in less than a month from the date of admission he was sitting up in a chair playing draughts, reading books, and writing letters. From a detailed report kindly supplied by the Medical Director Commanding a U.S. Naval Base Hospital, to which the patient was discharged, it appeared that satisfactory progress was maintained. The Wassermann test was negative in cerebro-spinal fluid on August 8th and in the blood on August 8th and 13th. 38 cells per c.mm. were present in the fluid on the 8th.

The rapid recovery excluded the diagnosis of tuberculous meningitis, and the absence of signs of cerebral irritation favoured the final diagnosis of polio-encephalitis.

Cerebro-spinal Fluid.

Date.	Quantity.	Reducing substance.	Globulin.	Total proteid.	Cells per c.mm.	Wassermann reaction.
July 2nd	50 c.cm.	+	++	0·1%	405	—
,, 5th	30 ,,	++	++	0·1%	421	Negative in all dilutions
,, 18th	33 ,,	+	+++	0·12%	61	—
,, 24th	45 ,,	+	Blood contamination.			—
Aug. 8th	—	—	++	—	38	Negative.

+ = present in normal amount. ++ = slightly increased.
+++ = moderately increased.

[1] See Fildes and Parnell, Journal of the R.N. Medical Service, July, 1918, p. 267.

Treatment.

July 2nd ... ... 0·15 g. N.A.B. intravenously.
,, 4th ... ... 0·30 ,, ,, ,,
,, 7th ... ... 0·30 ,, ,, ,,
,, 10th ... ... 0·45 ,, ,, ,,
,, 13th ... ... 0·45 ,, ,, ,,
,, 16th ... ... 0·45 ,, ,, ,,

Interest centres in the pathology of the cerebro-spinal fluid. A large excess of small lymphocytes is found in the fluid in syphilis of the central nervous system, in tuberculous meningitis, and sometimes, though not in the acute stage, in cerebro-spinal meningitis. It is also found in acute polio-myelitis, and presumably, therefore, may be found in association with acute polio-encephalitis. On the other hand, in a fatal case of polio-encephalitis under the care of the writers, of which the diagnosis was confirmed at autopsy, the fluid was clear and free from excess of lymphocytes.

The writers beg to acknowledge the courtesy of Surgeon Commander C. L. W. Bunton, R.N., by whose permission the case is published.

ACUTE PNEUMONIA FOLLOWED BY PNEUMOTHORAX; FEMORAL THROMBOSIS; RECOVERY.

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Emerson, in his exhaustive monograph on pneumothorax, says that pneumonia was early considered a cause of pneumothorax, and that it was not until Skoda "had emphasised the presence of the hyper-resonant note, suggesting air which is present in pneumonia and in pleurisy, over the not-yet-involved lung that these cases were recognised as not pneumothorax." Its rarity is shown by the fact that in Biach's collection of 918 cases of pneumothorax not one is ascribed to pneumonia, and that in 7868 cases of pneumonia which formed the basis of a discussion on the complications of that disease at the Royal Society of Medicine only three cases (two fatal) are to be found. Nor is this rarity a matter of surprise, for the alveolar consolidation of pneumonia would appear, on theoretical grounds, to act as a bar to such an accident.

In the present case it is significant that there was a history of winter cough, and however trivial it may have been and the anatomical change causing it, it certainly suggests the rupture of an emphysematous bleb.

An infantry private, aged 35, prior to enlisting in January, 1916, had worked as a tram-driver, necessarily exposed to all weathers. He had had no illness of importance, but a winter cough kept him from work occasionally, though his average loss of time did not exceed two or three days per year; during his first two years in the Army he was never ill.

Early in April he was in the front line in Flanders under very bad weather conditions, being continuously cold and wet; he felt ill, but kept on until the onset of a rigor, and then went to hospital. His record shows that he had a right lobar pneumonia running an ordinary course, with a crisis on the sixth day (April 18th). He improved, crossed to England, and was admitted into hospital under my care.

The following are the notes of his condition:—

April 23rd: Looked and felt ill, complained of pain in chest and shortness of breath. Right lung: impaired resonance apex and base with redux crepitations at base and a few rhonchi elsewhere. Increase of V.R. and V.F. Left lung normal. No bronchitis. Heart normal in size, position, and sounds. *The signs were those of a normally resolving pneumonia.*

April 27th: Has not improved as a pneumonia should in the time; pain in chest; dyspnœa. Signs at apex as before: at base indefinite (he was too uncomfortable for prolonged examination). Heart apex is now 1 in. outside nipple line.

April 29th: Respiratory movements and inspiratory retraction of intercostal spaces equal on the two sides. Right side tympanitic from apex to level of sixth space in nipple line and lower in axillary line. Behind tympanitic at base; note doubtful at level of scapula. Amphoric breathing and beautifully clear and numerous tinkling metallic sounds were heard over whole of right lung, except posteriorly in scapular region. They were loudest in front in axillary line below nipple level and behind over lower lobe; at apex, and above clavicle even, amphoric breathing was clear, very high-pitched and distant. Whispered voice sounds clear and metallic. No moist sounds; no signs of pleural effusion. Sputum profuse, blood-stained, ropy; no tubercle bacilli found. Heart further displaced to left; its right border is level with the left edge of the sternum. *The signs were those of extensive pneumothorax with considerable air-entry into the collapsed lung.*

May 2nd: General condition improved; less pain; sputum more profuse, more frothy; no blood.

May 4th: Whole of right side of chest tympanitic. Inspiratory indrawing of intercostal spaces most pronounced on right side; bulging of spaces on right side during coughing or forced expiration. Breath sounds almost inaudible from apex to nipple level, below this amphoric breathing present; no metallic tinkling, no coin sound. Posteriorly whole lung area tympanitic with almost entire absence of breath sounds. The physical signs had therefore again changed; the silent area had largely increased and area of amphoric breathing diminished. *The signs were those of lessened lung expansion and of an increase in volume of the air in the pleural cavity.*

May 6th: Right side almost entirely silent; cavernous whispering sounds at base. Blood examination: No leucocytosis, nor did white cells suggest any inflammatory process. Liver not displaced.

May 16th: Left femoral thrombosis after a premonitory day's pain in leg; swelling of leg and thigh, skin blue-grey, much pain, pyrexia. Chest: Little change; if anything there was less evidence of air entry into right lung, though excursions of chest wall were as great as on left side. Increase downwards in silent area; no protrusion of intercostal spaces on expiration or on whistling. Pulse small, low tension, feeble. Heart sounds poor.

May 22nd: Practically no breath sounds were to be heard on right side, except about root of lung posteriorly.

June 6th: Right side of chest in front absolutely silent. Hyperresonant.

June 8th: General condition began to improve. Vesicular murmur heard in axilla and about base of lung; deep breathing increased area over which this was heard. Heart displacement as before.

June 29th: Leg recovered; no swelling; some discolouration. Easy passive movements commenced. Breath sounds heard faintly over wide area; also for first time pleural friction sound in front and in axilla.

July 28th: Breath sounds heard over whole of lung, but, generally speaking, were fainter and more distant than on left. Is able to stand out of bed.

From this date his recovery though very slow was continuous until by Sept. 2nd the only abnormality recognisable was a suggestion of distance in the breath sounds then to be heard throughout right lung; the heart had regained its normal position.

Summary.

This case afforded an excellent opportunity of observing a pneumothorax due to a rupture—probably valvular—of the pleura during coughing from its gradual onset to its practical cure—a period of over four months. The slow and deliberate increase in the amount of air in the pleural cavity with the concurrent collapse of the lung was easy to follow, distinguished as it was by its classical signs; its fullest extent was not reached until about three weeks from the onset. To what extent its course was modified by the resolving pneumonia no indication was afforded. This was succeeded by a stationary period of another three weeks before the first signs of vesicular breathing reappeared (i.e., about June 8th—six weeks from the onset). The characteristic auscultatory signs of pneumothorax were only to be heard for about 10 days (from the third to the thirteenth of the disease). The exquisite metallic tinkling was of short duration (a few days) and appeared in the absence of any pleural effusion. The behaviour of the heart in its displacement was a typical instance of its sensitiveness to any change in intrathoracic pressures; it was almost the first warning to be recognised of the grave happenings in the chest, and only towards the end of convalescence was its normal position regained.

Some Former Recorded Cases.

1. Graves (*Dublin Journ. of Med. and Chem Sci.*, 1834; quoted from Emerson, *Johns Hopkins Hospital Reports*, 1903): Man aged 40. On the fourth day of dulness lower down, from the clavicle to below the nipple, percussion yielded a "preternaturally clear and hollow sound." Physical signs of pneumothorax disappeared in about 16 hours. One is not surprised to find that the diagnosis in this individual has been doubted.

2. Rumpf (from Emerson) (Beitrag zur Lehre vom Pneumothorax, 1849): Pneumonia followed by bronchiectasis, with gangrene and pneumothorax.

3. Monnerei (from Emerson) (*Arch. gén. de Méd.*, 1851): Acute pneumonia, gangrene, perforation followed by hydropneumothorax. Death.

4. F. Taylor (in a discussion on a case of West's at the Clin. Soc.; report from *Brit. Med. Jour.*, Dec. 22nd 1883): Acute pneumonia followed by pneumothorax with some effusion; air gradually absorbed. Patient remained well for 12 months, then phthisis followed hæmoptysis. "It became a question whether the pneumothorax had been set up by the pneumonia or whether it was a result of the individual's phthisical tendency."

5. Oldridge (*Brit. Med. Jour.*, Dec. 25th, 1915): Man, aged 40, seen Oct. 6th, diagnosis pneumonia, 10 hours later more urgent symptoms; dyspnœa and cyanosis. Symptoms of shock. Right pneumothorax present; displacement of heart (?). No pleural effusion; no tubercle bacilli found. Bed 10 days; return to work Nov. 4th—i.e., within one month.

6. S. Matthews (*Practitioner*, July, 1918): Measles; whooping-cough; pneumonia; pneumothorax; recovery. Girl, aged 7. Measles, Jan. 1st; apparently well and downstairs Jan. 20th; whooping-cough Jan. 31st; broncho-pneumonia Feb. 10th. On March 10th, after coughing, sudden access of pain left lower back of chest. Pneumothorax diagnosed. March 11th: Apex beat in right axillary line. April 14th: Physical signs of pneumothorax gone. Apex normal site. No effusion. No T.B.

To these may be added (7, 8) two known cases (one fatal) in the London Hospital in a period of about ten years and another fatal case (9) in the Middlesex Hospital.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.—The two Goldsmid Entrance Exhibitions, offered annually for competition in September, were awarded this year to H. Spibey, Cambridge University, and Miss J. K. Gatty, London School of Medicine for Women and King's College, London

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Presidential Address.—Demonstration on Degeneration in Art, Science, and Literature.

A MEETING of this society was held on Oct. 14th, when the incoming President, Major A. F. VOELCKER, R.A.M.C.(T.), delivered his presidential address, in which he considered some ways in which the society could contribute towards the regeneration of the profession. No man could be satisfied with the position which our profession now occupied either in the eyes of the public or as a factor in the general commonweal, and he thought we had ourselves very largely to thank for this want of recognition. Our services were not understood, and consequently not appreciated, our readiness to work without remuneration was exploited, and in matters where professional knowledge was essential we were not consulted or were inadequately represented. The medical profession had allowed, and was allowing, itself to be exploited by almost every branch of social reform. The time was surely at hand when matters which affected the health and with it the morals of the community should be dealt with primarily by our profession, whilst the means and machinery for carrying out such measures might be left to the politician and social worker. In the regenerated medical profession he would urge the Fellows of the Society to be prepared to take their part as leaders in the fields of activity concerned.

Ministry of Health.

We were promised in our regenerated medical world that the health of the community, which had been up to now no one's concern in particular, though the burden had been on medical shoulders, should be the special care of a Ministry of Health. The creation of such an office would, he trusted, be the means of coördinating much of the work which was being undertaken by individuals both within and without the profession, and so preventing overlapping and redundant activities, and might even secure for our profession a recognition of the value of the advice given and the work which was constantly being done by us for the welfare of the community. At the present time the State by certain of its departments did give us invaluable help in dealing with some of the problems of infectious diseases, sanitation, and the inspection and control of food and drink, but even in these matters it must be confessed that we did not all see eye to eye with the official mind and that a Ministry of Health might possibly prove a King Stork in place of our present King Log. A Ministry of Health implied a Minister of Health, and it would be "a consummation devoutly to be wished" should such a Minister be a man (or should he say super-man) appointed by His Majesty after *election* by the qualified medical practitioners of the United Kingdom. We had lately been urged to secure the return of medical men to Parliament, but whilst recognising the excellent service such men had rendered in Parliament, could we seriously say that even a Fifth or Medical Party in Parliament would add to its utility, however much it might contribute to the diversity of the division lists? It had always seemed to him that the less medical men had to do with professional politics the better. We must be prepared for a Ministry of Health and must see to it that it was given loyal support in everything which made for the health of the community, and that the Minister was the selection of the profession and not of party.

Specialism in Medicine.

A Ministry of Health could not ensure health. The personal factor in medicine would ever be the moving power, and we ourselves must take our individual part in the practice and inculcation of the moral virtues of temperance, patience, charity, and sympathy. One of the questions in the near future would be that of the place of specialism. By many specialism was held to be the crowning mercy of medicine, but there were others who would urge that specialism was an overgrowth, and as such needed repression. There was no doubt that the public were obsessed with the glamour of specialism. If we thought of it we should recognise that in this matter of specialism it was the public and not the profession which created and supported the specialist, and he urged that this

was not desirable. In a regenerated condition of medicine might we not hope that specialists would be those who by their work and ability had won the confidence of the medical profession, and that the practice of specialists would flow to them through the channel of the practitioner and not through the press or the public. In the new earth (he dared not say new heaven and new earth) of medicine we must beware lest specialism be allowed to occupy too prominent a place. There would always be the need for specialism, but the specialist must follow and not precede the generalist. It would be one of the dangers of a State-controlled medicine, should that come, that the popular clamour for specialism might lead to the multiplication of special hospitals or special departments in hospitals and that the coming race of medical practitioners would be lamentably deficient in general knowledge.

A State Medical Service.

The question of the creation of a State Medical Service was one which was certain in the immediate future to claim the serious attention of our profession: for years we had seen it coming, though few had leaped for joy at the prospect. Financial burdens, due largely to the increased cost of treatment and maintenance, though not to the payment of the medical men, had compelled the managing bodies of our hospitals to realise that some change must take place in the financial resources of our hospitals if these were to carry on their work efficiently. It was felt by many that the work done was for the good of the State, and that, consequently, the State should pay for the work for which certain sums of money were voted annually by Parliament. The State, through such agencies as the Local Government Board, the county councils, the Universities, and the Board of Education, already granted financial aid to our profession, in order to enable provisions of public health legislation to be carried out, and with the gilding came the pill in the form of control. We were reminded that there were sums of money voted by Parliament and contributed by the taxpayer, which were available in the form of grants, and that if we did not choose to take them there were other bodies who would, and who would be enabled to compete with us under more favourable financial conditions, and—what was much more serious for our hospitals and for medical education—would be able to divert from us the material which we valued, both for its scientific and educational, as well as for its humanitarian interests. We were, perhaps unnecessarily, reminded of the fact that in hospital work we received nothing for the time and labour we devoted to the treatment of the patients, and little, nothing, or even less than nothing, for the education of the future medical practitioners, and we were told that State control of hospitals would do away with this anomaly. The bait was tempting, but it was possible to pay too dearly for financial relief. Apart from hospital work it was urged in favour of a State service that when such a system was established every medical man would be able to rely on securing a living wage in return for which he should render medical service to the individual and to the community. Undoubtedly this would relieve many a hard-worked doctor of the wearing anxiety arising from the uncertainty of practice, but the object of State service should not be to secure a definite benefit for the doctor unless a corresponding benefit accrued to the patient or the community. As long as medical men were content to work for such low fees as obtained in certain practices they would not even deserve the respect and consideration paid to those who, in their respective fields of labour, demanded a minimum wage and restrictions of hours of labour. The low fees of which he had spoken were either grossly disproportionate to the services rendered, or the services rendered were not such as a highly trained and honourable profession could justify. The question of fees was a difficult one to tackle, but he trusted that in a regenerated state of our profession a juster arrangement of fees, both in the direction of raising the low fees and in mitigating the high fees, would be brought about, and that our licensing bodies would not allow the low scale of fees at present ruling in some practices.

Criticism of State Control.

The prevention of illness might be regarded as a duty of the State, and much had already been done by the State in the direction of prevention and treatment, but none of us could say that this duty was carried out efficiently. The outbreak of the numerous centres of medico-social activity such as health centres, infant-welfare centres, after-care associations, which were the creation of non-official bodies, testified to the inadequate manner in which at present the State played its part in protecting and furthering the welfare of the citizen. Some of us felt that it would be an evil day when the State by its medical service undertook the care of the health of the individual. The profession of medicine was so eminently human and the services so personal that it might be feared that as no man could serve two masters, so no medical man could serve both the State and the patient simultaneously. Was it not possible that a State service might destroy in its officials that energy and interest which were such important factors in the attainment of success in private practice? Promotion in a State service, if it became merely a matter of seniority, would cease to be striven for, and be merely waited for, and, if made the reward of real or imagined merit, might lead to intrigue and abuse. Our experience of State control as a stimulus to originality and endeavour had not been so convincing as to its advantages as to make us enthusiastic on its behalf, and although the splendid efficiency of our naval and military medical services during the war might be advanced as evidence of the value of a State service, we must remember that the temporary incorporation of civilian practitioners into these previously State-restricted services might be the explanation of the strikingly brilliant achievements of our medical services in this war. Advancement by merit in a State service would be a very questionable method of procedure.

Concluding Remarks.

He hoped that the medical profession would see to it that the remuneration of nurses whose work was so essential to the success of our treatment, and whose labours were so ungrudgingly given, should no longer be on a scale which was a scandal to our profession, for it was *we* who stood by and saw the miserably inadequate salaries paid both in hospitals and in private to the nursing profession. In his opinion, a woman who took up nursing took ten years off her life. After training three or four years she was then, worked out, able to earn a wage which a parlourmaid would scorn. During her training she was housed and fed, worked hard, and got possibly £12 in her first, £18 in her second, and £24 in her third year. Out of this she had to clothe herself and provide for a holiday and any recreations. For her there was no 8-hours day, any more than there was for us.

This society was founded "to give practitioners in medicine frequent opportunities of meeting together and conferring with each other concerning any difficult or common cases which might have occurred, or communicating any new discoveries which might have been made either at home or abroad." In his remarks on the occasion of the presentation of the first Fothergillian medal Lettsom defined the duties of the practitioner of medicine, surgery, and pharmacy, and observed on the importance of an institution which associated the respective members of each. Lettsom's interests were catholic, his activities ceaseless, and were all directed to the welfare of others.[1] He was an original member of the Humane Society; his voice was raised in favour of measures for preserving the health of prisoners in gaols and preventing the gaol distemper; he was instrumental in raising the Howard memorial; he was the first to send Jenner's vaccine to America; he instituted the Royal Sea-Bathing Infirmary at Margate; he founded a society for the cultivation of bees. His generosity and hospitality were proverbial. He was intensely human. He was not afraid to denounce quackery, as was seen in his ruthless exposure of the urine caster Myersbach. His energies were constructive as well as destructive, and while he was busy lashing the latest fashionable quack he was devising means for increasing the supply of bread by the addition of potato, and of encouraging the cultivation of the mangel wurzel as an additional source of food. It was on the labours of such a man that we were entered, and he thought that we could fairly claim that the success of this society had been its loyalty to the traditions of its founder.

Dr. T. B. HYSLOP gave a lantern demonstration illustrating the Oration on Degeneration in Art, Science, and Literature which was delivered last session. The demonstration consisted of pictures composed by various types of degenerates.

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[1] THE LANCET, 1918, i., 70.

Reviews and Notices of Books.

Surgical Therapeutics and Operative Technique. By E. DOYEN. English edition, prepared by the Author in collaboration with H. SPENCER-BROWNE, M.B. Cantab., &c., Élève de l'Institut Pasteur; Physician to and Chef de Clinique de l'Institut Doyen. Vol. II, pp. 680. With 982 figures in the text. London: Baillière, Tindall, and Cox. 1918. Price 25*s.*

THIS is the second of the three volumes of which the English edition of Doyen's work is to consist. The first was reviewed in THE LANCET of June 9th, 1917 (p. 881). The volume now before us contains the continuation of the section dealing with operations on the head, as well as those concerned with the neck, thorax, upper and lower limbs. This volume is no less characteristic of the views and methods of the accomplished author than was its predecessor. The wealth of illustration is the most obvious feature. The drawings are all admirably clear and well executed, and a very large proportion of the figures are reproductions of photographs, as was to be expected in a treatise by one who had brought into such prominence the use of the camera and the kinematograph for the representation of surgical technique. Yet, admirable as they are, the number of illustrations might probably have been halved without detracting from the value of the book; thus in numerous instances a general sketch of the operation is followed by an enlarged view, where one or the other could well be dispensed with; and 11 figures are surely unnecessary to illustrate the exposure of lymph-glands by divulsion. Some of the figures, too, are nearly useless, and a few are really bad. Fig. 546, for example, shows a procedure which in many hands would be dangerous, and Fig. 553, as an illustration of a method of removing cancerous axillary lymph-glands, cannot pass without criticism.

Perusal of the text suggests that the book is not one for students, but is likely to be of considerable use only for those who have already had a good deal of experience of clinical and operative surgery; for there is next to no discussion of methods other than those which the author employed, and the description of these is often very sketchy indeed. Many dangerous and some highly questionable operations are lightly referred to. Very few would regard the operation figured on pp. 246–248 as justifiable. Some operations on the mediastinum, trans-pericardial anterior œsophagotomy, resection of the cervical sympathetic for the exophthalmos of Graves's disease, and the division of posterior nerve roots for the gastric crises of tabes occur as further and striking examples. Yet many other debatable questions of treatment, such as that of removal of cervical ribs or that of thyroidectomy for Graves's disease, are far too shortly and easily disposed of. But it is good to see, in text and figures, the constant reference to topographical anatomy, which every operating surgeon ought to cultivate—a study, alas, too little fashionable at the present day. Good also is the assumption in this volume, as in the first, that every surgeon will strive to make himself an accomplished clinician; it may be for the surgeon rather than for the physician to decide the proper time and manner of surgical intervention. We see throughout evidence of the importance attached to speed in operating; even so, it is startling to read that the naso-pharyngeal tumour represented in Fig. 249 was removed in 15 seconds, or that denudation and resection of a rib need occupy only 5–10 seconds; and to see the method of transfixion in disarticulation at the hip recommended as superior to all slower methods—Liston himself could have done no better! The continued recommendation of the use of mycolysine and phymolase in septic and tuberculous infections (of the former even for suppurative arthritis of large joints) is perhaps not surprising, but is likely, we imagine, to meet with little serious study in this country. Still less likely to find adherents are the views of the author on the causation of tumours and on the value of "anti-neoplastic vaccination" and thermic electro-coagulation. Indeed, preference for such methods of treatment may have been not unconnected with the nature of the operations here recommended for carcinoma of the tongue and of the breast, operations which most surgeons would regard as partial and inadequate.

The translation is not always beyond criticism. "I have removed a Flobert bullet of six millimetres from the body of the second cervical vertebra, which had been discharged within the mouth" is an example. There are fewer misprints than might have been expected in a work of this size. An index would have been valuable.

Medical Electricity. By H. LEWIS JONES, M.A., M.D., F.R.C.P., late Consulting Medical Officer to the Electrical Department, St. Bartholomew's Hospital. Revised and edited by LULLUM WOOD BATHURST, M.D. Lond., Physician in Charge of Electrotherapeutic Department, Royal Free Hospital, &c. London: H. K. Lewis. 1918. Pp. xvi. + 588. 15*s.* net.

THE task of revising a book such as that of the late Dr. Lewis Jones has called for judgment and discretion. The difficulty has been met in what we consider the wisest way—that of leaving the work in its original form—making only such alterations as are necessary to record the more recent advances in the subject. Consequently our remarks on the previous edition[1] apply in the main to the volume now before us. The then recent developments in our knowledge of the action and uses of electrical applications have been further extended, and the whole subject has received a tremendous impetus in studying the experience gained in dealing with the various disabilities following injury and disease in the Great War. These are reflected in the additions made by the editor, but with the vast amount of material, becoming greater day by day, it is too soon to expect more than general inferences and conclusions. With regard to the use of condenser discharges for testing nerves and muscles, it appears that their value in accurately determining the degree of degeneration present has not come up to expectations, though the method constitutes a very substantial advance on the use of the coil and constant current. The extended uses of ionic medication and diathermy are enlarged upon, while the application of electrical currents through the medium of water kept in constant motion constitutes one of the most recent and useful methods. These and other matters have been brought up to date, so that the book remains the standard volume on medical electricity published in the United Kingdom. If we were to offer any criticism it would be to question the desirability of attempting to include a description of X ray appliances, their uses and applications, in a work of this kind. The subjects of medical electricity and radiology have developed so enormously in recent years that one can no longer be regarded as a sort of side issue to the other.

Quantitative Chemical Analysis. By FRANK CLOWES, D.Sc. Lond., and J. BERNARD COLEMAN, A.R.C.Sc., Dublin. Eleventh edition. London: J. and A. Churchill. 1918. Pp. 580. 12*s.* 6*d.* net.

APPRECIATION of this book on "Quantitative Chemical Analysis" is patent since it has now reached its eleventh edition, the first edition having been issued in 1891. The work has developed through this period from a manual for use in the laboratories of colleges and institutes to a volume of reference helpful to the consulting and analytical chemist. The chapters on water analysis, foods, oils, fats, and waxes, in addition to those on technical analyses, may be quoted in proof of this statement. The simple gravimetric estimations refer chiefly to the metals, and suggest really useful exercises. The technical analyses form a valuable feature of the work; it is a department of analytical practice which has evidently occupied considerable attention from the writers. Here are considered the methods of valuing ores for their metallic contents, alloys for the separation and estimation of their constituents, soda ash valuation, glass analysis, and other important directions of chemical assay. In a subsequent chapter a very useful section is given presenting the results of typical analyses made under the supervision of the authors in their laboratories. The book is thus thoroughly practical, and maintains its standard character, the manipulative details and the methods described being brought into line with modern developments.

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[1] THE LANCET, June 21st, 1913.

FRENCH SUPPLEMENT TO THE LANCET*

Under the Editorial Direction of

Professor CHARLES ACHARD,
PROFESSOR OF PATHOLOGY AND THERAPEUTICS IN THE UNIVERSITY OF PARIS.

AND

Dr. CHARLES FLANDIN, D.S.O.,
MÉDECIN-MAJOR DE 2ME CLASSE; CHEF DE CLINIQUE À LA FACULTÉ DE PARIS.

FOR four years British Arms have fought on French soil for the cause of Justice and Progress. The coöperation of the Allies, at first exclusively military, has grown in scope, and has extended to realms apparently without the range of the war. An ENTENTE has been replaced by a UNION. And this Union should exist after the war, and should coöperate in all fields of human activity. Our doctors must not remain outside the great *rapprochement*, which should make one the soul of Britain and the soul of France.

British and French soldiers now make one Army, and this is because they have learned to understand each other. That the British and French doctors should become the exponents of one scientific and moral organisation, it is necessary that they should understand each other.

The aim of this Monthly Supplement in THE LANCET is to enable British doctors to understand the theories and the researches of French doctors.

We propose to issue, in more or less monthly form, a general review of some big medical subject and an original article dealing with a particular question. We shall obtain these contributions from authors whom we know to be especially qualified by their researches and work to set out ably the results actually achieved, as well as the trend of ideas in France. In this way we aspire to assist our British confrères to a fuller understanding of French medical movements, and we shall be happy to serve them by placing them in relation with those of our workers whose researches interest them specially. If this Supplement leads to mutual interpenetration of the two medical worlds we shall be amply repaid.

CH. ACHARD.
CH. FLANDIN.

WHAT THE WAR HAS TAUGHT US ABOUT TETANUS.

By LOUIS BAZY.

TETANUS is one of the diseases most anciently known. It has been besides much studied from the clinical as well as the bacteriological point of view, and everyone recalls the fine researches made in France by Roux and Vaillard, which gave us antitetanic serotherapy. It appeared, then, that the war was not able to teach us anything new. However, for the first time in our armies all the wounded received repeated doses of antitetanic serum. The result was that the common tetanus, that we were observing before the war, almost completely disappeared. In its place some cases have been observed, occurring in spite of the serum, and for this reason called by Borrel [1] post-seric tetanus. These forms present a particular physiognomy absolutely different from the classical form.

"There is, indeed, in question a tetanus of incomplete immunisation, tetanus which represents a fine example of those modified morbid types, with which preventive medicine is in course of endowing the natural history of the infectious maladies." (Widal.)

In short, it may be said that the war has brought us the following ideas:—1. Antitetanic preventive serotherapy is efficacious in the immense majority of cases. 2. When it acts incompletely it so modifies the course of tetanus that it has created new forms of the disease, unknown before its use was general. 3. The study of the checks to serotherapy ought to lead us (*a*) to use the serum in a more rational way; and (*b*) to know how to complete its action by that of an antitetanic vaccination. These are some points that it is proposed to consider.

I.—*Efficacy of Antitetanic Preventive Serotherapy.*

Before, and even during, the war some surgeons have discussed the efficacy of the preventive serotherapy of tetanus. It is, however, beyond discussion. Pierre Bazy,[2] who, the first, in 1914 proposed to make systematically in all the wounded an injection of antitetanic serum, has only observed 129 cases of tetanus in 10,896 wounded in hospital in the entrenched camp of Paris. These cases were almost entirely seen where the preventive injection was not habitually practised. Walther[3] received at the Val-de-Grâce 200 wounded Germans. The serum not being available at this moment in sufficient quantity, 100 cases only could receive an injection. One alone had tetanus, which appeared the day after admission—i.e., the prophylactic injection had been made too late. Of the other 100 who had not been injected 18 had tetanus.

Fredet,[4] at the moment of our first victory of the Marne, found in his hospital at Mary-sur-Marne 12 German wounded tended by a German medical man, who refused the antitetanic serum offered to him. Six of these wounded men died from tetanus, while Fredet, who employed serotherapy, did not see a single case of tetanus among his wounded, although they were more numerous. Many other statistics published in France demonstrate the efficacy of the preventive sero-therapy of tetanus, but only the most characteristic are here cited.

II.—*Post-seric Tetanus.*

However, the immunity conferred by the injections of serum is not absolute. As Lumière[5] says, it seems that the antitetanic serotherapy may be in default for two principal reasons:—

(*a*) When the quantity of toxin secreted at the seat of the wounds is considerable and out of proportion to the dose of serum injected. In this case the tetanus appears soon after the injection of the serum and in spite of it. Here we are dealing with an *early* post-seric tetanus.

(*b*) The immunity conferred by the preventive injection may be partly or totally exhausted at the very moment when at the site of the wounds, more or less old, cicatrised or not, tetanic sowings follow a surgical intervention or a traumatism. Either of these may liberate the spores shut up in the encysted foreign bodies. These are the *late* post-seric tetanus, and are much more frequent.

Considering the majority of the cases of tetanus observed in the present circumstances, the cases of post-seric tetanus constitute a family apart, possessing its special pathogenesis, its symptomatic picture, and, above all, its quite particular prognosis. Far from testifying to the insufficiency of the preventive serum, such cases give us, on the contrary, the most varied proofs of its efficacy. It is the presence of the antitoxin and its action which dominate the malady (Montais[6]). Everything comes down, in effect, to the struggle between the tetanic toxin and the antitoxin introduced

* The first of these Supplements appeared in THE LANCET on Sept. 21st, 1918, and comprised the following articles:—The Microbic Diversity of the Enteric Fevers, by Professor Achard; Post-Typhoid Atony of the Cæcum, by Maurice Loeper, Professor in the Faculty of Medicine and Physician to the Hospitals, Paris.

[1] Borrel: Comptes rendus de la Société de Biologie, 6 Mai, 1916.

[2] Pierre Bazy: Presse Médicale, 4 Février, 1915.

[3] W. Walther: Bulletin de l'Académie de Médecine, 29 Sept., 1914.

[4] Fredet: Société de Chirurgie, 20 Juin, 1917, p. 1338.

[5] Lumière: Annales de l'Institut Pasteur, Janvier, 1917, p. 19.

[6] Montais: Annales de l'Institut Pasteur, Juillet, 1916, p. 330.

by the serum. The post-seric tetanus is more attenuated and localised in proportion as the action of the antitoxin is more powerful. It is this action of the antitoxin which regulates at once the clinical signs and the prognosis of tetanus.

The experiments of Roux and Vaillard on the preventive power of the serum are well known. Guinea-pigs are injected with a dose of filtered tetanus culture lethal to the controls in 48 hours. The animals then receive, some immediately after injection of the toxin, others at intervals of 1–6 hours, a strong dose of very active antitetanic serum. In these conditions what do we see? The tetanus will show itself earlier and more intense in proportion as the preventive injection has been made later, and the prophylactic dose of serum must then be proportionate to the delay, and must also be administered by the most rapid routes of absorption, in the guinea-pig by intraperitoneal injection in preference.

Clinically, in man the same phenomena are to be observed, and the preventive injection of serum can be seen to modify completely the clinical course of tetanus. Thus it is very difficult to fix the clinical "physiognomy" of the tetanus, and we shall not endeavour to do this. Good descriptions will be found in the book of Courtois-Suffit and Giroux,[7] and especially in the very excellent works of Montais and of Lumière already cited. One of the most striking features is the inconstancy and variability of the symptoms of post-seric tetanus (Montais, Bérard, and Lumière). In ordinary tetanus, that occurring in subjects who have never received antitetanic serum, the toxin affects successively, in a constant order, all the parts of the nervous system, from the nerves of the region wounded to the bulbo-medullary centres.

"But in the injected subjects the pathogeny is quite special; the tetanus is the result of an incomplete seric protection. In these conditions the reaction of the higher centres can, from this fact, be incomplete, irregular, and incoördinate. Instead of yielding to the toxin with the habitual regularity of the classical tetanus, each of the centres has become free to react separately, in a variable and even nconstant manner." (Montais.)

The seric injection protects in general the higher centres, which in the ordinary tetanus are the last affected. Thus many cases of post-seric tetanus are localised to the wounded limb. Courtois-Suffit and Giroux have been able to say that in these conditions the tetanus was no longer a general but a local affection. We might name it a veritable *tetanic neuritis*. Apart from those characteristic symptoms which are essentially painful cramps, this form of tetanus can give rise, like all kinds of neuritis, to trophic troubles. Bérard, Lumière, and Dunet,[8] Sencert and Cornioley,[9] have described, in the course of evolution of late localised tetanus, osteoporosis which, under the influence of the tetanic contractures, resulted in the production of spontaneous fractures.

It has been orthodox to say up to now that tetanus respected the integrity of the intelligence. And in effect the tetanic toxin, following a progressively ascending course, affected successively the peripheral nervous extremities, the medulla spinalis, and then the bulb. In this way the tetanic patients died before the brain had been affected by the tetanic toxin. But now, owing to the serum, the bulbo-medullary centres can be preserved from the fatal lesions, and the tetanic poison is seen to reach the cerebral centres and to give rise to *accidents cérébraux*. Bérard and Lumière,[10] Lumière and Astier,[11] have described these mental disorders, which consist of hallucinations, delirium, agitation, and phobias, with nocturnal exacerbation.

We would not have described all these clinical particulars if it were not possible to draw from them important elements of *prognosis*. As the seric protection, which influences the course of the malady, has only a limited duration it can be remarked in the first place, with Bérard, that—

"the longer the interval between the preventive injection and the first signs of tetanus the more the symptomatology approaches the classical form of early tetanus, and the more serious becomes the prognosis."

[7] Courtois-Suffit et Giroux: Les Formes Anomales du Tétanos, Masson, éditeur, Collection Horizon.
[8] Bérard, Lumière, et Dunet: Bulletin Médical, 5 Janvier, 1918.
[9] Sencert et Cornioley: Société de Chirurgie, 17 Avril, 1918, 742.
[10] Bérard et Lumière: Académie de Médecine, 18 Décembre, 1917.
[11] Lumière et Astier: Société de Thérapeutique de Paris, 10 Janvier, 1917.

It can be observed further that the tetanus will be grave in proportion as the preventive injection of the serum has more or less well protected the higher nervous centres. From this point of view, as has been well shown by Montais and Lumière, great attention must be paid to the presence or absence of *trismus*. In considering this single symptom three varieties of post-seric tetanus can be distinguished:—

(*a*) *Tetanus without trismus.*—In these cases the injected antitoxin has prevented the fixation of the microbic poison on the central nervous system, limiting its action to the motor nerves of the wounded limb. These cases of tetanus without trismus are much less grave than the other forms.

(*b*) *Tetanus with late trismus.*—The bulbo-medullary centres are only incompletely protected. Then is noted the appearance of a late or incomplete trismus accompanying the local contracture. The prognosis is here less favourable.

(*c*) *Tetanus with immediate trismus* [*trismus d'emblée*].—Here the protective effect of the serum is exhausted; the route has again become free for the penetration of the toxin, and the higher centres can be affected. These cases are almost always fatal.

To compare the relative gravity of these different forms I give some very eloquent statistics from Lumière:—

Post-seric tetanus—(*a*) without trismus; (*b*) with trismus delayed or attenuated; (*c*) with trismus *d'emblée*.
(*d*) Tetanus without preventive injection.

—	(*a*)	(*b*)	(*c*)	(*d*)	Total.
Number of cases	15	13	26	27	81
Cured	11	8	8	7	34
Died from tetanus	1	3	17	19	40
,, ,, intercurrent affections	3	2	1	1	7

III.—*Therapeutic Conclusions.*

The new ideas acquired on post-seric tetanus may serve to indicate rational therapeutic action in regard to curative and preventive treatment.

A. *Curative Treatment.*

In the preface, which he has contributed to the book of Courtois-Suffit and Giroux, Widal writes:—

"In its origin tetanus is only a simple infectious localisation at the level of a wound; but, on account of the elective action of the toxin secreted by its microbe, it is as a malady of the nervous system that it presents itself to us from its first manifestations. So, to combat it, a symptomatic medication should come to the aid of the pathogenic medication. In knowing how to alleviate the crises of painful contractures the medical man gives at periods to his patient the means of passing over the dangerous stage, and can thus conduct him to the period of cellular reparations—that is to say, to cure."

The pathogenic medication is the injection of antitetanic serum. Before the war nearly everybody admitted that the antitetanic serum had no curative virtue, in spite of some suggestive observations of massive serotherapy crowned with success.[12] Roux and Vaillard, although we are indebted to them for this brilliant discovery, concluded from their experiences that—

"When the first symptoms of tetanus appear the toxin elaborated in the focus of infection has reached the nervous centres, and these may be sufficiently affected for death to occur inevitably. Injected under the skin or into the peritoneum the antitoxin neutralises, indeed, the toxin in the circulation, but does not remedy the lesions produced, and can effect nothing against a poisoning already realised."

These ideas, which were applied to the cases of tetanus habitually observed at that time—cases which arose in subjects who had received no preventive infection—are no longer true for the cases of post-seric tetanus, which during this war are much more frequent. The evolution of these latter cases is slow and retarded, and the injections of antitetanic serum in large doses seem to exercise a happy influence on this evolution. Thus on the appearance of the first symptoms of tetanus there should be injected in two or three days 100–200 c.cm. of serum and even more. It must not be forgotten, in fact, that—

"If the antitoxin can no longer act on the toxin already fixed in the nervous elements, it can still act on the toxin that the tetanus bacilli,

[12] Ch. Achard: Soc. Médic. des Hôpitaux, 9 Février, 1912. Oulmont et Dumont: Ibid., 19 Avril, 1912. J. Darier et Ch. Flandin: Ibid., Novembre, 1912.

not destroyed, can continue to pour out at the level of the wound." (Widal.)

At the present time the curative action of antitetanic serum seems indisputable.

Route.—What route should be employed? The new trials which have been made in the course of this war are, above all, based on the principle that tetanus being a nervous malady it is upon the nerves that it is necessary to act. The intracerebral route, supported by Roux and Borrel, has been almost abandoned. On the other hand, many surgeons much favour the intrarachidian route, but this seems of little practical use. Sicard has proposed paraneural injections, which are made at the junction of the limb with the trunk, and in the neighbourhood of the great nerves. Appert and Lhermitte practise epidural injection in the sacral canal, effecting thus a pararadicular injection. Walther and Jousset[13] in four cases made deep injections of serum of 20 to 30 c.cm. around the pharynx in the submaxillary region; they have thus alleviated the trismus and dysphagia. But of all the methods it seems that one alone may be practically sufficient and free from all criticism—that is the subcutaneous method.

Symptomatic medication.—But pathogenic medication, powerful though it is, has need of being completed by symptomatic medication, which is directed to the nervous phenomena; indeed, these remedies were proposed before the war. I shall not enumerate them, but will only point out two very interesting methods, due to Bérard and Lumière. These authors direct at Lyons a special tetanus treatment centre, and they have thus been able to acquire a very large experience.

Lumière,[14] having studied during several years the action of oxydising agents on the tetanic toxin, found that the alkaline persulphates possessed in the highest degree the power of destroying the tetanic poisons. He then treated the tetanic patients under his care by intravenous injections of 20 c.cm. of a pure and neutral solution (5 per cent.) of persulphate of soda, performed once or twice a day. He has obtained excellent results, which have been confirmed in particular by W. du Bouchet[15] and by Jacob. I also have been able to note the good effects of this method of medication.

Bérard and Lumière,[16] having on the other hand observed that the permanent contracture of the wounded limb is the most constant symptom of post-seric tetanus, and that this contracture, when the wound is accompanied by fracture, has the serious result of nullifying the reduction of the fracture, had the idea of combating it by *regional anæsthesia.* They have employed to this end a solution of novocaine of 1·5 per cent., with the addition of a drop of adrenalin, 1 in 1000. The injections have been made at the level of the brachial plexus for the upper limb, at the point of emergence of the sciatic for the lower limb, and in the vicinity of the nerve trunks controlling the groups of the contractured muscles. This treatment has given in all cases most encouraging results.

But it is better to prevent than to have to combat an infection so redoubtable as tetanus.

B. *Preventive Treatment.*

In order to be able to meet all the circumstances it is necessary to know alike how to prevent the early post-seric tetanus which supervenes when the prophylactic injection has not been powerful enough, and the late post-seric tetanus which appears when the prophylactic injection is too remote.

(*a*) *Prevention of early post-seric tetanus.*—Tetanus can develop soon after an injection of antitetanic serum made at the appropriate time, perhaps because there exists, together with the tetanus bacillus, paratetanus bacilli (this is a question which requires to be determined), but above all because at the level of a wound there is a superabundant secretion of toxin out of proportion to the dose of preventive serum injected. The superabundant secretion of toxin is produced especially in the freely suppurating wound, badly drained, and the first conclusion to be drawn is that one of the best ways of avoiding tetanus is to carry out early a complete surgical intervention. The second conclusion is that it is not necessary to hesitate in cases of serious wounds—above all, in the wounds of the lower limb, and quite specially in the cold-bites of the feet which have led during this war to such a large number of cases of tetanus—to make at once an injection of 20 or even 30 c.cm. of antitetanic serum. Repetition of the injection of serum is indicated every eight days for one month after receipt of the wound when dealing with infected wounds. This wise prophylactic measure is, however, insufficient. The immunity persisting for only about 15 days after the last injection of serum, it results from this that at the end of 45 days the patients are no longer protected by the previous inoculations. Now, tetanus has often been observed to appear more than 50 days after the wound. How are these late cases of tetanus to be prevented?

(*b*) *Prevention of late post-seric tetanus.*—The late post-seric tetanus supervenes after a delay of from one month to four months, and even more, after the wound—for example, 212 days in a case of Bérard and Lumière. To what are these cases of late tetanus due? In wounds which cicatrise slowly and are infected the spores of tetanus remain in a latent state as long as they are bathed by organic fluids containing the antitoxin of the serum. But when this last is exhausted by lapse of time microbic vegetation can take place and tetanus appears. In the cicatrised wounds the spores of tetanus can exist on the surface of projectiles. Bérard and Lumière have found them in three cases out of four.[17] They can also be found in the depth of old cicatrices, or even at times may come from the intestine of the wounded men. Any traumatism, and more particularly a surgical traumatism, operation, massage, mobilisation, suffices to set free the infection.

From this comes the rule laid down by Pierre Bazy, Bérard and Lumière, and a large number of French surgeons: always to practise a fresh injection of serum at the moment of the complementary surgical intervention which may liberate the infecting germs. However, this mode of action is not always sufficient. In certain wounds, which have a slow evolution or still contain foreign bodies, it can be observed that the tetanus constitutes a *permanent menace.* The question arises whether by means of injections of serum this permanent menace can be met. We have answered this question, M. Vallée and myself, in proposing *antitetanic vaccination.*[18] It is not logical, in fact, to seek to obtain durable effects from the serum, the action of which is always ephemeral. If it is desired to put rapidly, though for a short period, the wounded men in safety from tetanus it is necessary to supply them with the antibodies, already formed and immediately utilisable, that the serum represents. If, on the contrary, a prolonged menace of tetanus is feared the medical man can protect his patients by the slow but durable action of a vaccine.

Inspired by the work of Roux and Vaillard, we have employed as vaccine an iodised toxin, the same as is used at the Institut Pasteur to prepare the horses providing serum. The power of the toxin which we have employed is such that 1/10,000 c.cm. sufficed to kill a guinea-pig of 400 g. On mixing this toxin with an iodised solution (iodine 1 g., iodide of potassium 2 g., distilled water 200 g.), in the proportion of two-thirds of toxin to one-third of iodised solution, there is obtained a liquid neutral for the organism, but yet capable of vaccinating it. At first—acting, as can well be supposed, with the greatest prudence—we injected the wounded men a first time with 1 c.cm. of this iodised toxin, a second time with 2 c.cm., and a third time with 5 c.cm. of toxin mixed with 2 c.cm. of iodised solution. Since then we have much increased the doses. There can easily be injected the first time 4 c.cm. of iodised toxin, the second time 8 c.cm., and the third time 12 c.cm. It is possible to increase further the number and dose of the vaccinal injections, which are remarkably well borne and provoke neither local nor general phenomena.

We shall pursue, M. Vallée and myself, further researches on this antitetanic vaccination. Up to the present the results which it has given us are so satisfactory that we can recommend it to our British friends in the hope that it will render them service. With the serum and with the vaccination it seems that we are now better armed against tetanus, and I desire to reproduce the conclusions that I stated at the

[13] Walther et Jousset: Académie de Médecine, 29 Septembre, 1914.
[14] Lumière: Sur l'Emploi du Persulfate de Soude dans le Traitement du Tétanos, Lyon chirurgical, Octobre, 1915.
[15] W. du Bouchet: Société de Chirurgie, 18 Avril, 1917, p. 924.
[16] Bérard et Lumière: Académie de Médecine, 13 Novembre, 1917.
[17] Bérard et Lumière: Académie des Sciences, 9 Octobre, 1916.
[18] Henri Vallée et Louis Bazy: Vaccination Active contre le Tétanos, Académie des Sciences, 25 Juin, 1917, et Société de Chirurgie, 27 Juin, 1917, p. 1445.

Société de Chirurgie in June, 1917, so as to define precisely the indications of the two methods.

"Immediately after the wound practise without delay an injection of antitetanic serum, which you will repeat in case of need at intervals of some days, so as to guard against immediate accidents. Then, favoured by the immunity thus conferred on the wounded man, it will be legitimate treatment to render his resistance tenacious by submitting him to vaccination. It is recommended that this be carried out only five days at the soonest after the last seric injection, so as to avoid part of the toxin being absorbed by the antitoxin of the serum and thus becoming unsuitable to ensure the immunising reaction."

Such are the new ideas that the war has brought forth on tetanus.

TETANUS CONSECUTIVE TO SUPERFICIAL WOUNDS AND TO TRENCH FOOT:

TREATMENT AND PREVENTION.

BY PROFESSOR RAYMOND,

MÉDECIN PRINCIPAL DE 2e CLASSE.

I SHALL confine myself in this short note to giving the result of my personal clinical experience on the two following particular points: (1) Treatment of tetanus consecutive to superficial wounds; and (2) tetanus in trench foot.

Treatment of Tetanus Following Superficial Wounds.

I have watched two cases of tetanus consecutive to superficial wounds.

1. The first case was that of a soldier who had a slight wound in the region of the back caused by a small piece of shell. The wound was so slight that the man did not seek treatment, but some days later presented himself because of trismus. On admission to hospital he presented a typical tetanus with generalised contractures, trismus, dysphagia, convulsive crises, elevated temperature, &c. The treatment consisted of: (1) Excision of the little wound as done for malignant tumour; a small metal fragment was found in the excised tissues. (2) Serotherapy in large doses; 100 c.cm. of serum each day injected hypodermically; this treatment was continued for a fortnight. Gradually the crises became less frequent, the trismus, the dysphagia, and the contractures subsided. Towards the tenth day, as there was remission of temperature and the urine contained a large quantity of albumin, it was decided to discontinue the injection of serum. Immediately the temperature rose again, with aggravation of the symptoms. The seric treatment was again resorted to, whereupon the temperature fell, the symptoms disappeared, and cure became definite without fresh incident or complication.

2. The second case is analogous. A soldier received a very slight wound of the face in the region of the inferior maxilla. At first he did not seek treatment, but was obliged to do so, some days after his wound, for facial paralysis. He entered hospital with this diagnosis. A careful examination revealed slight crises of trismus on percussion of the inferior maxilla. Some hours later the complete symptomatology of tetanus appeared. The treatment consisted, as in the first case, of excision of the small wound, carried out as for a tumour, and intensive serotherapy. To start with, some intra-rachidian injections were made, but subcutaneous injection in doses of 100 c.cm. each day constituted the basis of the treatment. The affection evolved as a grave form; there were very disquieting bulbar and cerebral symptoms. Then by degrees cure took place. The only accident was an eschar of the thigh consecutive to the injections of the serum.

In these two cases we are dealing with a tetanus consecutive to a very superficial wound, so superficial that the wounded man did not present himself for treatment, and consequently did not receive preventive injection of antitetanic serum. The treatment has been based on:—

1. Excision of the wound. This was carried out as in the case of a malignant tumour, by circumscribing very widely the whole region of the wound. The object was to remove the tetanigenic germs with the tissues which contained them, without causing the penetration, by way of the operation wound, of tetanic toxin into the circulation. The excision has had in these cases, in our opinion, a preponderant action by the suppression of the focus of permanent production of poison.

2. The excision of the wound having suppressed all new access of tetanic toxin, it only remained to combat the toxin already fixed in the tissues. Here serotherapy in high doses has given excellent results. In the first case in particular its efficacy has been shown; on stopping the therapy a disquieting recrudescence of the symptoms immediately followed. The doses employed have been 100 c.cm. of serum each day by the subcutaneous route. The injections have been continued until the infection was overcome—that is to say, from 10 to 15 days. We have employed French or American serum; in the former the dosage is based on the cubic centimetre, and in the latter on the antitoxic unit. 10 c.cm. of French serum of the Institut Pasteur correspond to 1500 antitoxic units of American serum.

Tetanus in Trench Foot.

The affection called "trench foot" or "*gelure* of the feet" is very often accompanied by tetanus. This fact has been recorded by former authors, at the time of the wars of the First Empire and of the Crimea, but it has been lost sight of, so that the appearance of tetanus in trench foot has been a veritable surprise in the present war. Since our first studies with Parisot we have recorded the frequency and the gravity of this complication. We have observed especially two cases in the following conditions.

We had under treatment in our service 50 native soldiers, admitted the same day for a grave form of trench foot, with massive œdema of the legs, very extensive eschars, and profound infection of the tissues. To these local symptoms were joined an elevated temperature and the signs of general septicæmia that we find associated with this malady. All the patients had received a prophylactic injection of 10 c.cm. of antitetanic serum.

On the eleventh day one of the patients presented acute symptoms of tetanus and died in 36 hours. We administered at once a fresh injection of 10 c.cm. of antitetanic serum to all the patients, but this did not prevent another man having tetanus as grave and rapid as the preceding and leading to death in 48 hours. We then made an injection of 30 c.cm. of antitetanic serum in all the other patients, and we had no further cases of tetanus.

Numerous observers have recorded analogous facts, so that it can be said that trench foot is, above all, the tetanigenic affection, more so even than the wounds in war. This is very easily understood if we think of all the contaminations which are found on the feet of those who have stayed in the dirty water of the trenches, of the diminution of resistance of the tissues brought about by this stagnation, and, finally, of the microbic flora that have been described in this affection.

Tetanus in trench foot is always grave, and almost all the cases have been fatal. If now, in accordance with what has always been our view—a view supported by numerous authors—the medical man avoids systematic amputation of the feet, it is of importance, so as to guard against the formidable complication of tetanus, to comply with the following rules: 1. To make in all cases a prophylactic injection, as early as possible, of 20 c.cm. of antitetanic serum. 2. To repeat this injection, in all the cases where there has been loss of substance of the integuments, phlyctenæ or eschar, at the end of eight days. 3. Not to fear, in the grave forms with extensive gangrene, infective manifestations, to increase the doses and inject 30 c.cm. and more. 4. To make an injection of 10 c.cm. at the least every eight days as long as there exist sphacelated tissues, necrosed or suppurating zones—in short, as long as the wound is not in the way of definite cicatrisation. 5. It is well not to allow an interval of more than eight days between each injection of antitetanic serum, alike to assure the continuity of the antitoxic treatment and to avoid seric or anaphylactic accidents.

Thanks to this practice we have had, Parisot and myself, only the two cases of tetanus just related among several hundred serious cases treated in our centre.

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THE LANCET.

LONDON: SATURDAY, OCTOBER 19, 1918.

Pratt and Others v. The British Medical Association.

IN the King's Bench Division during the last fortnight of July there was heard at great length before Mr. Justice MCCARDIE an action by Dr. ERNEST CAMDEN PRATT, Dr. DAVID HOLMES, Dr. ANDREW ST. LAWRANCE-BURKE, and Dr. CHARLES HODGES CAIRNS (deceased) against the British Medical Association and certain members of the Coventry Division of the British Medical Association. The plaintiffs, who were at the time of the institution of the action medical officers of the Coventry Provident Dispensary, claimed damages for conspiracy and injury in their profession and for libel and slander. The opening addresses of counsel, both for plaintiffs and defendants, as well as the more pertinent evidence tendered on each side, were published in the medico-legal columns of the *British Medical Journal* on August 3rd and 17th, and, abbreviated although these reports are, the complicated arguments employed emerge well from them. In fact, this report was a remarkably accurate account of the principal features of the case. The exact definitions, and the legal and popular meaning attached to such terms as "conspiracy," "malice," and "professional honour," were debated; the fundamental divisions between free hospitals (taken as the type of completely philanthropic institutions) and provident dispensaries (where the work is not of a purely charitable nature) came under discussion; the powers and scope of the British Medical Association as opposed to those of a trade union were seen to be in question; the methods in which those powers were employed were described; and no one was surprised on the last day of the protracted hearing when Mr. Justice MCCARDIE, who had throughout displayed the greatest anxiety to make a complicated story clear, reserved his judgment in view of the legal importance of the case. With the consent of the plaintiffs the judge was sitting without a jury, and he explained frankly that he felt the onus upon him very heavy, inasmuch as not only the individual rights of persons alleged to have suffered were at issue, but questions of the first moment to the medical profession and the community.

Mr. Justice MCCARDIE delivered his lengthy judgment on Tuesday last, concluding with a verdict on the principal counts for the plaintiffs. Our readers are probably familiar with the main facts of the story, which is far too long a one to be treated in any categorical manner, although his lordship, in the course of his judgment, gave a very effective résumé of the salient facts. For very many years the conduct of the Coventry Provident Dispensary was considered unsatisfactory by the local medical men. The professional point of view was set out in articles which appeared in our columns, and which took note of the ancient history, but for the purposes of the case, as decided against the British Medical Association, it is not necessary to go further back than 1906. This year marked the high level of the success of the Dispensary, and in this year the opposition of the Association took formal shape, when the following three causes of complaint against the institution were formulated: That the canvassing of the public for patients through a collector, paid on commission, was professionally improper; that the management was too exclusively in lay hands; and that no proper wage limit was imposed upon the subscribers for medical aid, and that such limit was not retrospective. The result was a conference between the local medical profession and the managers of the Dispensary, when the first medical point was conceded, a salaried collector being substituted for one paid on commission; but no change of constitution was considered in respect of the other two points. Thereupon five of the medical staff of the Coventry Dispensary resigned, and in 1907 a medical club was started under medical auspices, the British Medical Association deciding that members of the Association ought not to take medical office at the Dispensary. Had the Association been able to prevent the Dispensary from obtaining medical service, at any rate until its house was set entirely in order, contract practice in Coventry would have taken the shape which most of the profession who had thought upon the matter considered to be best both in the public and professional interest; but the Dispensary was able to find medical officers, despite the representations of the Association. Whereupon the Coventry Division of the British Medical Association, supported by their central organisation, proceeded to make things professionally disagreeable for practitioners who held office at the Dispensary. Members of the Association were forbidden to enter into professional relations with the medical officers of the Dispensary, either in ordinary or consultant capacity, and the ostracism was extended, as far as might be, to practitioners who were not members of the Association. The action of the four plaintiffs against the British Medical Association as an organisation, and against certain local members of the Association, arose out of the situation in which they found themselves as medical officers to the Coventry Dispensary while under professional boycott. The legal proceedings commenced long ago, and one of the plaintiffs is dead; nor were the other three in wholly comparable situations in bringing their joint action, but substantially their grounds of complaint were identical. In the main, what Mr. Justice MCCARDIE had to determine was whether the ostracism of the medical officers of the Coventry Provident Dispensary, admitted by the defendants, was lawful.

Mr. Justice MCCARDIE found for the plaintiffs on all counts, holding the coercive action of the British Medical Association illegal. He alluded to the disciplinary measures of the Association as an improper assumption of power; and by describing the penal

powers of the General Medical Council with detailed accuracy he intended, we must suppose, to suggest that those powers are sufficient to meet all cases of improper medical conduct so far as the public is affected. In the awarding of damages he laid stress upon the blameless professional conduct of the plaintiffs, and was influenced by his reluctant conclusion that malice had played a part in the attitude of the Association towards them. He held that the Association, to whose good work and high position he more than occasionally paid tribute, had been, in many of the circumstances under consideration, impelled by mixed motives—partly by a real desire to uphold the honour and interests of the medical profession, but partly by an intention to punish defaulters from the standards erected by the Association. Mr. Justice MCCARDIE'S verdict had been very generally anticipated.

Wounds of Joints.

DURING the four years of the grim struggle now drawing to its close, in which the human body has been the principal target, joints have been wounded by rifle- or shell-fire in about 1 in 25 of the direct hits recorded. Presumably the joints occupy about this proportion of the whole exposed surface of the body. Surgeons have, in consequence, gained a large experience of the various methods of dealing with joint wounds, and initial wide differences of opinion are now giving place to a remarkable degree of agreement on the general principles of treatment. We have already published a number of articles on the subject and are glad to include in our present issue the second part of a paper by Captain J. CAMPBELL, which gives a useful summary of these principles. It is not long since joint injuries were regarded with something like dismay. Grave indeed they are, but we have learned that articular surfaces have no small power of self-protection, which does much to prevent and to limit the evil effects even of the severest injuries and infections. Synovial membrane may be trusted to overcome bacterial invasion, when not of overpowering virulence, provided that exit is afforded to the exudate which the membrane pours forth. Moreover, in the face of any agent causing inflammation the synovial membrane readily forms adhesions, and so rapidly are these produced that, in the course of a few hours, openings through which sepsis might enter are completely shut off, while sepsis which has already invaded the joint is localised within narrow limits. The properties of the tissues forming the articular ends of the bones have also important bearings. Articular cartilage is avascular, yet it does not readily undergo erosion even in the presence of sepsis unless subjected at the same time to pressure. When pressure is exerted sepsis leads rapidly to erosion. Hence, so long as sepsis is present in a joint it is logical to prevent pressure on the articular cartilage by the judicious use of extension. The bone underlying the articular cartilage receives no vessels from the articular surface, with the result that if any portion has its lateral blood-supply cut off, this portion of bone must die, forming a sequestrum which will then greatly facilitate the spread of any sepsis present. These are some of the fundamental considerations on the application of which depends the successful treatment of joint wounds.

Other points for deliberation have reference to time and circumstance. It is clear that when cases of joint injury are seen early an immediate operation is indicated provided that the patient is in a condition to stand the shock. The operation would then consist in the removal of any foreign body present and of any loose portions of bone, the excision of the wound, and its complete closure. In a large proportion of the cases so treated the result leaves nothing to be wished. If, on the other hand, a period of 24 or 48 hours has elapsed since the injury was inflicted, and if the joint meanwhile has been well immobilised and efficient extension applied, there can be no object in interfering, while all appears to be going well. Information obtained by X ray examination may now be of great value in deciding what shall be done or left undone, and the report on the character of invading organisms will also have its influence on the choice of treatment. The general principles for conservative treatment have already been indicated by anatomical considerations. First and foremost, the joint must be kept absolutely fixed, for movement diminishes relatively the chances of recovery; at the same time, the articular surfaces must be prevented by suitable extension from rubbing together. The number of splints introduced for this purpose during the war is legion, many of them both simple and ingenious, but the fact remains that for either limb some modification of Thomas's original knee-splint appears to serve every purpose. Several patterns of this splint are now made which allow of an easy application of extension, and practical experience has already shown their efficiency. In regard to operative procedures, excision of the joint should be reserved for early cases where the ends of the bones are much injured, but where a prospect remains for obtaining either a strong and fixed joint, or one in which some movement is retained; the amount of bone removed will vary accordingly. In late cases benefit will rarely be derived from excision, for severe sepsis adds a great danger to carrying it out. Many cases unfortunately still remain in which the injury is too severe, or the strength of the patient is too much impaired to allow of any conservative measure whatsoever, and in these amputation provides the final alternative.

Debatable points of technique there still are. The use of antiseptics in the joint is questioned by some, although many who have had experience with Professor RUTHERFORD MORISON'S bismuth and iodoform paste speak in the highest terms of its value. In early cases it certainly does marvels, but its employment when sepsis is well established is more doubtful. Captain CAMPBELL has something to say regarding the quantity employed, which should not be sufficient to constitute in itself a foreign body. In septic cases CARREL'S method has its special value, and the employment of irrigating tubes may enable secondary suture of

the wound to be performed later. Much depends on which is the actual joint involved. In respect of response to treatment no two joints are alike. In a large joint, such as the knee, drainage by lateral incisions is of little value; and where drainage has to be employed at all, openings should be made through the posterior wall of the joint. In the hip, the presence of the head of the femur, cut off from its blood-supply and surrounded by sepsis, is a definite hindrance to recovery, and in the opinion of many excision is imperative. While so much is firmly established, much still remains to be learned about the treatment of gunshot wounds of joints, but what has already been learned will be applied to the various injuries of civil life, with a vast improvement of joint surgery.

Annotations.

"Ne quid nimis."

THE CHANGES IN UNIFORM AND TITLES IN THE MEDICAL BRANCH OF THE NAVY.

THESE changes, recently introduced, may be of a far-reaching character; they must be regarded as almost revolutionary in such a conservative service as the Navy. Therefore all the more credit is due to the present Board of the Admiralty for broad-mindedness in facing the problem of making public the conviction that all the different branches of the Navy are limbs of the same grand tree. The changes are a timely recognition on the part of the Admiralty that in a modern man-o'-war the hazards are shared by all, and the casualty lists leave no doubt that the medical personnel has borne its full share of recent perils. Up till now the uniform of officers in the Royal Navy has been of two types—viz., that worn by the executive and engineers, and that by the other branches, including the medical service, the paymasters, and naval instructors. The former was distinguished by a curl surmounting the upper ring of gold lace on the cuff and by oak leaves instead of a plain gold band on the cap. All now wear the same uniform. The coloured cloth (red in the case of the medical officers) between the gold stripes will persist, and is so distinctive that none but the colour-blind can fail to recognise at a glance the officers of the medical service. Where two different types of uniform were worn by officers belonging to the same service invidious comparisons were bound to exist. The changes should result in a closer union between all the different branches of the service, where uniform means so much. The new titles are of a compound nature, and comparing them with the old we have—

Old.	*New.*
Surgeon Probationer, R.N.V.R.	Surgeon Sub-Lieutenant, R.N.V.R.
Surgeon.	Surgeon Lieutenant.
Staff Surgeon.	Surgeon Lieutenant Commander.
Fleet Surgeon.	Surgeon Commander.
Deputy Surgeon-General.	Surgeon Captain.
Surgeon-General.	Surgeon Rear-Admiral.

We are not much in favour of compound titles, but we recognise the good intentions underlying the change. There are other questions in the Naval Medical Service which require attention, but the changes in uniform and titles are an earnest of intended procedure which should influence young doctors in looking to the Navy for a future career.

UNIVERSAL ANÆSTHESIA.

THE remarkable case described in another column by Captain E. D. Roberts, R.A.M.C., offers a problem in diagnosis to the neurologist, apart from its intrinsic interest for all who find attraction in the by-paths of medical lore. The patient is a Breton sailor, aged 37, who apparently shows no signs of disease, organic or functional, in his nervous system, except in regard to his sensory apparatus. His condition is one of universal anæsthesia, cutaneous and deep, involving all varieties of the former and some (not all) of the special senses. For the actual details the reader is referred to Captain Roberts's painstaking description. There are certain features of the case which have struck the reporter as somewhat anomalous, and which are worth a little investigation. The patient is unable to make any voluntary movement with the arms when the eyes are closed; without visual control he cannot innervate with accuracy. Oddly enough, though muscular sense is apparently as defective in the legs as in the arms, he can walk quite well with the eyes shut, and he can swim, in spite of the fact that in that art the limbs are not under visual control. This is the condition described by Nothnagel in 1887 as *Seelenlähmung* of organic origin; in certain lesions of the parietal cortex loss of kinæsthetic images of the range and form of voluntary movements occurs, with consequent inability to innervate accurately. Where there is not merely loss of kinæsthetic images, but also loss of appreciation of kinæsthetic impressions, the patient has to depend on his visual memories and impressions of movements, and is helpless without them. Now in the present instance there is no evidence of a parietal lesion, nor, as already noted, is the *Seelenlähmung* constant or logical in its manifestations—a strong presumption in favour of the hysterical nature of the case. Again, when the eyes are closed the limbs may be passively put in any position, and they are so maintained by the patient—a condition of flexibilitas cerea. The mere fact of the position being sustained is proof of the innervation of the muscles in consonance with the kinæsthetic impressions awakened by the passive movement made by the observer. Hence these impressions are certainly present, though the patient may not be actually conscious of them—a point which again pleads in favour of the diagnosis of hysteria, and can scarcely occur in organic loss of kinæsthetic impressions as in advanced syringomyelia. The curious pica shown on occasion by the patient is worth notice, for it is not, of course, in any sense an indication of organic disease. The extraordinary thermanæsthesia is, no doubt, such as may be found in severe cases of syringomyelia. We are reminded of the "professional painless man" whose case was described by Witmer in 1897. In this case the patient could hold a red-hot half-dollar in his hand without wincing until it had burned itself deep into the flesh. Witmer came to the conclusion that the subject did not perceive the pain, and not that he was stoically enduring it, and concluded he possibly suffered from syringomyelia. But the facts of hysteria mutilans show that similarly profound anæsthesia for all stimuli may occur in that psychoneurosis, and we are inclined to suggest to Captain Roberts that hysteria by itself, as readily as the combination of hysteria and syringomyelia which he himself puts forward, will account for the symptomatology of this curious case. The profession is indebted to Captain Roberts for putting the case on record.

MEASURES AGAINST INFLUENZA IN GLASGOW.

THE great industrial city of North Britain has had its public life much interfered with by the serious outbreak of influenza. In the third September week school children in the Shettleston area attended very irregularly, and influenza soon invaded the schools in Govanhill, and then generally throughout the city; incidentally the general death-rate rose from 13·5 to 18·6 and 28·6 in the last week of September and the first week of October. This last-named figure is without precedent since 1909, when an equally high death-rate was associated with intense frost and fog. In the three weeks under review the total deaths registered were 257, 374, and 549, of which 16, 65, and 165 were credited to influenza, 30, 65, and 107 to pneumonia, leaving only 66 to the other forms of respiratory disease. In the same period measles, scarlatina, whooping-cough, and diphtheria together only claimed 29 victims. The dislocation of school attendance was not due to any special incidence at school age, although the proportion of deaths at ages under 5 years was strikingly in excess, as is shown by the following table:—

Age.	Proportion of population.	Proportion of total deaths for the week ending—	
		Sept. 28th.	Oct. 5th.
0–5 years	11·6 per cent.	20 per cent.	24 per cent.
5–15 ,, ...	20·8 ,,	20 ,,	19 ,,
15 years and upwards	67·6 ,,	60 ,,	57 ,,

The decrease in school attendance has been fairly uniform throughout all the standards, and is thus in striking contrast with the effect of an outbreak of measles, which is chiefly noted in the infant classes. This general prevalence raised some doubt as to the utility of school closure, but acting on the view that the risk of infection is always intensified when susceptible persons are collected together under one roof, Dr. A. K. Chalmers, the medical officer of health, adopted experimental closure of certain schools where absenteeism was at its maximum. Nine other schools have now been closed. With regard to the method of spread, everything points to aerial conveyance. There was nothing to suggest direct spray infection, but rather the access of organisms to the body by the nasal passages. Nurses in contact with the disease readily contracted it. Special preventive measures should therefore, in Dr. Chalmers's view, aim at intercepting the organism during the act of breathing by some agent supplied to the nasal passages and air cavities. He quotes Dr. J. Macintyre's suggestions for applying germicidal substances to the nostrils:—

"If the vehicle in which it is used is the proper kind a very few drops on a handkerchief will act for 12 to 24 hours, or every now and then the agent can be inhaled into the nostrils, and, of course, if the air be taken in through the nostrils this volatile substance will be carried right down to the apices of the lungs. This method of treatment does not mean that sprays or douches should not be used, but what I have found is that for diseases of the respiratory tract, by means of some of these agents and methods of administration, a great deal can be done by way of sedative and antiseptic means to relieve the patient from suffering, and to enable the whole respiratory tract to be kept in a healthy condition."

Dr. Chalmers adds that there seems reason to expect advantage from these measures when exposure to exceptional risk is encountered, as in public assemblies, picture-houses, and conveyances. He considers it essential at the same time not to neglect any factor contributing to personal hygiene.

MENINGOCOCCIC PURPURA WITHOUT MENINGITIS.

AT a meeting of the Société Médicale des Hôpitaux of Paris, M. Arnold Netter and M. Marius Mozer reported the case of a malê infant, brought up on the bottle, who was taken to the Trousseau Hospital at 9 A.M. on July 17th. He had been ill for ten days with diarrhœa and tympanites. On the 15th an eruption appeared the nature of which could not be determined at the Saint Louis Hospital. On examination the child was wasted and the eyes were sunken. On the face, trunk, and limbs were numerous little violaceous spots of equal size which did not disappear on pressure. They were evidently purpuric. The temperature was 101·8° F., and there were no signs of visceral disease, no stiffness or Kernig's sign, and the fontanelle was rather depressed. Lumbar puncture yielded clear liquid, not under much pressure, which on centrifugalisation gave a fine deposit containing extracellular diplococci not retaining Gram's stain, and having all the appearances of meningococci, and a few lymphocytes. There were 42 mononuclears to the c.mm. The purpura, therefore, appeared to be due to meningococcic septicæmia, and invasion of the meninges seemed to be imminent. Twenty c.cm. of polyvalent antimeningococcic serum were injected into the sacro-lumbar muscles at once, and the dose was repeated at 6 P.M. Cultures were made from the cerebro-spinal fluid and from blood removed from the jugular vein. The child died at 6 A.M. on the 18th. Four hours after death cerebro-spinal fluid was removed from the lumbar region of the cord and from the right lateral ventricle. The fluid was not yet purulent, but was not so clear as that removed on the previous evening. It contained numerous meningococci, principally extracellular, and cells, amongst which were numerous polynuclears. The blood and the fluid from the lateral ventricle gave pure cultures of the meningococcus, but the cerebro-spinal fluid removed during life gave no culture. At the necropsy the viscera were found normal, with no hæmorrhages. The brain showed only some injection. Without the microscopic examination the localisation of the meningococci in the meninges could not have been recognised or the nature of the disease suspected. M. Netter had recourse to lumbar puncture because he had long observed the relations of meningococcic infection with purpura and had found meningococci in the lesions of purpura. In such purpuras it is not exceptional to obtain cerebro-spinal fluid of normal appearance, which may even contain no microbes. Invasion of the cerebro-spinal fluid occurs after the infection and first in the cranial cavity. In the present case the septicæmia preceded the meningitis.

ACCURATE CLINICAL THERMOMETRY.

THE importance of a correctly recording clinical thermometer receives official recognition in an Order issued last week from the Ministry of Munitions of War. This Order demands that on and after Oct. 21st, 1918, no person shall sell, offer for sale, supply or deliver, any clinical thermometer which has not been tested, approved, and marked in accordance with rules made by the Controller of Glassware Supply on behalf of the Minister of Munitions in consultation with the Local Government Board and the Department of Scientific and Industrial Research. Clinical thermometers must in future bear the stamp of approval of the National

Physical Laboratory, Teddington, and this approval will not be given in regard to thermometers, after a period of one month after the date of the Order, which show at any point in the registration of temperatures an error of more than 0·4° F (+ or −, we may presume). The approved thermometer will be marked with the National Physical Laboratory trade-mark and the year of test, thus—NP 18. Nominal charges are made for the test and guarantee. This Order will bring pressure upon the work of the National Physical Laboratory, which has already undertaken such standardisation voluntarily and in return for a fee, and there are good reasons, doubtless, for making such a step compulsory. Medical men as a matter of scientific routine take care in their work of diagnosis to use correctly recording instruments, but the clinical thermometer has become almost a family guide, and the periodical taking of temperatures is often left in lay hands. To read accurately a thermometer which may prove to be inaccurate in its readings is to mislead the physician. The Order of the Ministry of Munitions brings into prominence the position of the National Physical Laboratory as a centre of standardisation of physical instruments.

SIR WILLIAM HENRY THOMPSON.

ONE of our Irish correspondents calls attention to the presumed loss on the *Leinster* of three members of the medical profession, one of whom was William Henry Thompson, M.D., K.B.E., whose name is closely associated with the scientific aspect of food values. Post-graduate study at Galway, Dublin, London, Leipzig, Paris, Marburg, and Heidelberg widened his outlook, and as King's Professor of Institutes of Medicine in the School of Physic at Trinity College, Dublin, he had long made food metabolism and nutrition his special study. Early in 1916 he read a paper before the Royal Academy of Medicine in Ireland giving a detailed survey of the food-supply of Great Britain on the lines of the Eltzbacher report brought out in Germany 12 months earlier. His intimate acquaintance with food economy, both large and small, made him a valued member of the Advisory Committee to the Ministry of Food, where he placed his knowledge unreservedly at the disposal of other medical colleagues through the columns of THE LANCET whenever his official position allowed of the publicity. One great merit lay in his ability to reduce the cold details of calories and energy values to terms of interest for the common man's breakfast-table. His article in a recent number of *Science Progress* was a conspicuous example of this facility.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A quarterly meeting of the Council was held on Oct. 10th, Sir George Makins, the President, being in the chair. The President reported that on August 14th the Right Honourable Sir Robert Borden, G.C.M.G., the Canadian Premier, accompanied by officers of the Canadian Army Medical Corps, visited the Museum and formally opened the Canadian Section of the War Office Exhibition of Medical Specimens. The Library Committee reported that Mr. Plarr, the librarian, was preparing a Roll of the Fellows, for which he has written about 1410 lives up to the present time. The Council, in pursuance of the recommendation of the Jenks Scholarship Committee, appointed Mr. Thomas Haines Sims, late of Epsom College, the twenty-sixth Jenks Scholar. The Council, in response to a letter from the Medical Secretary of the British Medical Association, approved of the calling of a conference in regard to the establishment of a Ministry of Health. The President reported that the Bradshaw lecture on "Cancer of the Tongue" would be delivered by Mr. D'Arcy Power on Thursday, Nov. 14th, at 5 P.M.

THE MEDICAL MAN'S INCOME-TAX.

BY JOHN BURNS, W.S.

PAPER restrictions compel what follows to be a study in income-tax and condensation combined. This article, also, does not deal with super-tax.

Income.—Ordinary professional income is taken on the average of the preceding three years. The income from specific appointments under public bodies is taken on the actual amount of the year. The former is charged under Schedule D, the latter under Schedule E. Where appointments carry not only a salary but also free residence, board, service, &c., only the cash salary is taxable income; the other items do not count at all. Sums received for drugs must go in as drawings. But, of course, what is taxed is net income, and therefore many deductions must come off. These include: rent or annual value of premises used exclusively for practice; a proper proportion of rent or annual value of residence, according to the part used for practice, not exceeding two-thirds; rent or annual value of garage or stable; inhabited house duty and tenants' rates, heating and lighting, corresponding to the above items; assistants and locum tenens; service applicable to the professional practice, including maid servant and secretary or book-keeper and any assistance obtained in dealing with the income-tax problem; travelling, including railway, car, carriage, and for horses, not the original cost, but all running expenses, repairs, and renewals, less salvage for the old articles; instruments, with the like restriction; drugs, &c.; professional subscriptions and literature; telephone, telegrams, stationery, and postage. As regards practice (except appointments), an account is made upon these lines for, say, each of the three years, April, 1915, to April, 1916, also 1916–17, also 1917–18, and adding the net results together and dividing by three there is brought out the "statutory income" under Schedule D tax for the now current year, April, 1918, to April, 1919. To that will be added the cash salaries of any public appointments for that year.

Cash or earnings.—There is an option to deal with the drawings on the basis of either cash or earnings. The cash system means that you ignore all fees earned but not actually received, and all expenses incurred but not actually paid. Of course, these will all come in next year or later. This saves you all trouble about bad or doubtful debts. The earnings system, on the other hand, brings into account everything earned or incurred respectively, though not received or paid; but, of course, the same items must not figure more than once. If under this system you estimated fees due to you £20, and if you receive only £15 or £25, only the difference of £5 will be treated in next year's account. We believe that nearly all practitioners adopt the cash system.

Actual income.—If you are serving in the R.A.M.C., or doing other war work as explained below, you are entitled to throw over the three years' average and to be assessed on your whole professional practice at the actual figure of the year. That can be ascertained only at the end of the year, and there will then be an adjustment. This holds whether you adopt "cash" or "earnings." Actual cash is treated as actual income. Further, in any case, war work or not, if your actual income of the year from all sources, taken together (including wife's), is less by more than 10 per cent. than the total charge made on you by direct assessment and deductions, then you are entitled to claim to be taxed on the actual income only.

Other income.—Of course all your non-professional income must be added on in order to reach your total, and so to fix your rates of tax and abatements, if any. This includes income from investments, and the annual value of your residence if it belongs to you or to your wife, but only at the net Schedule A assessment figure.

Wife's income.—This reminds us that your wife's income must for tax purposes be added on to your own. There is an exception of her separately *earned* income, if the total of both does not exceed £500.

Deductions.—You take off all true deductions—e.g., ground burdens, mortgage interest, bank interest, interest on price of practice.

Rates of tax.—Broadly, these are the items which make up the total. That total fixes your rate or rates. You may or may not be entitled to abatements (below), but these do not affect the *rate* or *rates*, though they do affect the sum on which these are payable. The rates are:—

If total income does not exceed—	Rate of tax on the part which is—		
	Unearned	Professional.	War work
£	s. d.	s. d.	s. d.
500	3 0	2 3	1 3
1000	3 9	3 0	1 9
1500	4 6	3 9	2 3
2000	5 3	4 6	2 9
2500	6 0	5 3	3 3
Over 2500	6 0	6 0	3 6

Abatements.—These are the rates, but on what are they payable? Answer: The net total above indicated, less abatements, as follows:—

1. *Scale.*—If total not over £400, £120; if not over £600, £100; if not over £700, £70.
2. *Wife.*—£25 if total income not over £800.
3. *Widower's housekeeper.*—The same. The housekeeper must be a relative of the taxpayer or of his late wife, and there must be a child under 16.
4. *Children.*—£25 for each child, step-child, or adopted child under 16. If the income does not exceed £800 all such children count; if it exceeds £800, but is not over £1000, all under 16 count bar two; if over £1000, no allowance.
5. *Life insurance.*—Premiums up to one-sixth of the taxable income. Suppose income £600, and the abatements £200, still this insurance abatement may be £100 if so much has been paid. There are certain restrictions, especially upon new policies effected after June, 1916, and, on the other hand, war "extras" are allowed beyond the one-sixth. Also it may be one-sixth of the 1913-14 (last pre-war) income, if that was larger.
6. *Incapacitated dependent relatives.*—If total income not over £800, £25 for each such relative of self or wife maintained by you, if relative's income not over £25.
7. *Marginal.*—In applying these scales and income limits there is come and go to this extent that if you are, say, £5 above some limit you pay that £5 to the Commissioners and then you get off as if you had never had it. If your income is, say, £810 and you have a wife and a lot of young children this is valuable.
8. *Officer's uniform.*—There is an allowance (of varying amount) for this if you are an R.A.M.C. or other officer. It is treated as an actual deduction from the pay, and not merely an abatement. It may alter the whole position.

Applying the abatements.—They always come off the lowest taxed part of your income first. This may greatly lessen their value. If you make £600 and your wife has from investments £200 all abatements will be first taken off at the 3*s.* rate and not at the 3*s.* 9*d.* But R.A.M.C. and other war services are treated better; if there is such income, abatements are taken off in this order: (1) ordinary professional income; (2) unearned; (3) service pay. These abatements are, as far as possible, given effect to in the direct assessment on the practice. But still it is often necessary to send in—

Repayment claims.—They are in time within three years. At present you may go back to April, 1915. Consider whether you have obtained your rights in all the respects above referred to. Do not forget interest paid to any bank. It would be paid without deduction of tax. That means that you are entitled to apply to the Inland Revenue for a refund of an amount equal to the tax on the interest if you did not receive it off in the assessment on your practice. Also, the non-deduction of the interest may upset your whole tax position for the last three years. These things can still be put right for that period.

Rate relief.—The same applies to the tax deducted at the source on dividends, &c., on your own and your wife's investments, including perhaps the house. It is always taken off at the highest rate. During the years in question it has been 3*s.*, 5*s.*, and is now 6*s.* But that is more than people with modest incomes have to bear ultimately. This relief is often given on the Schedule D assessment; but if not, then there must be a repayment claim. Do not be misled by dividends "free of tax." That is only an expression. You pay the tax all the same, and have repayment rights accordingly.

War work.—We have above used this term for brevity, but as this is a matter on which many inquiries might arise it may be better to state that the benefit of the reduced rate of tax, *on the pay only*, is available to all who in the tax year in question have served as (1) a member of any of the naval or military forces of the Crown or of the Air Force, which one is not deemed to have done unless he has served (*a*) on the active list of the Navy, or (*b*) in the Army with the colours, or (*c*) as an airman in the Air Force, or (*d*) as an Army or Air Force officer on full pay or at a rate of pay which appears to the Income-tax Commissioners and the Army or Air Council equivalent to full pay, and that either out of the British Isles or for one month continuously in these isles; or (2) in service of a naval or military character in connexion with the war, for which payment is made out of money provided by Parliament; or (3) in work *abroad* of the British Red Cross, St. John Ambulance, or similar body.

Changes.—We have stated this year's rules. Those for the three previous years have varied a good deal. The rates of tax were lower, so were the children abatements. The wife abatement is new this year. It is only this year that the limit for the family abatements has been raised from £700 to £800.

Partnerships.—The rate of tax is determined by the true tax position of each of the partners. Thus, though 4*s.* 6*d.* is the earned rate on a profit of £2000, if there are two partners equally interested the tax will be charged at 3*s.*, being the £1000 earned rate. But if one takes £1200 and the other £800 tax will be charged on £1200 at 3*s.* 9*d.* and on £800 at 3*s.* That is subject to giving effect to the partners' different abatements; one may have no abatements, and the other's may be important. All which shows that much care is required in seeing that the incidence of the tax is properly regulated in the partnership accounts.

Where one partner is serving in the war the firm's assessment is made up on the footing (1) of charging him on his actual profits of the year; and (2) of charging the other partners on the average, not of the three preceding years, but of the two preceding years and the tax year itself; but this is done only if it benefits them, and in no case can they get off on less than the actual figures of the year.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

A Radio-surgical Aeroplane.

A NEW medical application for the aeroplane has been proposed, no longer to transport the wounded man to hospital, but to carry the surgeon to him. MM. Nemirovsky and Tilmant describe a machine which they call the "aerochir," being a three-seater carrying a pilot, a surgeon, and a radiographer, along with radiological and surgical outfits of small dimensions sufficient to serve for all operations. The dynamo of the aeroplane furnishes the current necessary for radiology and for heating the steriliser. An aluminium folding operation table renders possible the extraction of projectiles by means of the screen. This aerochir is adapted to carry to the front a relieving party equipped with surgical and radiological necessaries in a minimum of time and without risk of being held up on congested roads during an engagement. A dressing station unable to cope with a sudden influx of wounded could thus receive efficacious help within a few minutes.

The Cerebro-spinal Fluid in Typhus.

Dr. Devaux, on his return from Roumania, where he was attached to the French Military Mission, has made an important report on the epidemic of typhus which raged there during the last two winters. He lays great stress upon the neurotropic affinities of the (still unknown) causative agent of the disease, basing his view on the predominance of nervous symptoms at the onset, their persistence throughout the attack, the frequency and gravity of the nervous complications and sequelæ of convalescence, and the wide distribution of lesions in the nerve centres seen at autopsy contrasted with the comparative immunity of the other organs. Cytological examination of the cerebro-spinal fluid is of marked clinical value and has some bearing on prognosis. Leucocytosis occurs early in every case and persists for two to eight months, covering the whole duration of complications. The increase of polynuclear cells is proportional to the gravity of the prognosis. Convalescence is heralded by a rapid diminution in the mononuclear forms, with a predominance of disintegrating cells.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Loss of the "Leinster."

IN the destruction of the R.M.S. *Leinster* last week at least three medical men were on board and have not since been traced, and several nurses have also disappeared. Along with the names of Captain Digby Burns, R.A.M.C., and Dr. R. E. Lee, is that of Sir W. Henry Thompson, D.Sc., whose loss is deeply felt in Belfast. In 1893 when, on the resignation of the late Dr. Peter Redfern, the double chair held by that distinguished teacher of anatomy and physiology in Queen's College, Belfast, was divided into separate departments, Dr. W. H. Thompson was appointed as Dunville professor of physiolcgy, a position he occupied until 1902, when he left Belfast on being selected as King's Professor of Institutes of Medicine in Trinity College, Dublin. He married Miss Isabel Redfern, the eldest daughter of Professor Peter Redfern, and to her and to their son and four daughters the sincerest sympathy of a very large circle of old friends in Belfast and the north of Ireland will be extended in their tragic and terrible loss. Sir W. H. Thompson came to Belfast a complete stranger, with a high record as a Galway College student, and as a demonstrator of anatomy in Trinity College, Dublin. He most worthily maintained and increased his fine early professional promise, and put the new department of physiology in the Belfast School of Medicine in a sound position. A thoroughly hard-working man, of marked independence of character, and determined to succeed, he impressed his colleagues with his great worth, while socially he took his proper position among the people and the affairs of the City of Belfast, following Professor Redfern's admirable example.

Scheme for Medical Attendance on Discharged Disabled Men.

The National Health Insurance Commission (Ireland) have now issued to the members of the medical profession an invitation to join in the scheme for giving medical attendance to discharged disabled sailors, soldiers, marines, and airmen resident in Ireland. The necessity for the scheme arises from the absence of the medical benefit from the National Health Insurance Acts as applied to Ireland. The Government is providing a sum of money equal to a capitation-rate of 12*s.* 6*d.* per head for each discharged disabled man resident in the large towns and 15*s.* for those in the country. The fund for the whole country will go into a common pool, and payment will be made to the practitioners who give treatment in proportion to the work done by each. An elaborate system of token values has been arranged for the several services likely to be rendered.

Royal Academy of Medicine in Ireland.

The annual general meeting of the Royal Academy of Medicine in Ireland was held on Oct. 11th. The number of Fellows increased during the year from 131 to 133, and the number of Members decreased from 17 to 15. The results of elections to the various offices were announced. Sir John Moore, D.Sc., succeeds Dr. R. D. Purefoy as President, and Major F. C. Purser succeeds Sir John Moore as secretary for foreign correspondence.

Oct. 14th.

MEDICINE AND THE LAW.

Pratt and Others v. *The British Medical Association.*

JUDGMENT was delivered by Mr. Justice McCardie on Tuesday last in the case in which several Coventry doctors sued the British Medical Association, and three of its local members, for conspiracy, libel, and slander. The Association had charged the plaintiffs with conduct detrimental to the honour and interests of the profession in carrying on a dispensary at Coventry on principles fundamentally opposed to those approved of by the Coventry division of the Association. His lordship, sitting without a jury, found in favour of the plaintiffs, and awarded damages as follows: For unlawful molestation Dr. Burke £1000, Dr. Holmes £700, and Dr. Pratt £700; for defamation, Dr. Burke £420, Dr. Pratt £630, and Dr. Holmes £360. In delivering judgment Mr. Justice McCardie said that in his view the plaintiffs were boycotted, punished, and pecuniarily damaged without just cause in law, and he felt compelled to come to the reluctant conclusion that the plaintiffs had established actual malice against the defendants. Plaintiffs, he added, must have the costs of the action, save in so far as any costs arose on issues in which they had failed. The terms of injunction remain for consideration.

An Audacious Impostor.

At Liverpool recently a man named Blacklin, 35 years of age, was convicted of giving false information on a registration form, with being an unauthorised person wearing six military decorations, and with wearing uniform so closely resembling that of the Royal Navy that it was calculated to deceive. On the first two charges he received concurrent sentences of six months' imprisonment, and on the third was ordered to pay a fine of £50, with the alternative of imprisonment for three months. He had engaged a room at a hotel in the character of Black, Surgeon, R.N., and had shown a card with the printed inscription, "Surgeon-Major Sir Patrick Black, Bart., M.V.O.," an assumption of titles which would have led to his immediate undoing on the exhibition of such a card to anyone with a glimmer of social knowledge. According to his own tale told to the police, with possible inaccuracies and exaggerations, he had been before the war in turn a messenger boy at the War Office, attached to the R.A.M.C., and a dispenser in New Zealand. He joined the Expeditionary Force and had been wounded twice, and had afterwards selected the name of Patrick Black in the Medical Register because that was a name resembling his own, and he saw opportunities. He had written to the Registrar of the General Medical Council asking him to change the address of that gentleman to his own address. He had no difficulty in obtaining the post of medical officer on board a steamship, and in that capacity had made two voyages. Whatever amount of truth there may be in this story, it points to the necessity for taking every reasonable precaution on the part of those controlling medical appointments. The adoption of the name of a medical practitioner actually on the Register is, however, probably not very often practised, and to obtain the alteration of the address is so obviously likely to lead to speedy detection that the example of Blacklin will hardly be followed by others.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions have been received up to Monday last, Oct. 14th:—

	£	*s.*	*d.*
Miss Agnes M. Cowan, M.O. i/c Q.M.A.A.C.	2	2	0
Dr. W. H. Davies (quarterly)	1	10	0
Mr. E. Spencer Evans (monthly)	0	10	0
Dr. J. W. Papillon (quarterly)	0	10	6
North of England Branch B.M.A.[1]—			
Dr. T. L. Bunting ...	5	5	0
Dr. F. Beaton	1	1	0
Dr. F. Bell	1	0	0
Major L. G. Dillon ...	1	1	0
Dr. J. Chalmers	2	2	0
Dr. O. W. Ogden ...	5	5	0
Dr. A. S. Percival ...	1	1	0
Dr. D. Revie	1	1	0
Dr. G. H. Lowe	1	1	0
Dr. J. Charles	2	2	0
Mr. Morison Johnston	1	1	0
Dr. F. Barker	1	1	0
Dr. H. E. Mortis (second donation this year) ...	3	0	0

[1] Per Dr. J. Don, Hon. Sec.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

SIDMOUTH ISOLATION HOSPITAL.—At the last meeting of the Devon County Council it was reported that the Sidmouth Urban Council had received notice to quit the premises they occupy as a temporary isolation hospital. The Sidmouth council are anxious to provide a permanent isolation hospital for their district, and requested the county council to release them from the scheme for the constitution of a hospital district (including Sidmouth) and provision of an isolation hospital for East Devon. The county council decided to inform the Sidmouth authorities that there was no objection to the provision of a temporary hospital during the war, but that the county scheme would be proceeded with as soon as circumstances permitted.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. G. A. G. Bonser, R.A.M.C., attached Norfolk Regiment, was educated at Cambridge University and at St. Thomas's Hospital, London, and held appointments at St. Thomas's and also at the Addenbrooke's Hospital, Cambridge. Prior to joining the R.A.M.C. he was in practice at Sutton-in-Ashfield, Notts.
Capt. K. Elmes, R.A.M.C., attached London Regiment, qualified in Ireland in 1916, and joined up forthwith.
Capt. A. Ross, Canadian A.M.C.
Capt. J. A. Stanley, R.A.M.C., attached Royal Warwickshire Regiment, came over with the Canadian Expeditionary Force, and later obtained a commission in the R.A.M.C.
Capt. R. P. Young, Australian A.M.C.
Capt. H. A. Culham, Canadian A.M.C., was educated at the University of Toronto, and qualified in 1910. Prior to joining the Expeditionary Force he was in practice at Viceroy, Moose Jaw.

Died.

Capt. B. H. Leigh, R.A.M.C., qualified at Edinburgh in 1896, and after serving as a surgeon to the Pacific Steam Navigation Company he practised for some years at Southend-on-Sea. Later he retired, and on the outbreak of war resumed his professional work by joining the R.A.M.C. He died at the Epsom War Hospital from illness contracted on foreign service.
Major P. T. Priestley, R.A.M.C., was educated at Birmingham University and qualified in 1912. He held an appointment at the Birmingham General Hospital and later practised at Moseley. He died at Salonika from influenza.

Previously Reported Wounded, now Reported Died of Wounds.

Capt. K. McA. Ross, R.A.M.C., attached Highland Light Infantry, qualified at Glasgow in 1915 and joined up shortly afterwards.

Wounded.

Major T. Ferguson, R.A.M.C.
Capt. G. B. Egerton, R.A.M.C.
Lieut.-Col. H. L. Welch, Australian A.M.C.
Capt. F. G. Banting, Canadian A.M.C.
Capt. A. McA. Blakely, Canadian A.M.C.
Capt. H. S. Berry, R.A.M.C., attd. Royal West Surrey Regt.
Major W. Hunt, M.C., R.A.M.C.
Major T. J. Lindsay, R.A.M.C.
Capt. J. C. Dunn, D.S.O., M.C., D.C.M., R.A.M.C., attached East Yorks Regiment.
Capt. B. M. Tuke, M.C., R.A.M.C., attd. Royal Welsh Fus.
Major J. Vallance, R.A.M.C.
Capt. H. E. B. White, R.A.M.C., attached Yorks Regiment.
Capt. H. G. Young, D.S.O., Canadian A.M.C.
Capt. F. S. Bedale, M.C., R.A.M.C., attached Lancs Fus.
Lieut. A. C. Paterson, R.A.M.C., attd. Royal West Surrey Regiment.
Capt. D. G. K. Turnbull, M.C., Canadian A.M.C.
Capt. H. M. Joseph, R.A.M.C., attached Essex Regt.
Major J. B. Scott, M.C., R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Second Lieut. C. J. N. Lambert, M.C., R.F.A., killed in action, elder son of Dr. H. L. Lambert, of Barnes, London, S.W.
Lieut. R. M. Bennett, R.A.F., killed in action, elder son of Dr. J. H. Bennett, of Beckenham.
Second Lieut. J. C. Maurice, Royal Berkshire Regiment, killed in action, youngest son of Brevet Colonel W. J. Maurice, R.A.M.C., T.F., of Reading.
Lieut. E. T. Halford, R.E., died at Aldershot, son of the late Dr. E. Halford, of Hammersmith, London, S.W.
Second Lieut. H. F. Weiss, London Regiment, killed in action, only son of the late Mr. H. F. Weiss, F.R.C.S., of Hanover-square, London, S.W.
Second Lieut. Rev. R. H. A. Cotton, A.S.C., youngest son of Dr. C. Cotton, of Canterbury.
Second Lieut. J. S. Ricketts, R.F.A., eldest son of the late Dr. T. F. Ricketts, of the Joyce Green Hospital, Dartford.

OBITUARY OF THE WAR.

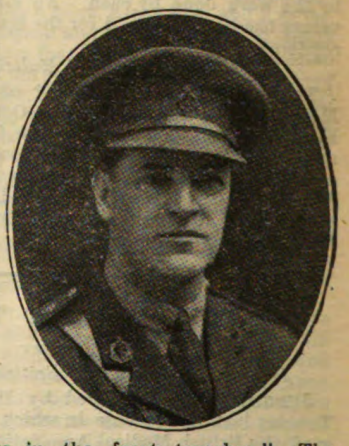
ALEXANDER JOHNSTON, M.D. GLASG., D.P.H. CAMB.,
MAJOR, ROYAL ARMY MEDICAL CORPS.

Major A. Johnston, who died at a nursing home in Glasgow on Sept. 22nd, was son of the late Robert Johnston, of Dumbarton. He was educated at Glasgow Academy and at the University where he graduated M.B., C.M. in 1883, subsequently holding resident posts at Manchester Royal Infirmary and Monsall Hospital. He then travelled widely in Europe and America before settling down to his life-work as physician-superintendent of the Glasgow City Hospitals, a position which he held for 22 years. He was also deputy medical officer of health and lecturer on infectious diseases in the University, being responsible for a number of important papers and reports on epidemiology. In April, 1915, he was appointed officer in command of the Thornhill Military Hospital, continuing until July last, when he underwent an operation which unexpectedly had a fatal termination.

Major Johnston was a man of many interests. He was deeply read in Scottish history. He was an active chairman of the Glasgow Eastern Medical Society. Of a kindly disposition, he had the reputation of being fearless in the discharge of his duty and careful for the well-being of those under him. His widow, the eldest daughter of Mr. Richard Allan, medical officer of health for Dumbarton, survives him.

BERNARD CHARLES TENNENT, M.D., CH.B. EDIN.,
MILITARY CROSS WITH BAR,
MAJOR, ROYAL ARMY MEDICAL CORPS.

Major B. C. Tennent, who was killed in action on August 22nd, was son of the late Rev. E. C. Tennent, of Martinborough, N.Z. After graduating in medicine at Edinburgh University and holding resident appointments in London at the Great Northern and Ormond-street Hospitals, he went out to New Zealand and settled in Wellington. Returning to this country on the outbreak of war, he received a commission in the R.A.M.C. in January, 1915, serving for three and a half years on various fronts. The Military Cross was awarded to him "for conspicuous gallantry and devotion to duty in constantly exposing himself with the utmost fearlessness under heavy shell fire in order to visit his posts in the front trenches." The addition of the bar was further proof of his courage and presence of mind. A friend who knew Major Tennent well writes of his combination of manly and athletic qualities with gentleness and grace of spirit. Major Tennent married in June, 1917, Daisy, youngest daughter of the late C. C. Skarratt.



"OUR DAY," 1918.—The King and Queen have each subscribed £1000 to the funds of the Red Cross for "Our Day," Oct. 24th. The Lord Mayor has asked the City of London to subscribe £1,000,000 for "Our Day."

THE HONOURS LIST.

The *Distinguished Service Cross*, for services in the destroyer action in the Adriatic on the night of April 22nd–23rd, 1918, has been conferred upon—

Surg. Prob. Charles C. Elliott, R.N.V.R.

He carried out his duties in attending wounded under heavy fire and difficult conditions. Although he was suffering from a painful sprained wrist, his skilful work undoubtedly saved several lives. His conduct was an example and encouragement to all on board.

And for services in the Battle of Jutland on May 31st, 1916, upon—

Surg. Prob. Alexander Joe, R.N.V.R.

Medical Officer of H.M.S. *Nestor*. He behaved with the greatest coolness under fire, tending the wounded single-handed both in *Nestor* and later on board a German destroyer. His conduct was highly praiseworthy throughout.

The following appointments to the *Order of the British Empire* are announced :—

Officers.—Dr. Mary Booth (organised Friendly Union of Soldiers' Wives and Soldiers' Club, Sydney); Lt.-Col. A. S. Herbert, New Zealand M.C. (for special services in connexion with military hospitals at Rotorua); Lt.-Col. H. H. Y. Hearsey, Principal Medical Officer to the Civil Government and Assistant Director of Military Medical Services, Nyasaland Protectorate.

Members.—Dr. C. Akerman (Natal); Dr. P. P. J. Ganteaume, Mayor of East London, S.A.; Dr. R. Strachan, Mayor of Germiston, S.A.; Dr. J. B. Addison, Chief Medical Officer, Colony of Seychelles (for services in connexion with war charities); Dr. R. Howard, of the Universities Mission to Central Africa (for voluntary service in attending sick and wounded native soldiers and carriers, Zanzibar); Surgeon-Major John Hutson, Public Health Inspector, Barbados, and Principal Medical Officer to the Barbados Defence Force; and Dr. J. Lochhead, Surgeon, Colonial Hospital, Gibraltar (for services to merchant seamen).

MENTIONED IN DESPATCHES.

The names of the following medical officers are added to recent despatches :—

Maj.-Gen. W. G. A. Bedford, C.B., C.M.G., A.M.S.; Temp. Capt. M. B. Arnold, R.A.M.C.; Capt. B. A. Odlum, R.A.M.C.; Lt. (temp. Capt.) W. H. Ferguson, R.A.M.C.; Temp. Capt. A. C. Mann, M.C., R.A.M.C.; Col. R. M. Simpson, Canadian A.M.C.; Temp. Maj. J. J. Abraham, R.A.M.C.; Lt.-Col. (temp. Col.) G. A. T. Bray, R.A.M.C.; Maj. (temp. Lt.-Col.) M. Dunning, R.A.M.C.; Col. E. G. R. Evatt, R.A.M.C.; Capt. (acting Lt.-Col.) E. C. Lambkin, R.A.M.C.; Temp. Lt.-Col. H. Wade, R.A.M.C.; Lt.-Col. R. T. Brown, D.S.O., R.A.M.C.; Maj. (temp. Lt.-Col.) P. S. Clarke, South African M.C.; Capt. T. S. Dunn, East African Med. Service; Temp. Maj. W. J. Gow, R.A.M.C.; Maj. R. S. Kennedy, M.C., I.M.S.; Capt. (acting Lt.-Col.) J. A. Manifold, R.A.M.C.; Lt.-Col. P. W. O'Gorman, I.M.S.; Surg.-Prob J. E. Deane, R.N.V.R.

BROUGHT TO NOTICE.

The names of Major W. McConaghy, R.A.M.C., and of Temp. Capt. W. N. Montgomery, R.A.M.C., have been brought to the notice of the Secretary of State for War for valuable services rendered in connexion with military operations in Hedjaz.

FOREIGN DECORATIONS.

French.

Croix de Guerre.—Temp. Capt. J. B. McFarland, M.C., R.A.M.C.; Capt. (acting Maj.) R. R. Lovell, R.A.M.C.; Capt. M. J. Holmes, Australian A.M.C.; Maj. (acting Lt.-Col.) H. H. A. Emerson, D.S.O., R.A.M.C.; Capt. S. R. Foster, M.C., R.A.M.C.; Maj. (temp. Lt.-Col.) W. J. S. Harvey, D.S.O., R.A.M.C.; Maj. (temp. Lt.-Col.) F. D. G. Howell, D.S.O., M.C., R.A.M.C.; Capt. P. McEwan, R.A.M.C.; Maj. (acting Lt.-Col.) P. J. Marett, R.A.M.C.; Capt. (acting Maj.) J. J. McI. Shaw, M.C., R.A.M.C.; Capt. (acting Maj.) W. L. Webster, R.A.M.C.; Temp Capt. A. B. Cluckie, R.A.M.C.

Légion d'Honneur: Croix de Chevalier.—Col. H. R. Casgrain, Canadian A.M.C.; Hon. Maj. C. F. Skipper, Canadian A.M.C.

Portuguese.

Military Order of Avis, 2nd Class.—Major W. H. G. H. Best, R.A.M.C.

Hellenic.

Order of the Redeemer.—2nd Class, Grand Commander: Surg.-Gen. Sir H. R. Whitehead, K.C.B. *3rd Class, Commander:* Lieut.-Col. A. R. Aldridge, C.B., C.S.I., C.M.G., R.A.M.C. *5th Class, Cavalier:* Capt. J. P. Litt, R.A.M.C.

Japanese.

Order of the Sacred Treasure, 3rd Class.—Col. T. J. R. Lucas, C.B. (retired pay).

INFLUENZA ON AMERICAN TRANSPORTS.

Alarming accounts have been current regarding the prevalence and fatality of influenza among the U.S.A. troops on their way across the Atlantic, especially on the ill-fated s.s. *Otranto*. There has evidently been some confusion between the number of cases and the number of deaths. Regarding the *Otranto*, we are in a position to state that up to the time of arrival in English waters there had been about 50 cases of influenza and pneumonia. Four of these cases of pneumonia proved fatal. Among the survivors, a considerable number of whom were injured in the accident, deaths have occurred from pneumonia due to exposure during rescue. But this mortality should, of course, not be credited to the prevailing epidemic.

MAJOR-GENERAL M. W. IRELAND, THE NEW SURGEON-GENERAL, U.S.A.

As we announced last week, Major-General Merritte W. Ireland has been appointed Surgeon-General to the United States Forces. General Ireland entered the Medical Corps of the American Army in 1891 as a first lieutenant. He was promoted to the grade of captain in 1896. During the Spanish-American War he was with the Fifth Army Corps expedition, which fought the battle of Santiago and received the surrender of the city. Shortly after the conclusion of the Cuban campaign General Ireland was sent to the Philippine Islands as major and surgeon of the 35th Infantry, U.S. Volunteers. Soon after arrival there he was detached from regimental service and placed in charge of the Medical Supply Depôt in the city of Manila, which he administered with great success. Returning to the United States at the end of two years, he was called to the Surgeon-General's office in Washington, D.C., in 1902, under Surgeon-General O'Reilly, and placed in charge of the personnel division of that office, which he administered most successfully until 1912, when he was again sent to the Philippines and put in charge of a large hospital in the vicinity of the city of Manila, located at Fort William McKinley.

General Ireland returned to the United States in 1915, and at the time that America entered the present war was the commanding officer of the large base hospital at Fort Sam Houston, Texas. Detached from this duty, he accompanied General Pershing to Europe as a member of his staff and filled the position of assistant to the chief surgeon of the American Expeditionary Forces from July, 1917, until March, 1918, when he was promoted to chief surgeon of the command while yet a colonel. His promotion to the grade of brigadier-general followed in May of the present year, and he attained the grade of major-general in the Medical Corps last August. General Ireland returns to the United States very shortly to take up the duties of his new position at U.S. Army Headquarters at Washington. He has always been a man of untiring energy and acute judgment in the conduct of affairs, and the Medical Corps under his strong guidance will acquit itself well in the great endeavour which it has now before it.

THE INCOME-TAX OF MEDICAL WOMEN ATTACHED TO THE R.A.M.C.

Dr. Louisa Garrett Anderson has written calling attention to the fact that medical women attached to the R.A.M.C. do the work of commissioned officers when enforcing discipline in such a hospital as the General Military Hospital, Endell-street, perform the surgical duties of officers in the R.A.M.C., and receive the same rate of pay, but because they do this without having commissions or honorary commissions they are not entitled to the Service rate of income-tax. Where abatement is made in the case of men on the ground that they are doing work of a military character, it is not easy to see why work of the same kind performed by women should not entitle them to the same privilege.

URBAN VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING SEPTEMBER, 1918.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 4·7 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 4·5, 3·5, and 3·2 per 1000. No case of any of these diseases was notified during the month of September in the City of London. Among the metropolitan boroughs the lowest rates were recorded in Chelsea, the City of Westminster, St. Marylebone, Hampstead, and Holborn; and the highest rates in Finsbury, Bethnal Green, Stepney, Southwark, Bermondsey, and Greenwich. The prevalence of scarlet fever was 60 per cent. higher than in the preceding month; this disease was proportionally most prevalent in Finsbury, Bethnal Green, Stepney, Southwark, Bermondsey, and Lambeth. The Metropolitan Asylums Hospitals contained 931 scarlet fever patients at the end of the month, against 846, 753, and 690 at the end of the three preceding months; the weekly admissions averaged 164, against 127, 105, and 101 in the three preceding months. The prevalence of diphtheria was about 50 per cent. higher than in August; the greatest proportional prevalence of this disease was recorded in St. Pancras, Hackney, Bethnal Green, Stepney, Southwark, Bermondsey,

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING SEPTEMBER, 1918.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1917.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.									
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.
LONDON...	4,026,901	—	641	620	1	28	—	10	149	8	5	1462	4·7	—	18	9	29	28	7	303	394	1·3	3537	11·4
West Districts :																								
Paddington	122,507	—	22	16	—	2	—	—	5	—	—	45	4·8	—	1	—	—	1	—	4	6	0·6	106	11·3
Kensington	151,535	—	27	6	—	—	—	—	3	—	—	36	3·1	—	—	—	1	1	—	9	11	0·9	121	10·4
Hammersmith ...	114,952	—	19	10	—	1	—	—	3	—	—	33	3·7	—	—	—	1	1	—	5	7	0·8	108	12·2
Fulham	145,186	—	17	11	—	2	—	—	3	—	—	33	3·0	—	—	—	—	—	—	18	18	1·6	131	11·8
Chelsea	57,368	—	5	2	—	—	—	—	2	—	—	9	2·0	—	—	—	—	1	—	1	2	0·5	46	10·5
City of Westminster	122,046	—	5	8	—	—	—	—	4	1	—	18	1·9	—	—	—	—	—	—	5	5	0·5	86	9·2
North Districts :																								
St. Marylebone ...	92,796	—	8	7	—	—	—	—	2	—	—	17	2·4	—	—	—	—	—	—	4	4	0·6	91	12·8
Hampstead	75,649	—	1	7	—	1	—	1	3	—	1	14	2·4	—	—	—	—	—	1	1	2	0·3	51	8·8
St. Pancras	186,600	—	22	47	—	1	—	—	12	—	—	82	5·7	—	6	—	—	—	2	13	21	1·5	182	12·7
Islington	297,102	—	38	42	—	5	—	—	18	—	1	104	4·6	—	—	—	3	4	—	13	20	0·9	259	11·4
Stoke Newington...	47,426	—	6	3	—	—	—	1	1	—	—	11	3·0	—	—	—	2	—	—	—	2	0·5	36	9·9
Hackney	196,598	—	21	43	—	2	—	3	6	—	—	75	5·0	—	—	—	2	—	1	24	27	1·8	185	12·3
Central Districts :																								
Holborn	35,303	—	—	2	—	—	—	—	—	—	—	2	0·7	—	—	—	—	—	—	2	2	0·7	44	16·2
Finsbury	68,011	—	21	6	—	—	—	—	5	—	—	32	6·1	—	—	1	—	2	—	4	7	1·3	63	12·1
City of London ...	16,138	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	0·8	8	6·5
East Districts :																								
Shoreditch	89,675	—	9	9	—	—	—	—	4	1	1	24	3·5	—	—	—	1	—	1	15	17	2·5	86	12·5
Bethnal Green ...	107,362	—	38	26	—	—	—	—	16	1	—	81	9·8	—	—	1	1	—	—	14	16	1·9	114	13·8
Stepney	232,010	—	56	69	—	—	—	—	10	—	—	135	7·6	—	2	1	4	2	—	26	35	2·0	216	12·1
Poplar	143,443	—	19	22	—	1	—	—	4	—	1	47	4·3	—	—	—	3	—	—	22	25	2·3	156	14·2
South Districts :																								
Southwark	167,936	—	89	50	—	—	—	1	12	—	—	152	11·8	—	1	2	1	2	—	14	20	1·6	149	11·6
Bermondsey	107,635	—	23	24	1	—	—	—	2	—	—	50	6·1	—	3	—	—	3	—	11	17	2·1	113	13·7
Lambeth	272,038	—	55	30	—	—	—	—	6	1	—	92	4·4	—	—	3	1	2	—	18	24	1·2	241	11·5
Battersea	150,023	—	17	18	—	—	—	—	3	—	—	38	4·3	—	—	—	1	3	—	13	17	1·5	130	11·3
Wandsworth	300,787	—	39	22	—	5	—	—	11	2	—	79	3·4	—	2	—	—	—	1	23	26	1·1	237	10·3
Camberwell	239,461	—	24	47	—	1	—	—	4	1	—	77	4·2	—	1	—	2	1	1	9	14	0·8	191	10·4
Deptford	103,527	—	18	18	—	1	—	1	4	—	1	43	5·4	—	—	—	1	—	—	7	8	1·0	86	10·8
Greenwich	90,440	—	10	32	—	2	—	—	2	—	—	46	6·6	—	1	—	—	1	—	8	10	1·4	77	11·1
Lewisham	161,405	—	16	14	—	2	—	1	3	—	—	36	2·9	—	1	—	1	2	—	7	11	0·9	130	10·5
Woolwich...	131,942	—	16	29	—	2	—	2	1	1	—	51	5·0	—	—	1	4	2	—	12	19	1·9	94	9·3
Port of London ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1179, 918, and 886 at the end of the three preceding months, numbered 1051 at the end of September; the weekly admissions averaged 166, against 165, 122, and 107 in the three preceding months. The prevalence of enteric fever was about equal to that in the two preceding months; of the 28 cases notified in September, 5 belonged to Islington, 5 to Wandsworth, and 2 each to Paddington, Fulham, Hackney, Greenwich, Lewisham, and Woolwich. There were 43 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 40, 23, and 32 at the end of the three preceding months; the weekly admissions averaged 6, against 6, 4, and 6 in the three preceding months. Erysipelas was proportionally most prevalent in St. Pancras, Islington, Finsbury, Bethnal Green, and Southwark. The 10 cases of puerperal fever notified during the month included 3 in Hackney and 2 in Woolwich. Of the 8 cases of cerebro-spinal meningitis 2 belonged to Wandsworth.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended Sept. 28th the deaths of 3537 London residents were registered, equal to an annual rate of 11·4 per 1000; in the three preceding months the rates had been 11·8, 14·8, and 10·1 per 1000. The death-rates ranged in September from 6·5 in the City of London, 8·8 in Hampstead, 9·2 in the City of Westminster, 9·3 in Woolwich, and 9·9 in Stoke Newington, to 12·7 in St. Pancras, 12·8 in St. Marylebone, 13·7 in Bermondsey, 13·8 in Bethnal Green, 14·2 in Poplar, and 16·2 in Holborn. The 3537 deaths from all causes included 394 which were referred to the principal infectious diseases; of these, 18 resulted from measles, 9 from scarlet fever, 29 from diphtheria, 28 from whooping-cough, 7 from enteric fever, and 303 from diarrhœa and enteritis among children under 2 years of age. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Paddington, Chelsea, the City of Westminster, St. Marylebone, Hampstead, and Stoke Newington; and the highest in Shoreditch, Bethnal Green, Stepney, Poplar, Bermondsey, and Woolwich. The 18 deaths from measles were 19 below the average number in the corresponding period of the five preceding years, and included 6 in St. Pancras and 3 in Bermondsey. The 9 fatal cases of scarlet fever showed a decline of 2 from the average; of these, 3 deaths belonged to Lambeth. The 29 deaths from diphtheria were 10 less than the average, and included 4 in Stepney, 4 in Woolwich, 3 in Islington, and 3 in Poplar. The deaths from whooping-cough numbered 28, and showed a decline of 13 from the average; of these, 4 belonged to Islington, 3 to Bermondsey, and 3 to Battersea. The 7 fatal cases of enteric fever were one less than the average number; 2 deaths belonged to St. Pancras. The 303 deaths from diarrhœa and enteritis among children under 2 years of age were less than a half of the average; this disease was proportionally most fatal in Fulham, Hackney, Shoreditch, Bethnal Green, Stepney, and Poplar. In conclusion, it may be stated that the aggregate mortality in London in September from these principal infectious diseases was 51 per cent. below the average.

(Week ended Oct. 12th, 1918.)

English and Welsh Towns.—In the 98 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 15·1, against 11·4 and 12·6 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 14·0, or 1·3 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 4·7 in Gillingham, 5·4 in Barnsley and in Rhondda, and 6·2 in Ilford, to 33·5 in Birkenhead, 41·6 in Southampton, 43·4 in Exeter, and 44·1 in Portsmouth. The principal epidemic diseases caused 207 deaths, which corresponded to an annual rate of 0·7 per 1000, and included 96 from infantile diarrhœa, 49 from diphtheria, 22 from whooping-cough, 21 from measles, 15 from scarlet fever, and 4 from enteric fever. The deaths from diarrhœa, which had declined from 435 to 186 in the six preceding weeks, further fell to 96, and were 147 below the number registered in the corresponding week of last year; 30 deaths belonged to London, 7 to Liverpool, and 6 each to Birmingham and Sheffield. The 1148 cases of scarlet fever and 1182 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 129 and 57 above the respective numbers remaining at the end of the previous week. The deaths from influenza in London numbered 89, against 17 in each of the two preceding weeks. The causes of 47 deaths in the 96 towns were uncertified, of which 12 were registered in Birmingham, 10 in Liverpool, 5 in Walthamstow, and 3 in Leicester.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,000,000 persons, the annual rate of mortality, which had increased from 10·6 to 19·0 in the four preceding weeks, further rose to 21·7 per 1000. Of the 1141 deaths from all causes, 45 were classified to influenza, which was also stated as a contributory cause in 339 deaths classified to other diseases; in the previous week these numbers were 35 and 159 respectively. The 767 deaths in Glasgow corresponded to an annual rate of 35·9 per 1000, and included 11 from whooping-cough, 5 from infantile diarrhœa, 4 from diphtheria, and 1 from measles. The 74 deaths in Edinburgh were equal to a rate of 11·6 per 1000, and included 3 each from scarlet fever and diphtheria, 2 from infantile diarrhœa, and 1 from measles.

Irish Towns.—The 188 deaths in Dublin corresponded to an annual rate of 24·6, or 3·3 per 1000 above that recorded in the previous week, and included 7 from infantile diarrhœa, and 1 each from enteric fever, scarlet fever, and diphtheria. The 106 deaths in Belfast were equal to a rate of 14·1 per 1000, and included 4 from infantile diarrhœa and 1 each from enteric fever and measles.

BRITISH HOSPITALS ASSOCIATION.—A conference will be held at St. Thomas's Hospital, London, to-day (Friday, Oct. 18th) at 3 P.M. to consider the proposal to create a Ministry of Health, in its relation to the voluntary hospitals. Lord Sandhurst will preside.

Obituary.

ALFRED HUME GRIFFITH, M.D. EDIN., D.P.H. CAMB.,

SUPERINTENDENT OF THE LINGFIELD COLONY FOR EPILEPTICS.

Dr. Alfred Hume Griffith, whose death occurred at the early age of 43 years, was second son of the late Rev. Edward Moule Griffith, and received his preliminary education at Persse School, Cambridge, and at Totnes and Bedford Grammar Schools. The missionary spirit took hold of him in the earlier years of his manhood; and it was in order to fit himself to be of service to others that he decided to enter the medical profession. With this intent he matriculated at Edinburgh in 1893, graduating M.B., Ch.B. six years later. In 1900 he married Mary, daughter of George Welchman, of Cullompton, and went out to take temporary charge of the Persian medical mission work at Ispahan. His pioneer work in Kerman, relinquished with reluctance on account of his wife's ill-health, was successful in breaking down hostile fanaticism of a kind which has often cost the lives of those who faced it. After a year in charge of the Medical Mission at Yezd Dr. Griffith finally left Persia in 1903, and after a short furlough, largely spent in study at Edinburgh (during which he took his M.D. degree), he offered himself for work in Palestine, and was appointed to the C.M.S. Hospital at Nablus, obtaining, while passing through Constantinople, the Turkish certificate enabling him to practise medicine throughout the Turkish Empire. In 1904 he moved on to Mosul in Mesopotamia and founded a hospital, where, assisted only by native men whom he himself had trained, he performed a large amount of surgical work. A collection of urinary calculi was presented by him to the Museum at Cambridge. But his strength proving unequal to the great strain thus made upon it, he was invalided home in 1908.

After a period of further study, during which he obtained the Cambridge D.P.H., Dr. Griffith was appointed, in October, 1910, superintendent and medical officer of Lingfield Colony for Epileptics, one of the several homes established by the National Union for Christian Social Service. Although impaired health necessarily restricted his energies, he brought to this task a union of qualities exactly suited for the successful handling and treatment in colony life of a malady and temperament admittedly presenting peculiar difficulties. Himself of athletic instincts—he was an Edinburgh "blue" in football, and when abroad never so happy as in the saddle—he saw to it that his patients as far as possible lived an open-air life, abundantly supplied with occupation, recreation, and hobbies.

He was an omnivorous reader and kept himself abreast of medical research, his own powers of observation being displayed in the contributions he made to medical literature, including articles on Hereditary Factors in Epilepsy (1911), Mental Tests in Defective Children (1916), and a chapter on the Epileptic in Kelynack's "Human Derelicts." He also wrote the chapters on Medical Missions in his wife's book, "Behind the Veil in Persia and Turkish Arabia." Recently Dr. Griffith had been much occupied with the institutional treatment and training of discharged sailors and soldiers suffering from epilepsy by arrangement with the Ministry of Pensions. Experience has shown that this is a specially difficult problem, many of the men failing to realise their disability, and being, not unnaturally, impatient of prolonged treatment. But Dr. Griffith knew his men; he possessed the technical skill requisite to obtain insight into their individual peculiarities, and often into the origin of the latter; and his sympathy with them and determination to restore them to a normal civilian life engendered, besides affection, a loyalty to régime that explains much of his success. Apart from his special work, Dr. Griffith had many projects in view for the development of the Lingfield Colony's sphere of usefulness, and the carrying of these into effect will be the best tribute to his memory. He leaves a widow and a young daughter.

AT their meeting on Oct. 8th the Portsmouth town council resolved unanimously to raise the salary of their medical officer of health, Dr. A. Mearns Fraser, from £800 to £1000 per annum "in view of the satisfactory manner in which he has performed his duties during a period of 23 years."

Correspondence.

"Audi alteram partem."

WAR EMERGENCY FUND OF THE R.M.B.F.

To the Editor of THE LANCET.

SIR,—I am very glad that Sir W. Watson Cheyne has drawn attention (THE LANCET, Oct. 12th) to the urgent need of providing without delay help for the members of our profession who, on returning from the war, will have to start in practice anew. Some provision for the financial need has already been made. Two years ago the War Emergency Fund of the Royal Medical Benevolent Fund was started, and about £20,000 have already been collected and temporarily invested. This Fund has been raised to help those who are in financial difficulties as the result of their war service, and to assist them in re-starting in practice. It is obviously most desirable not to duplicate funds of this kind, and I venture to urge all those who are moved by Sir W. Watson Cheyne's appeal to rally to the support of the War Emergency Fund and send subscriptions to the treasurer, addressed to 11, Chandos-street, Cavendish-square, W. 1.

It is impossible to tell what amount of money will be needed; it is certain that we shall want much more than we have at present, and we are appealing now for a further £10,000. When our colleagues returning from the front need help to resume their civil work they will want it promptly and it must be ample in amount. We must be prepared with large funds, and there is no time to lose if we are to be ready for the emergency.—I am, Sir, yours faithfully,

ALFRED PEARCE GOULD,
Chairman of the War Emergency Fund Committee.

Queen Anne-street, W., Oct. 13th, 1918.

THE CAMPAIGN FOR THE PREVENTION OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—The American Commission for the Prevention of Tuberculosis in France (the Rockefeller Foundation) has organised a very successful campaign against tuberculosis among the civil population in France by means of dispensaries, caravans, lectures, cartoons, and similar propaganda. Professor Selskar M. Gunn, one of the Associate Directors of the above Commission, will give a lecture, illustrated by lantern slides, at the annual meeting of the National Association for the Prevention of Consumption and Other Forms of Tuberculosis, on Tuesday, Oct. 29th, at 4 P.M., in the Large Hall, 20, Hanover-square, W. He will show the methods the Commission is using in France, which should be very interesting to us in this country.

Anyone wishing to attend the meeting should apply to the secretary of the National Association for the Prevention of Consumption and Other Forms of Tuberculosis, 20, Hanover-square, W. 1, for a ticket.—I am, Sir, yours faithfully,

J. J. PERKINS,
Hon. Secretary.

Oct. 15th, 1918.

MEDICAL MEN IN PARLIAMENT: SIR WILMOT HERRINGHAM'S CANDIDATURE.

To the Editor of THE LANCET.

SIR,—I see that a meeting has been held, under the chairmanship of Sir Henry Morris, to promote the candidature of medical men in the coming General Election. It will be important to have doctors in Parliament in view of the many questions which will press for attention concerning the prevention of disease and of infant mortality, sanitary housing, the treatment of the sick, and the establishment of disabled soldiers in suitable positions. The creation of a Ministry of Health and the proper position of medical advisers in local administration are equally important topics. It has been pointed out that the Universities are specially suitable for our candidates, since they are, or should be, more free than other constituencies from a narrow party spirit.

On these grounds I have accepted an invitation to stand for the University of London at the coming election.

I am, Sir, yours faithfully,

W. P. HERRINGHAM,
Major-General (Temp.); Consulting Physician to the Forces in France.

G.H.Q., France, Oct. 11th, 1918.

MEDICAL MEN IN PARLIAMENT.

To the Editor of THE LANCET.

SIR,—Will you allow me to say that I am in entire agreement with Lieutenant-Colonel M. A. Collins's suggestion (THE LANCET, Oct. 12th) that the Medico-Psychological Association should be represented on the Executive Committee formed on Oct. 1st "to further the election of medical men to the House of Commons." I know well the importance of that branch of medicine in its relation to State legislation, and I will take the first available opportunity to endeavour to attain his object. When Colonel Collins raised the question it was getting very late, the meeting had lasted considerably over two hours and was beginning to disperse, and I wished to avoid the risk of prolonged delay and discussion which similar suggestions made by members specially interested in other branches of medicine and surgery would certainly have caused.

I am, Sir, yours faithfully,

HENRY MORRIS.

Cavendish-square, London, W., Oct. 14th, 1918.

To the Editor of THE LANCET.

SIR,—Can anyone inform me why in the recently formed committee for "taking such steps as may be possible to further the election of medical men to the House of Commons," there is no representative of the Society of Apothecaries?—I am, Sir, yours faithfully,

WILLIAM H. KESTEVEN, L.S.A.

Kingston Hill, Surrey, Oct. 12th, 1918.

NOTIFICATION OF INDIGENOUS MALARIA.

To the Editor of THE LANCET.

SIR,—I should like to add a word to Professor Arthur Hall's letter of warning in your issue of Oct. 12th concerning the introduction of malaria into this country. Hitherto cases of malaria have been comparatively few, and the chance, therefore, of any given anopheline mosquito coming into contact with any given case has been somewhat remote. The conditions are now, or will shortly be, greatly changed; and I am under the impression that people generally are not fully alive to the very wide distribution of the anopheline group of mosquitoes in these islands.

During the past two years I have paid considerable attention to this subject in my own district, and have discovered that in the woods and river valleys in the eastern portion of this county anophelines are readily to be found, most commonly *A. maculipennis;* but this summer I have also found colonies of *A. plumbeus*, and it is quite certain that the south-eastern portion of England is the normal habitat of a large number of anopheline mosquitoes, as is shown in the British Museum map, which probably understates the case owing to paucity of observers. I regret that the limitation of petrol has this year circumscribed my own observation to a much narrower field.

I am, Sir, yours faithfully,

JAMES R. WHITWELL.

St. Audry's Hospital, Melton, Suffolk, Oct. 14th, 1918.

CHRONIC INTESTINAL STASIS.

To the Editor of THE LANCET.

SIR,—I can lay very little claim to the title of anatomist, and none at all to that of anthropologist. I am, therefore, clearly not in a position to discuss with Captain F. Wood-Jones the interesting question as to whether or not the Hominidæ ever passed through a quadrupedal stage. I was taught that they did, but that proves nothing.

In the matter of "the damnable heritage of the colon," however, I crave a further word. If I have correctly understood your correspondent, he maintains that the short colon of the carnivora is adapted to the discipline of fasting, and the long colon of the herbivora to the otiose absorption of raw vegetables. I am quite content to take it at that. Now, man is furnished with a very long colon; but, in flagrant contravention of the formula, he eats flesh foods. Moreover, he cooks these flesh foods. He also cooks his vegetables, and mainly in such a manner as completely to destroy their vitamines. Such a degree of civilisation in matters dietetic may be very æsthetic, but it is obviously unsuited to the colon with which Providence has provided him. His colon, therefore, gives him very serious trouble. If he would avoid this trouble he must select one of two alternatives. He must either adapt his diet to his colon, or he must adapt his colon to his diet. The first he can do by confining himself to raw vegetables; the second he can accomplish either by fasting or by having his colon shortened. He declines to live entirely on raw vegetables; and, having tried it, I cannot find it in me to blame him. The decision between fasting and colon removing is a mere matter of taste. Personally, I prefer the former.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 12th, 1918. LEONARD WILLIAMS.

SENSORY CHANGES IN THE DIAGNOSIS OF TRENCH FEVER.

To the Editor of THE LANCET.

SIR,—The paper by Major Carmalt Jones in your issue of Oct. 5th is of very great interest. He has placed in our hands a helpful method of retrospective diagnosis of the original cause of much "debility." It would be interesting to know whether the absence of areas of increased sensitiveness in 20 per cent. of his series of 500 cases was ever associated with the presence of analgesic patches. Since my attention was called to such cases by Captain J. A. Hartley, R.A.M.C.(T.), I have investigated a large number and have found that it is quite common for men in the middle and later stages of the disease to have areas of analgesia to pin-prick. This loss of sensibility varies in degree from a mere blunting of sensation to complete analgesia. The most common situations for this phenomenon are the outer surface of the calf, the infrapatellar, scapular, and deltoid regions; it has not been found in the skin of the face, neck, or trunk. Circumstances have prevented investigation of the total duration of this sensory loss, but it has sometimes been found five weeks after the onset of the disease, and may still be present in a proportion of chronic cases readmitted to hospital from convalescent camps.

I am, Sir, yours faithfully,

C. E SUNDELL,

France, Oct. 9th, 1918. Captain, R.A.M.C.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations recently held the following candidates were successful in the subjects indicated:—

PRIMARY EXAMINATION, PART II.

Anatomy.—J. W. Alden, Oxford; A. B. Aldred, Guy's Hosp.; M. Bulrski, London Hosp.; F. J. Darbyshire, King's Coll. Hosp.; G. Fraser-Smith, Middlesex Hosp.; E. W. Hicks, St. Thomas's Hosp.; R. J. Hooker, Guy's Hosp.; C. F. Long, Bristol; and A. Senn, London Hosp.

Physiology.—A. B. Aldred, Guy's Hosp.; M. Bulrski, London Hosp.; H. V. Croucher, Guy's Hosp.; F. J. Darbyshire, King's Coll. Hosp.; R. Erskine Gray and E. W. Hicks, St. Thomas's Hosp.; R. J. Hooker, Guy's Hosp.; C. F. Long, Bristol; and A. Senn, London Hosp.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on Oct. 10th, with Sir Francis H. Champneys in the chair.—A letter was considered from the Local Government Board asking the Central Midwives Board to consider the advisability of framing a new Rule E. 22 (1) (*f*) in terms similar to the corresponding rule of the Central Midwives Board for Scotland, which requires a midwife to notify the local supervising authority in the following case—* (*f*) "Artificial feeding"—whenever under Rule 19 (*b*) she has advised the substitution of artificial feeding for breast feeding. The Board decided that the question be adjourned to the next meeting of the Board.—A letter was considered from the medical officer of health for the county of Durham asking whether the Board would object to the County Council supplying midwives within their jurisdiction with collosum argentum for the treatment of the eyes of newly born infants. The Board decided that the medical officer of health for the county of Durham be informed that the Board has designedly refrained from recommending in the rules the use of any specific drug for the treatment of the eyes of newly born infants. It sees no objection to the course proposed by the medical officer of health for the county of Durham.—A letter was considered from the acting county medical officer of health for the West Riding of Yorkshire bringing to the notice of the Board a scheme of maternity

and child welfare now in course of organisation by the county council of the West Riding, and asking the Board to approve S. Faith's Rescue and Maternity Home, Leeds, as a branch of the West Riding Nurses' Home with a view to enabling the latter institution to utilise for the training of its pupils the midwifery cases undertaken by the midwives at S. Faith's. The Board decided, in view of the altered condition of the circumstances set forth in the letter of the acting county medical officer, to consider an application for approval to train pupil midwives from the lady superintendent or matron (being certified midwives) of S. Faith's Rescue and Maternity Home, Leeds, provided that the whole of the attendance on labours of such pupils is not carried out at the home.

LONDON HOSPITAL MEDICAL COLLEGE.—The "Price" and Entrance Scholarships in Science (value £100 and £50 respectively) have been divided between G. N. Golden, J. H. Andre, and K. W. Todd.

A COURSE of three public lectures on "France's Share in the Progress of Science" will be delivered at University College on Tuesdays, Oct. 22nd and 29th and Nov. 5th, at 5 P.M., by M. Henri L. Joly, Professeur de Sciences Physiques et Naturelles au Lycée Français (Institut Français du Royaume Uni). The chair will be taken at the first lecture by Professor J. Norman Collie, D.Sc., F.R.S. A leaflet containing full particulars of the lectures may be obtained by sending a stamped addressed envelope to the Publications Secretary, University College, London (Gower-street, W.C. 1).

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee, held on Oct. 8th, 21 cases were considered and £206 1s. voted to 16 of the applicants. The following is a summary of some of the cases relieved:—

L.R.C.S. Irel., aged 72, married, who practised at Redland, Bristol. Owing to ill-health quite unable to practise, and has no savings. Only income interest on £200 on deposit at the bank. This was received from insurance on the death of his son. Voted £26 in 12 instalments.—Widow, aged 57, of M.B. Glasg. who practised in South Wales and died in August, 1918. Applicant was left unprovided for at her husband's death. Has three children, son 24, and twin daughters aged 22. Rent £30. Voted £5.—Widow, aged 70, of L.R.C.P. Edin. who practised at Bervie and died in June, 1918. Applicant's husband had been helped by the Fund for the last two years. She is now a confirmed invalid, and her only income is occasional gifts from her two children. Rent £14. Voted £12 in 12 instalments.—Daughter, aged 61, of M.R.C.S. Eng. who practised at Wymondham and died in 1870. Applicant lost all her income through a defaulting trustee, and a lady who helped her has recently died. Lives with a family who provide board, but no pay. Relieved ten times. £64. Voted £12 in 12 instalments.—Wife, aged 39, of M.R.C.S. Eng. who practised at Bournemouth and is now in an asylum. Applicant is suffering from tuberculosis. Has two children, now aged 17 and 12, living with relations, who also provide for her husband's maintenance. Relieved five times. £67 10s. Voted £12 in six instalments.—Daughter, aged 50, of M.D. Edin. who practised at Southampton and died in 1888. Applicant is a trained midwife, but owing to ill health is unable to follow her occupation. Friends provide 12s. 6d. per week, but this is insufficient to pay for board and lodging. Relieved five times, £36. Voted £12 in 12 instalments.—Daughter, aged 52, of M.D. Glasg. who practised at Glasgow and died in 1897. Applicant used to earn a little as housekeeper, but owing to the severe illness of her invalid mother, aged 78, has had to give up work to attend to her. Relieved four times, £40. Voted £10.—Widow, aged 73, of L.R.C.S. Irel. who practised at Walworth and died in 1915. Was left entirely without means. Receives Old Age Pension, £7 16s. Eldest daughter allows 2s. 6d. per week, and youngest daughter, who earns 35s., lives with mother. Relieved four times, £38. Voted £12 in 12 instalments.—Widow, aged 82, of M.R.C.S. Eng. who practised at Woodford, Essex, and died in 1913. Applicant was left without means, and friends subscribed to a fund, but this is now almost exhausted. Has four children, son, aged 47, and daughter, married, unable to help. Daughter, aged 45, is at home looking after mother, and daughter, aged 48, a munition worker, earns 35s. and pays 15s. per week towards household expenses. Relieved once, £18, in September, 1913. Voted £18 in 12 instalments.

Subscriptions may be sent to the acting Honorary Treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W. 1.

CAMBRIDGESHIRE TUBERCULOSIS COLONY.—On Oct. 9th the Queen, accompanied by Princess Mary, paid a visit to the Tuberculosis Sanatorium, Papworth Hall, Cambridge, inspecting, as well as the central institution, the workshops where the open-air shelters are being constructed and the cottages in the village which are occupied by ex-patients employed in various ways on the estate. Before leaving the Queen intimated to Colonel Sims Woodhead her intention of sending a contribution of £1000 for the purchase of more cottages. Among those present were the Lord Lieutenant of Cambridgeshire, the High Sheriff, the High Steward, the Mayor, the Acting Vice-Chancellor, Dr. T. N. Keynes (the Registrary of the University), Mr. J. F. P. Rawlinson, M.P. (the Recorder), Sir Clifford Allbutt (Regius professor of physic), and Sir Arthur Newsholme, representing the Local Government Board. The colony, originally started at Bourne in January, 1916, was removed to Papworth Hall in February of the present year, Sir Ernest Cassel having given £5000 towards the expansion of the institution. Property was acquired which extended the estate to nearly 100 acres, and the Ministry of Pensions offered £3000 for a lien on 30 beds during the war and 10 beds for a later period. There are now 50 patients in residence, under the charge of Mr. P. C. Varrier-Jones, honorary resident medical officer, but further extensions in accommodation are to be made in consequence of a gift of £10,000 from the National Relief Fund. A special feature of the colony is its industrial side, the ex-patients carrying on various trades in the open air, and it is hoped that gradually a self-supporting village community may be built up around the central institution. For the completion of the work of the institution already undertaken by the committee £7000 is still required.

DONATIONS AND BEQUESTS.—By the will of the late Mr. Alfred Ridley Bax, F.S.A., the Royal Hospital for Incurables will receive £1000.—The late Major-General William Henry Knight left by will £500 to the Royal Victoria Hospital, Dover.

ANNUAL MEDICAL SERVICE AT LIVERPOOL.—The service was held as usual at the church of St. Luke on Oct. 13th, and was attended by the Lord Mayor (Major J. Utting, R.A.M.C.) in state, Professor W. Thelwall Thomas, President of the Liverpool Medical Institution, and a number of leading medical men. The collection, on behalf of the Royal Medical Benevolent Fund, realised the record amount of £130, a result largely due to the efforts of the Lord Mayor, who collected a considerable amount before the date.

LITERARY INTELLIGENCE.—The Library Press, Ltd., London, hope to publish within a week or two a translation of Professor Jules Amar's book on "The Physiology of Industrial Organisation and the Re-employment of the Disabled." The translation has been made by Mr. Bernard Miall, and has been edited, with notes and an introduction, by Professor A. F. Stanley Kent, M.A., D.Sc. Oxon. We reviewed the French edition of this book in THE LANCET of April 21st, 1917.

NEW CONVALESCENT HOME IN DEVON.—A convalescent home for 20 delicate children was formally opened on Oct. 9th at Dousland. Mrs. Waldorf Astor has provided the home, which stands in pleasant grounds on the borders of Dartmoor. The institution is intended for children from Plymouth, and Mrs. Astor will defray all expenses for the first two or three years. The honorary physician is Dr. John G. Bailey, and the honorary surgeon Mr. George Jackson.

OLD-AGE PENSIONERS AND WORKHOUSE TREATMENT.—The Helston (Cornwall) board of guardians has been informed by the Local Government Board that in the case of old-age pensioners admitted to the workhouse infirmary, if the pension officer was satisfied that this admission was principally due to the need of medical treatment, the pension would be continued, but if the pensioner had become a chronic inmate of the infirmary the question of disqualification could be raised by the Local Pensions Committee.

THE SERVICES.

ARMY MEDICAL SERVICE.

Cols. T. G. Lavie and J. Girvin retire on retired pay.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. S. H. Withers retires on retired pay.

Major (Bt. Lieut.-Col.) B. A. Craig to be acting Lieutenant-Colone whilst in command of a Medical Unit.

Major M. C. Wetherell relinquishes the acting rank of Lieutenant-Colonel on re-posting.

Capt. Sir T. C. English, R.A.M.C. (T.F.) (hon. Col. in Army), to be temporary Lieutenant-Colonel whilst specially employed.

Temp. Capt. (acting Lieut.-Col.) F. W. G. Deane relinquishes his acting rank on ceasing duty at Leith War Hospital.

The undermentioned to be acting Lieutenant-Colonels: Temp. Major (Capt., R.A.M.C. (T.F.)) W. Robertson; whilst in command of a Medical Unit: Capt. (acting Major) S. D. Large, Capt. (acting Major) H. A. Harbison.

Temp. Capts. relinquishing the acting rank of Major: E. W. Craig, W. K. A. Richards; on re-posting: T. E. R. Branch, K. B. Dickson, G. W. Stone.

To be acting Majors: Temp. Major P. Turner; Capt. (Brevet Major) H. F. Panton; Temp. Capts. J. N. Wheeler, G. Jackson, A. L. Krogh, H. V. Leigh, F. P. Joscelyn, R. S. Scott, E. C. Lindsay, T. H. Just, V. F. Soothill, T. A. Lawder, H. F. N. Scott, H. Pringle, A. Manuel, P. Moran; Temp. Lieut. G. B. Warburton. Whilst specially employed: Temp. Capts. R. C. Harkness, J. Donald, J. L. Rankine, C. C. de B. Daly.

F. McE. Sinclair and H. Whitwell, late temporary Captains, are granted the honorary rank of Captain.

R. P. Mitchell to be temporary Honorary Captain whilst serving with British Red Cross Society in France.

Officers relinquishing their commissions: Temp. Major R. O. Moon; Temp. Capts. J. A. A. Orlebar, W. Dickson, E. V. Frederick, H. F. Wickens, F. C. Stewart, R. B. John (on account of ill-health contracted on active service, and is granted the honorary rank of Captain), W. M.

Fergusson (on account of ill-health, and is granted the honorary rank of Captain), W. S. Foote, E. Macmillan, G. A. Barss, C. G. Shearer (on account of ill-health contracted on active service, and is granted the honorary rank of Captain), J. G. Reidy (on account of ill-health contracted on active service, and is granted the honorary rank of Captain); Temp. Hon. Capt. F. W. Goyder (on ceasing to be employed with St. John Ambulance Brigade Hospital); Temp. Lieuts. F. Spearing (on account of ill-health contracted on active service, and is granted the honorary rank of Lieutenant), A. C. Norwich (on account of ill-health caused by wounds, and is granted the honorary rank of Lieutenant), W. S. Gibson (on account of ill-health, and is granted the honorary rank of Lieutenant), C. J. G. Exley (on account of ill-health); Temp. Hon. Lieut. H. E. Durham (having ceased to be employed with Welsh Hospital, Netley).

Canadian Army Medical Corps.

Temporary Captains to be temporary Majors): D. B. Kennedy, J. A. Briggs, H. Hart.

Temp. Capt. J. McCulloch to be acting Major while employed at Canadian Depôt.

Temporary Captains to be acting Majors while employed at a Canadian Field Ambulance: H. M. Barrett, F. W. Lees, E. Douglas, L. C. Palmer.

SPECIAL RESERVE OF OFFICERS.

Capts. M. W. Ruthven and S. J. Steward relinquish the acting rank of Major on re-posting.

Capt. D. M. Marr to be acting Major.

Capt. H. Taylor relinquishes his commission on account of ill-health, and is granted the honorary rank of Lieutenant.

TERRITORIAL FORCE.

Lieut.-Col. O. E. B. Marsh is retired, having attained the age limit, and is granted the honorary rank of Lieutenant-Colonel.

Major J. Allison to be acting Lieutenant-Colonel whilst specially employed.

Major A. V. Ford relinquishes his commission on account of ill-health, and is granted the honorary rank of Major.

Capts. H. E. Gibson (General List) and W. Malden relinquish their commissions on account of ill-health, and are granted the honorary rank of Captain.

Capt. (acting Major) M. U. Wilson (General List) relinquishes his acting rank on ceasing to be specially employed.

Captains to be acting Majors whilst specially employed: W. E. H. Bull, F. J. Green, W. J. Gray, A. R. Muir.

Capts. J. B. Macalpine and W. Gough are restored to the establishment.

Lieuts. L. H. Callendar and C. P. Matthews to be Captains.

TERRITORIAL FORCE RESERVE.

Capts. J. A. Menzies and A. R. Moodie, from R.A.M.C., to be Captains.

ROYAL AIR FORCE.

Medical Branch.—J. Maclaughlin (Lieut.-Col., retired, R.A.M.C.) is granted a temporary commission as Captain and to be honorary Lieutenant-Colonel. H. McWilliam Daniel, M. Murphy, W. Lessey (late Captain, R.A.M.C.) are granted temporary commissions as Captains. F. S. Drewe, A. Henderson, T. Acton, O. Hilton are granted temporary commissions as Lieutenants.

Dental Branch.—R. C. T. Evetts, N. A. Goudge, A. E. F. Peaty, F. J. Bradburn are granted temporary commissions as Lieutenants.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, London.
A System of Clinical Medicine. By T. D. Savill, M.D. 5th ed. 28*s.*

BAILLIÈRE, TINDALL, AND COX, London.
Lessons on Massage. By Margaret Palmer. 5th ed. 10*s.* 6*d.*
Manual of Physiology, with Practical Exercises. By C. N. Stewart, M.D. 8th ed. 21*s.*

CLARENDON PRESS, Oxford.
Dr. John Radcliffe: A Sketch of His Life, with an Account of His Fellows and Foundations. By J. B. Nias, M.D. 12*s.* 6*d.*

HEINEMANN, WILLIAM, London.
Studies in Word Association. By C. G. Jung, M.D. Translated by Dr. M. D. Eder. 25*s.*

HOEBER, PAUL B., New York
Neurological Clinics: Exercises in the Diagnosis of Diseases of the Nervous System given at the Neurological Institute, New York, by the Staff of the First Division. Edited by J. Collins, M.D. $3.

KIMPTON, HENRY, London.
Tropical Surgery and Diseases of the Far East. By J. R. McDill, M.D. 24*s.*

LONGMANS, GREEN, AND CO., London, New York, and India.
Simplified Methods of Tracing Rays Through any Optical System of Lenses, Prisms, and Mirrors. By L. Silberstein, Ph.D. 5*s.*
New Reduction Methods in Volumetric Analysis. By E. Knecht, M.Sc., and Eva Hibbert, M.Sc. 5*s.*
The Chemistry of Synthetic Drugs. By P. May, D.Sc. 2nd ed. 10*s.* 6*d.*

OXFORD PRESS WAREHOUSE, London.
A Text-book for Midwives. By J. S. Fairbairn, B.M. 2nd ed. 2*s.*

SAUNDERS (W. B.) COMPANY, London and Philadelphia.
Gynecology. By William P. Graves, M.D. 2nd ed., thoroughly revised. $7.75.
Surgical Treatment: a Practical Treatise on the Therapy of Surgical Diseases for the Use of Practitioners and Students of Surgery. By James Peter Warbasse, M.D. (Three Vols. and Index Vol. $30.) Vol. I.
Military Hygiene and Sanitation. By Frank R. Keefer, M.D., Colonel, Medical Corps, United States Army. 2nd ed., reset. $1.75.
The Orthopædic Treatment of Gunshot Injuries. By Leo Mayer, M.D. Introduction by Colonel E. G. Brackett, M.C. $2.50.

UNIVERSITY PRESS, Cambridge.
War Neuroses. By J. T. MacCurdy, M.D. Preface by W. H. R. Rivers, M.D. 7*s.* 6*d.*

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Parliamentary Session.

BOTH Houses of Parliament resumed on Tuesday, Oct. 15th, after a recess extending from the beginning of August.

HOUSE OF COMMONS.

TUESDAY, OCT. 15TH.

The Midwives Bill.

Mr. HAYES FISHER (President of the Local Government Board), in moving the second reading of the Midwives Bill, said that the measure had originally been introduced and passed in the House of Lords. When, however, it came down to the House of Commons a lynx eye discovered that there was a flaw in it. It infringed the privilege of the House of Commons inasmuch as some of its clauses made a charge on public funds. This being the case there were three courses open: first, to reintroduce the Bill in the House of Lords without the offending clauses; secondly, to introduce the Bill into the House of Commons with the clauses which created the charge; and thirdly, to drop the Bill. At that time—late in July—the Chancellor of the Exchequer, who was responsible for the conduct of the business of the House, was beginning the slaughter of the innocents, and there was no time for the Bill to be considered in the House of Commons. Therefore there was only one course to take—namely, to drop the Bill for the time, with the intention of introducing it into the House of Commons at the earliest possible date. The Midwives Act of 1902 only applied to England and Wales, and not to Scotland or Ireland. The two latter countries obtained some advantages in that respect, because a Departmental Committee which was appointed to inquire into the operations of the 1902 Act made certain valuable recommendations regarding amendments which might fittingly be made in the Act. Since Scotland and Ireland had obtained Midwives Acts in which those recommendations were incorporated England and Wales had become the Cinderella of midwives legislation, and the whole object of the present Bill was to assimilate the law relating to midwives, so that the whole legislation on the subject throughout the United Kingdom would be in harmony. Proceeding to mention one or two of the more important clauses, Mr. Hayes Fisher said that Clause 2 made arrangements for a more equitable apportionment regarding any deficit which might accrue to the local authorities. The apportioning of the deficit was made on the basis of the population, and not on the basis of the number of midwives who had taken out certificates. The old apportionment was somewhat cumbersome and inequitable. Those local authorities which were most active in promoting the work of the midwives were to a certain extent penalised by having to take upon themselves a larger proportion of the deficit than they ought to have done. Under Clause 6 compensation was introduced for the first time to women who had been suspended through no fault of their own. Clause 8 provided that a woman struck off the Roll should return her certificate to the Board. By Clause 10 there would be reciprocal recognition of the certificate of the Central Midwives Board not only in the United Kingdom but in the British Dominions, with the proviso that the term of training must be the same in each case. Clause 12 enabled the county council to delegate its duties to the district council except in cases where that power had already been exercised. This was the only clause on which there was division of opinion in the House of Lords, and it was quite possible that division of opinion might manifest itself on that clause in the House of Commons when the Bill went into Committee. Clause 14 made it obligatory to summon a medical man in emergency cases and for the local authority to pay his fee. They would be able to recover 50 per cent. of these fees from grants made by the Treasury under the administration of the Local Government Board. Everyone must be anxious at this time to do all they could in relation to maternity and child welfare. There was a great shortage of midwives at the present time, and if they could do anything to raise their status and remove the difficulties under which they worked they were doing something at all events to diminish the perils of motherhood and to ensure that a better class of woman would take up the ancient and honourable profession of a midwife.

Replying to a number of questions, Mr. HAYES FISHER said that it would be possible to increase the number of women on the Central Midwives Board. It would be possible, if it was found desirable, to give midwives themselves direct representation on that Board. The Government had thought it better to bring in the Bill as it left the House

of Lords, but when they came to Clause 12, which was probably the only one which would excite any debate or division, he would listen with a very open mind to the arguments put forward as to whether or not the delegating of powers should be allowed. But he thought that it would be wise to give a discretionary power to the Local Government Board and not to close the door entirely to delegation and matters of that kind.

The Bill was read a second time.

Appointments.

DEAN, L. T., M.B. Cantab., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Spilsby District of Lincoln.

O'DONNELL, P. C., M.B., B.Ch., Certifying Surgeon under the Factory and Workshop Acts for the Dingle District of the County of Kerry.

Vacancies.

For further information refer to the advertisement columns.

Alnwick Infirmary.—H.S. £150.

Barrow-in-Furness, County Borough.—Female Asst. M.O.H. and Asst. Sch. M.O. £450.

Bradford.—Temp. Asst. Sch. M.O. £8 8s. per week.

Bristol Royal Infirmary.—H.P. and H.S. £120.

Burton-on-Trent Infirmary.—H.S. £200.

Cambridge, Addenbrooke's Hospital.—H.P. £300.

Cambridge Borough Education Committee.—Asst. Sch. M.O. £400.

Chester Royal Infirmary.—H.S. £200.

Chesterfield and North Derbyshire Royal Hospital.—Sen. H.S. £300.

Exminster, Devon Mental Hospital.—L.T. 7 gs. per week.

Grimsby and District Hospital.—Res. H.S. £200.

Hastings, East Sussex Hospital.—H.S. £250.

Huddersfield County Borough.—Female Asst. M.O.H. £400.

Kent, Bromley Union Guardians' Institution, Farnborough.—M.O. £250.

Kirkburton, Storthes Hall Asylum, Huddersfield.—L.T. £7 7s. per wk.

Leicester, Leicestershire County Council Education Committee.—School Dentist, £400.

Manchester, Crossley Sanatorium, Delamere Forest, Cheshire.—Asst. M.O. £300.

Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—H.S. £150.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Res. M.O. Also Jun. H.P.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Asst. Res. M.O. £250. Also H.P.'s. and H.S.'s. £50, and (in one case) £100.

Newcastle-upon-Tyne, University of Durham College of Medicine.—Lect. Psych. Med.

Northampton General Hospital.—Jun. H.S. £150.

Plymouth, South Devon and East Cornwall Hospital.—H.P. £200.

Queen Charlotte's Lying-in Hospital, N.W.—Asst. Res. M.O. £60.

Reading, Royal Berkshire Hospital.—H.S. £250.

Roll of Honour Hospital for Children, 688, Harrow-road, W.—Female Asst. Phys.

Royal Free Hospital, Gray's Inn-road, W.C.—Paths. to Ven Dis. Dept. and to Military Sect. £150. Also Asst. Path. £250.

Royal London Ophthalmic Hospital.—Deputy Bacteriologist. £120.

Salford Royal Hospital.—H.P. £250. H.S. £200. Jun. H.S. £150.

Sheffield City Hospitals.—Asst. M.O.

Shrewsbury, Salop County Asylum.—Temp. Asst. M.O. £300.

South London Hospital for Women.—Female Clin. Asst. £1 1s. per attendance. Also Anæsth. 10s. 6d. per attendance

Wakefield, Clayton Hospital.—H.S. £250.

Winchester, Royal Hampshire County Hospital.—Sen. Res. M.O. £400.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Swaffham, Norfolk, and at Spennymoor, Durham.

Births, Marriages, and Deaths.

BIRTHS.

NEILD.—On July 13th, at 7, Love Lane, Shanghai, the wife of F. M. Neild, M.B., B.S. (Lond.)—a daughter.

RIDDELL.—On Oct. 14th, at Chalmers-street, Edinburgh, the wife of Captain (Acting Major) J. W. G. H. Riddell, M.C., R.A.M.C., T., of a son.

MARRIAGES.

ADDEY—WILSON.—On Oct. 7th, at Shepperton Parish Church, William Fielding Addey, Captain, R.A.M.C., to Edith Jane, daughter of the late James Wilson, of Alford, Aberdeenshire.

STALKER—MACLEAN MANSIE.—On Oct. 12th, at Dundee, Captain J. M. Stalker, R.A.M.C., to Jeannette Maclean Mansie, M.B., Ch.B.

DEATHS.

BIERNACKI.—On Oct. 11th, at the Hospital, John Biernacki, M.B., Physician-Superintendent of Plaistow Fever Hospital, and of 17, Wimpole-street, Cavendish-square.

MCLAGGAN.—Killed in action on Oct. 4th, Captain J. Murray McLaggan, M.C., R.A.M.C., attached Royal Fusiliers, aged 27 years.

PRIESTLEY.—On Sept. 28th, at Salonika, of influenza, Major Percival T. Priestley, R.A.M.C.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

MEETINGS OF SECTIONS.

Tuesday, Oct. 22nd.

MEDICINE
PATHOLOGY
EPIDEMIOLOGY: *Discussion* on "Epidemic Encephalitis," at 5.30 P.M. Speakers: Dr. F. W. Mott, Dr. S. P. James, Dr. A. S. MacNalty, Dr. W. H. Hamer, Dr. A. J. Hall, Dr. P. N. Panton, Dr. F. G. Crookshank, and others.

Wednesday, Oct. 23rd.

SURGERY (Hon. Secretaries—V. Warren Low, Cyril A. R. Nitch): at 6 P.M.
Presidential Address by Sir J. Bland-Sutton: Spolia Opima.

Friday, Oct. 25th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—Eric Pritchard, H. C. Cameron, C. P. Lapage): at 4.30 P.M.
Cases will be shown.
Demonstration: Dr. K. S. Bhat: A New Counting Chamber for Cells, &c., in Fluids.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
FRIDAY, Oct. 25th.—5 P.M., Museum Demonstration:—Prof. A. Keith: The Physiological Effects of Massage and Gymnastics.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of Post-Graduate Course were given in issue of Sept. 27th.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.
Course of Lectures on Public Health Problems under War and After-war Conditions (each Lecture will be followed by a Discussion):—
WEDNESDAY, Oct. 23rd.—4 P.M., Lecture III:—Dr. W. M. Willoughby: The Obviation of Ship-borne Infections.

CHADWICK PUBLIC LECTURES, at the Rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W.
Lectures on the Story of a New Disease (illustrated by epidiascope):—
THURSDAY, Oct. 24th.—5 P.M., Lecture III:—Dr. F. G. Crookshank: (1) Raphania; (2) Botulism; (3) Theory of the Heine-Medin Disease.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. W. H. B. Aikins, Toronto.

B.—Surg.-Gen. R. Blue, Washington; British Hospitals Association, Lond., Hon. Sec. of; Sir John Bland-Sutton, Lond.; Dr. C. H. Bond, Lond.; British Organotherapy Co., Lond.; Mrs. Cloudesley Brereton, Lond.; Dr. T. B. Broadway, Dorchester.

C.—Messrs. J. and A. Churchill, Lond.; Dr. A. B. Carver, Torquay; Rev. Dr. Corner, Abergavenny; Chicago School of Sanitary Instruction; Messrs. Clement and Johnson, Lond.; Dr. F. G. Crookshank, Lond.; Mr. J. Cabburn, Lond.; Miss M. M. Cashmore, Woolwich; Central Midwives Board, Lond., Sec. of; Dr. H. P. Cholmeley, Forest Row.

D.—Mr. S. H. Davey, Neath; Major H. Dutch, R.A.M.C.(T.); Surg. Lt. Comm. S. F. Dudley, R.N.

E.—Dr. W. Ewart, Lond.; Dr. A. D. Edwards, Bournemouth; Eagle, Star and British Dominions Insurance Co., Lond.

F.—Dr. R. Fenner, Lond.; Dr. W. M. Feldman, Lond.; Dr. A. M. Fraser, Portsmouth.

G.—Dr. D. Graham, Boston; Mr. H. J. Gauvain, Alton; Glasgow, Medical Officer of Health of; Miss L. Givens, Sheffield; Sir A. Pearce Gould, K.C.V.O., Lond.; General Medical Council, Lond., Acting Registrar of.

H.—Dr. I. Harris, Liverpool; Dr. J. B. Hurry, Reading; Rev. C. W. Heald, Chale; Dr. R. H. Hann; Major-Gen. Sir W. P. Herringham, C.B.

I.—*The India Rubber Journal*, Lond., Editor of.

J.—Rev. H. B. Jones, Hull; Mrs. J. A. Johnston, Dunbarton; Mr. C. L. Jenkins, Lond.; Mr. W. Jones, Liverpool.

K.—Mr. W. H. Kesteven, Kingston-on-Thames; Mrs. F. A. Keynes, Cambridge; Dr. H. C. Kidd, Bromsgrove.

L.—Dr. C. Lillingston, Peppard Common; Local Government Board, Lond.; London Dermatological Society, Hon. Sec. of.

M.—Ministry of Munitions of War, Lond.; Ministry of Food, Lond.; Sir Henry Morris, Bart., Lond.; Dr. Reginald Morton, Lond.

N.—National Baby Week Council, Lond., Sec. of; National Association for the Prevention of Consumption, Lond.

O.—Sir William Osler, Bart., Oxford.

P.—Major J. Phillips, R.A.M.C.; Capt. H. M. Perry, R.A.M.C.; Practitioner.

R.—Royal Medical Benevolent Fund, Lond., Sec. of; Dr. M. R. Rhodes, Lond.; Royal Albert Institution, Lancaster; Dr. R. R. Rentoul, Liverpool; Royal Microscopical Society, Lond.; Mr. S. H. Rouquette, Lond.

S.—Society of Apothecaries of London, Sec. of; Capt. C. B. Sundell, R.A.M.C.; Capt. J. L. Stoddard, M.C., U.S.A.; St. John's Hospital, Lond.; Dr. E. I. Spriggs, Banff; Dr. W. B. Sansom, Lond.; Dr. E. Stolkind, Lond.; Capt. A. R. Snowdon, R.A.M.C.

U.—University College, Lond., Provost of; University of Cambridge.

W.—Brig.-Gen. F. A. Winter, M.C., U.S.A.; Dr. L. Williams, Lond.; Dr. F. P. Weber, Lond.; Warrington, Medical Officer of Health of; Major R. B. Wild, R.A.M.C.(T.); Dr. F. G. Wallace, Lond.; Dr. J. R. Whitwell, Melton; Messrs. John Weiss and Son, Lond.; Lt.-Col. J. H. T. Walsh, I.M.S. (retd.)

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

SOME EARLY BRITISH SURGEONS.

THE fifth volume of the *British Journal of Surgery* (Bristol: John Wright and Sons, Ltd. Pp. 714. Price 36*s.* 6*d.*) contains four articles dealing with one fourteenth century surgeon—namely, John Arderne, and three Tudor surgeons, John Banester, John Halle, and Thomas Vicary. John Banester, like his fellows Halle and Vicary, whose lives are given in the volume before us, and his other contemporaries, Gale, Clowes, and Read, were all Elizabethan surgeons, who strove to raise the status of surgery in England and to restrain quacks. They succeeded in their former effort to a very limited extent, but probably were not successful in the latter, although severe measures had been taken by the Act of 1531 against vagabondage, including "rogues who pretended to a knowledge of physic." Banester acted as surgeon to the Forces sent to relieve Havre in 1563, and in 1572 he was admitted a Member of the Barber Surgeons Company, apparently more owing to interest than to his undoubted merits. A note in the records of the Company says:—

"Mr. Banester, of Nottingham, was sworn and admitted a brother of this mystery. Whereupon he hath granted to the House yearly twenty shillings so long as he liveth, and to be liberal and commodious to this house in that he may and will yearly send a buck or two, and hath paid ten shillings and shall have his licence."

His biographer suggests that Banester's friendship with Clowes or his own family interest may have gained him admission to the Company, but we expect that the 20*s.* and the promise of the bucks had something to do with it too. In 1573 the University of Oxford granted him a licence in medicine, and in 1593 he received the licence of the Royal College of Physicians of London by desire of Queen Elizabeth. He was the Company's "Visceral Lecturer" in 1581, and an interesting picture (reproduced in the book) is extant of the proceedings at the lecture. From this picture we can get a very accurate idea of a demonstration in anatomy of the sixteenth century. It is pleasant to find from the records of the Company that provision was made for all things to be done decently and in order. Thus, the body was to be kept behind curtains until it "is wrought upon" (i.e., by the "Masters" or "stewards" of anatomy, who were apparently what are now called prosectors). The dissection being finished, all was to be made clean "and covered with fayre clothes" until the doctor should come to demonstrate. Both the doctor and the stewards were to have clean aprons and sleeves every day, and the latter were to see that all their instruments were clean. Banester died in 1610, so that at the date of this picture (1581) he was 48, having been born in 1533.

John Halle (1529–1568) was born in Maidstone. Little is known of him except from his books. Among these were a translation of Lanfranc's "Surgery" with a glossary, in which, concerning the word "algebra" we think he has made an error. He says:—

"The Arabye word 'algebra' signifieth as well fractures of bones, &c., as sometime the restauration of the same."

We do not think that the word "algebra" ever meant fracture, but was always used of bone-setting—i.e., restoration of fractures. "Algebra" is still used in Spanish to signify bone-setting, and the original Arabic word "al-jebr" means the reunion of broken parts. Halle also wrote a treatise against quacks in the vigorous English of his time, though not a whit too strong for the offences of "the beastly beguilers."

Thomas Vicary (1490–1562) was the leader of the band of Tudor surgical reformers. He was governor of St. Bartholomew's Hospital in 1548, with three surgeons under him. He is best known as the editor or author of a treatise on anatomy generally called "The Englishman's Treasure." The late Dr. J. F. Payne showed conclusively that this work is really an abridgment of a fourteenth century derivative of Lanfranc and Mondeville. It is not certain that Vicary claimed to be the author, and probably he simply edited the unknown fourteenth century author, just as Halle did Lanfranc.

John Arderne (1307–1380?) was the first English surgeon of whom we have any detailed knowledge. His chief work was a treatise on fistula in ano and its cure. His treatment was to make a clean incision instead of slowly cutting through the fistula with a ligature. The work has been admirably edited by Mr. D'Arcy Power for the Early English Text Society, Orig. Series 139, 1910.

The modern methods of surgery recorded in the *British Journal of Surgery*, especially the plastic variety, are so astounding that if their exponents had lived at the date of the surgery mentioned above they would have been burned as professors of diabolic arts.

ANTHROPOMETRY AND NATIONAL HEALTH.

THE first of a series of lectures on Public Health Problems under War and after War Conditions was delivered at the Royal Institute of Public Health on Oct. 9th by Professor Arthur Keith, F.R.S., his subject being Anthropometry and National Health. The chair was occupied by Major Leonard Darwin. Professor Keith said he did not believe the Prime Minister had done any greater service than when he drew attention in his speech at Manchester, on Sept. 12th, to the fact that if the health of the people had been looked after we should have been able to put into the fighting ranks at least a million more men, and the war would by that date have ended triumphantly. The first movement in this country to ascertain the physical condition of the people was made by a committee of the British Association in 1875, which in 10 years took measurements of 80,000 men, women, and children. After the Boer War General Maurice (Sir Frederick Maurice's father) stated, in an article in the *Contemporary Review*, that out of every five men who presented themselves for acceptance as soldiers only two were found fit to bear arms. A surgeon-general of the time, after investigating the recruiting statistics for 10 years, said they showed that of every 1000 men who applied to become soldiers 400 had to be rejected. On the initiative of General Maurice the Government appointed a departmental committee, which, after an eight months' inquiry, made a valuable report which recommended the setting up of machinery for investigation, but the report had been pigeon-holed. Conscription, however, had now placed us in possession of the figures in regard to the physical condition of the people. A population which deserved the term "healthy" ought to yield the following per 1000 men: 700 Grade I., 200 Grade II., 75 Grade III. (for sedentary work), and only 25 physically incapable. Yet a midland manufacturing town produced only 200 Grade I., 250 Grade II., 450 Grade III., 100 Grade IV. And that was characteristic of many towns in the Midland and Northern Counties of England and in the South of Scotland. Mr. Lloyd George's statement was found to be well within the mark. That was also true of the Premier's remark that the chief cause of the deterioration was in the home. Dr. A. Shadwell had traversed that statement on the subject in his *Times* letter, but Mr. Lloyd George evidently meant that no first-rate country had done less than England in providing certain conditions for improving the home. Professor Keith said he wanted to see a physical census of the people, and even after the setting up of a Ministry of National Health he would retain the Ministry of National Service, and he would have each county subdivided into areas, so that prevailing standards and ailments could be traced and investigated.

INFORMATION FOR INVALIDED CANADIAN SOLDIERS AND SAILORS.

A NEW version of a familiar poster has been prepared and will shortly make its appearance in Canada, entitled "What Every Invalided Canadian Soldier and Sailor Should Know." The information appearing on it is reproduced in pocket size on a khaki card, which is given to every wounded or otherwise invalided member of the force. The card consists of 26 paragraphs printed in red and black alternately, of which the following are examples:—

1. That his first business is to get well and stay well.
5. That until his discharge, being still a soldier, he is under the care of the Militia Department.
6. That the Department of Soldiers' Civil Re-establishment coöperates by arranging helpful and interesting occupations in the hospitals of the Militia Department.
13. That if he is willing to learn, and takes the opportunities offered him to increase his skill, he can usually get a better position than he had before.
15. That if his service disability prevents him from returning to his old work, after discharge, the Department of Soldiers' Civil Re-establishment gives him free training for a new occupation.
16. That his maintenance and that of his family are paid for as long as this training lasts, and for a month longer if necessary.
21. That a pension, being for disability caused or aggravated by service, cannot be reduced by his taking work or perfecting himself in an industry.
22. That if he needs an artificial limb or other orthopædic appliance it will be supplied free and kept in repair by the Department of Soldiers' Civil Re-establishment.
26. That if he wishes further information, advice, or help from the Department of Soldiers' Civil Re-establishment he should write to its headquarters, 22, Victoria-street, Ottawa, or speak to a representative of the Department. Every man is interviewed by such a representative before discharge.

The number of men accepted for training has now risen to nearly 3000. The motto of the organisation would appear to be Paragraph 12: "Skill won makes up for strength lost."

THE King has given permission to Dr. Lilian Violet Cooper to wear the Insignia of the Fourth Class of the Order of St. Sava, conferred upon her by the King of Serbia in recognition of services as surgeon at the Scottish Women's Hospital at Ostrovo during the present war.

The Harveian Oration

ON

THE DOCTRINE OF CONSUMPTION IN HARVEY'S TIME AND TO-DAY.

Delivered before the Royal College of Physicians of London on Oct. 18th, 1918,

BY PERCY KIDD, M.D.OXON., F.R.C.P. LOND.,
PHYSICIAN, LONDON HOSPITAL; CONSULTING PHYSICIAN, HOSPITAL FOR CONSUMPTION AND DISEASES OF CHEST, BROMPTON, ETC.

MR. PRESIDENT, FELLOWS OF THE COLLEGE, AND GUESTS,—Rather more than 300 years ago, in his Lumleian Lectures delivered in 1616, William Harvey first made known the results of his experiments on the circulation of the blood, though his complete work was not given to the world until 1628. The story of his great discovery has often been told, and well told. I shall not attempt to emulate the felicitous language of my predecessors. Much has been written about Harvey's life and work, perhaps more still remains to be discovered. But success in this kind of research is not given to everyone. If I had felt that it would be my duty on this occasion to attempt to add another stone to the already imposing cairn erected to Harvey's memory, I should not stand here to-day.

In 1656, the year before his own death, Harvey made provision for the annual delivery of an oration to commemorate the benefactors of the College, to exhort the Fellows and Members of the College to search out the secrets of nature by way of experiment, and to continue in mutual love and affection amongst themselves.

This year we have no bequests to record. In previous orations grateful mention has been made of the many benefactions which have been received, and the College has ever been mindful of generous donors.

HARVEY AND THE VALUE OF RESEARCH.

In his injunction to the Fellows and Members of the College to search out the secrets of nature by way of experiment, Harvey urges others to follow the practice which, in his hands, had led to such great results. His discovery of the circulation of the blood was founded on experiment and could not have been worked out in any other way. While learned physicians were engaged in subtle metaphysical discussions about disease, Harvey addressed himself to his own experimental work until he felt justified in publishing his revolutionary results.

In his introduction to the "Treatise on the Generation of Animals" Harvey pours contempt on the exclusive reference in all discussion to the authority of the great men of the past in these words:—

> "The method of investigating truth commonly pursued at this time therefore is to be held as erroneous and almost foolish, in which so many inquire what others have said, and omit to ask whether the things themselves be actually so or not."

Yet Harvey was no despiser of the Ancients, as his numerous references to Aristotle and Galen attest.

At the present day there is no fear of undue respect being paid to the Old Masters; nay, the young lions of the twentieth century are too well satisfied with their own prowess to devote much thought to an ignorant age that knew nothing of vaccines, blood cultures, test meals, blood counts, and other revelations of these latter days.

In this crisis of our history, when all men's thoughts are directed to the life-and-death struggle which our country is waging in defence of the liberties of the world against the sinister forces of reaction, let us recall the period of Harvey's lifetime that immediately followed the execution of Charles the First.

At this troublous and disturbed time Harvey had retired from London, and the following account of a visit paid to him in his retirement by Ent has a special interest for us to-day. In his introduction to Harvey's "Anatomical Exercises on the Generation of Animals," published in 1651, Ent thus addresses "the learned and illustrious the President and Fellows of the College of Physicians of London":—

> "Harassed with anxious and in the end not much availing cares, about Christmas last (the year after the violent death of the King.—Ed.) I sought to rid my spirit of the cloud that oppressed it by a visit to that great man, the chief honour and ornament of our College, Dr. William Harvey, then dwelling not far from the city: I found him, Democritus-like, busy with the study of natural things, his countenance cheerful, his mind serene, embracing all within its sphere.
>
> I forthwith saluted him and asked if all were well with him.
>
> 'How can it,' said he, 'whilst the Commonwealth is full of distractions, and I myself am still in the open sea? And truly,' he continued, 'did I not find solace in my studies, and a balm for my spirit in the memory of my observations of former years I should feel little desire for longer life? But so it has been, that this life of obscurity, this vacation from public business, which causes tedium and disgust to so many, has proved a sovereign remedy to me.'"

We may feel sure that had Harvey lived in these days, when not only the Commonwealth of England but the whole world is full of distractions, he would still have found solace in his studies. What Harvey did we may all do according to our several capacities. Those of us who, from one cause or another, are unable to render direct service to the State can yet help to carry on the civil life of the community which is indispensable to the successful conduct of one of the most righteous wars in which our country has ever been engaged.

It is hardly necessary at the present day to insist on the value of experiment in the elucidation of disease, and Harvey's injunction to search out the secrets of nature by way of experiments has now lost something of its original point. To-day experiment is in the air. And though much of the laboratory work published appears sterile and inconclusive, all additions to the sum of knowledge, however small and indirect, must have their value. In no disease, perhaps, has the beneficent influence of experiment been more strikingly exemplified than in consumption or tuberculosis. Experiment has been the light that lightened our darkness.

The seventeenth century, with its many wonderful achievements in literature, art, and science, marks the beginning of a new era in the study of consumption. Let us, then, compare the doctrine of consumption in Harvey's time with that of to-day.

FROM HIPPOCRATES TO THE SEVENTEENTH CENTURY.

In order to comprehend the state of opinion in Harvey's time we must retrace our steps to the time of Hippocrates, to whom we owe the first recorded account of consumption.

Hippocrates defines phthisis as suppuration and ulceration of the lung, and includes under the same head empyema, abscess of the lung, and gangrene. He speaks also of φυματα, swellings or growths in the lung, as causing phthisis. In Latin editions of his works these are translated "tubercula," hence, as Waldenburg points out, it has been thought that Hippocrates was acquainted with tubercles. But Virchow, after a critical examination of the passages in which φυματα are mentioned, came to the conclusion that these were circumscribed abscesses and not tubercles in the modern sense. These swellings are attributed by Hippocrates to collections of mucus or bile which suppurate, and are described as occurring also in the tonsils and in other parts.

The causes of consumption are pneumonia which fails to resolve in a critical manner, spitting of blood, and suppuration in the pleura. Pituitous secretion dropping down from the head and stagnating in the lung is another cause of suppuration and phthisis.

It is an eloquent testimony to the authority of Hippocrates that these views were adopted wholly or in part by every writer of note for the next 2000 years. Celsus added nothing to the account given by Hippocrates. Aretæus was the first to distinguish phthisis from empyema. Hear what he says:—

> "If an ulcer form in the lungs from an abscess or from a chronic cough or from the rejection of blood, and if the patient spit up pus, the disease is called Pyeor Phthisis. But if matter form in the chest or side or be brought up by the lungs the name is Empyema; but if in addition to these symptoms the lung contract an ulcer, being corroded by the pus passing through it, the disease no longer gets the name of Empyema, but takes that of Phthoe instead of it."

Aretæus makes no mention of φυματα or anything resembling tubercles in the lungs.

Galen in the main follows Hippocrates.

Phthisis is caused by ulceration of the lung. Ulcers of the lung are like ulcers of any other parts, and are due to direct injury, rupture and hæmorrhage from strain, and inflammation. Galen speaks of φυματα as inflammatory swellings resembling furuncles and buboes. One of the earliest references to contagion is believed to be found in these words:—

> "It is dangerous to live with consumptives and with those whose foul breath imparts a heavy odour to the rooms in which they lie."

Bulloch and Greenwood point out that Aristotle had expressed similar views concerning contagion.

The Arabian physicians closely followed Hippocrates and Galen, and made no further contribution to the subject. Phthisis remained an ulcer of the lung. The position was unchanged until the seventeenth century.

At this eventful period, when anatomical examination of the dead became more general, medical science began to burst its fetters, and a true renascence of medicine set in. The time which produced Harvey's great work on the Circulation witnessed other striking developments of medical knowledge, and this century constitutes one of the great epochs in the study of consumption. Among the writers of this time who dealt with this disease two men stand out pre-eminently, Franciscus Sylvius and Richard Morton.

Some account of the life and work of these two great men will, I hope, prove not uninteresting.

FRANCISCUS SYLVIUS (1614–1672).

Franciscus de le Boë Sylvius (not to be confounded with Jacobus Sylvius, who lived about one hundred years earlier) was born in 1614 at Hanau, in Germany.

His family was French, by name Du Bois or De le Boë, but his grandfather François, a Huguenot, had migrated to Germany to escape the religious persecutions of the time. The family had a distinguished military record, but owing to pecuniary losses François had embarked in commerce, for which Germany at that time offered favourable opportunities, having enjoyed peace for a considerable time. Isaac de le Boë, the son of François, married Anna de la Vignette, whose family came from Cambrai. Their son, afterwards known as Sylvius, was named François.

Lucas Schacht says that the boy's "beauty" of person, bodily activity, and gentle and virtuous disposition, inspired his father with the hope that such a body could only be inhabited by a lofty mind. His father determined, therefore, to give him a good education, and François was sent to Sedan to be instructed by learned and religious men in a Protestant school. Sedan, as Jelliffe points out, was one of the cities of refuge on the French border where Huguenots were tolerated.

The Medical Career of Sylvius.

When his schooling was completed he was given his choice of a profession: commerce, military science, or letters. He chose the last, and expressed a desire to study medicine. This decision met with his father's warm approval, and François returned to Sedan to study philosophy and medicine. After two years he went to Germany and the Netherlands to complete his education. At the age of 23 he was admitted Doctor of Medicine at Basle in 1637, and received authority to teach and practise medicine. After this time he assumed the Latin name of Sylvius. At his parents' desire he returned to practise at Hanau, his native town. But two years later he set out again to prosecute his studies in France and the Netherlands, finally settling at Leyden. Here he opened a school of anatomy and practised medicine with great success. His anatomical teaching became so celebrated that students were attracted to him from all parts. Anatomy and chemistry were the subjects to which he specially devoted himself. So great was his fame as a teacher of anatomy, says Lucas Schacht, that anyone who had not worked under him was thought to know little of the subject.

A few years later, to the surprise of his friends and to the grief of his pupils, he migrated to Amsterdam, when he was 27–28 years of age. Soon after his arrival he was appointed by the deacons of the Walloon Calvinistic Church to the care of their sick poor.

> "This charge," says Jelliffe, "without pay, gave him the public confidence, and at the same time facilitated his clinical researches."

The reputation which he brought with him from Leyden was speedily confirmed, and before long he obtained the chief practice in Amsterdam. He was beloved by the poor, whom he supplied gratuitously with costly drugs, many of them prepared with his own hand. His diligence, pity, civility, gentle manners, and sobriety commended him to all.

> "Who," says Schacht, "ever saw Sylvius drunk or disgraced by drink, a fault, alas! too common among medical men?"

In 1658 he was elected professor of medicine at Leyden, and for the next 14 years his activity in teaching, research, and clinical teaching was amazing. Opportunities for clinical teaching were provided by a small infirmary with 12 beds at Leyden, and these were very successfully developed by Sylvius. But Jelliffe shows that it is not correct to say, as some have done, that Sylvius was the first to give bedside instruction, for this method of teaching was originally employed at Padua in 1558, and had been imported into Leyden early in the seventeenth century, where it continued to be carried on for some years, though in a desultory fashion.

Sylvius had a most inspiring influence on his students; so many of whom achieved distinction afterwards that, in the words of Lucas Schacht—

> "The learned men that came from his school rivalled in numbers the crowd of warriors that sprang from the Trojan horse."

In 1668 his second wife and his only child succumbed to an epidemic fever, and Sylvius himself narrowly escaped the same fate in the following year. But on Nov. 14th, 1672, a second attack of the same disease carried him off in his fifty-eighth year. Jelliffe suggests that this epidemic disease was typhoid fever, but the fact that Sylvius had two attacks of the same nature in four years throws some doubt on this.

Sylvius's Contributions to Medicine.

Frank Baker, of Washington, in a very careful study of the anatomical works of Sylvius, comes to the conclusion that he was not the first to describe the Sylvian aqueduct, which was known to anatomists before his time or that of Jacobus Sylvius, who has also been credited with the same discovery. But from the evidence of his contemporary, Thomas Bartholinus, and of later writers, Franciscus Sylvius seems to have been the first to describe the Sylvian fissure.

Portal says that, though he worked much at anatomy, Sylvius made no great advance in this science. But Baker states that he invented a system of sections of the brain in different directions by which structures could be more effectively displayed. In addition he made examinations of lymphatic vessels, salivary glands, pancreas, and the spleen. He pointed out the difference between ductless glands, which he named conglobate, and acinous glands, called by him conglomerate. He believed that the ductless glands had a profound influence on the blood, and he thus may be said to have been in a sense a forerunner of modern views concerning internal secretions.

Portal points out that Sylvius had some knowledge of chemistry and its application to the human body. He was one of the early advocates of the fermentation of humours, which he applied to the explanation of secretions. He regarded the pancreatic juice as acid and the bile as alkaline; the contact of acid and alkali in the intestine gave rise to a new juice which preserved the balance between the acid and alkali. He was the author of numerous other explanations. With such principles, Portal says:—

> "He did little to advance the history of disease. His labours would have been more profitable if he had imported into his observation and experiments more of the scientific spirit, and if he had preferred description to ratiocination, which beguiles but often deceives us."

This criticism, though sound enough, seems rather severe when we remember the state of physiological knowledge at that time. But Portal, anxious to do him justice, adds in a subsequent passage that Sylvius was more instructed in mechanics than his predecessors, and described correctly the action of the diaphragm, proving that this muscle becomes flattened during inspiration and arched during expiration. He also admits that he made important observations on phthisis based on numerous autopsies. Further, to his credit it must be remembered that he was one of the first to repeat Harvey's experiments and to adopt his views on the circulation.

Eloy, after an adverse criticism of Sylvius's chemical theories, says of him:—

> "But he supported a better cause by defending with all his power the discovery of the circulation of the blood by the celebrated Harvey. Truth is sometimes regarded as a paradox by prejudiced minds, and this discovery, announced by the English physician in 1628, was still rejected as a chimerical fancy by most of the professors of Europe when Sylvius assumed the Chair of Medicine at Leyden in 1658.
>
> The proofs which he collected in favour of Harvey's discovery were so convincing that he had the glory of being the first to teach and demonstrate the truth of these views in the University of Leyden."

Lucas Schacht in his Funeral Oration says that Sylvius having convinced himself of the truth of Harvey's doctrine defended and advocated it publicly with such force that "one might doubt whether the greater honour and praise were due to Harvey, its author, or to Sylvius who first introduced it, published it abroad, and demonstrated its truth in this illustrious academy."

A glance at the medical works of Sylvius will show how wide was the range of his studies. There were few branches of medicine that he did not touch. Apart from his anatomical work, Sylvius has been chiefly known as the author of a purely chemical theory of disease which had little permanence. Nevertheless, these views possess a special interest at the present time, when the importance of physiological and pathological chemistry is so fully realised. But in his work on consumption he stands out as one of the

pioneers of the seventeenth century, and for this reason alone he would merit imperishable renown.

Views of Sylvius on Consumption.

The views of Sylvius on this subject do not appear to have attracted the attention which they deserve; I venture, therefore, to give a somewhat detailed account of them.

In his "Practice of Medicine" he introduces the subject by some general remarks on the nutrition of the lungs.

The lungs waste through the presence of pus, or of blood effused into their substance, or through some fault of their own. The fault lies in the blood when it suppurates, or when an abscess is formed in the course of pleurisy which conveys pus to the lungs either directly or through the blood. Whence not only are the lungs themselves wasted, but the whole body suffers also. The fault lies with the lungs when from any external or internal cause they become incapable of assimilating the blood brought to them, the usual internal cause being an ulcer, the external cause an empyema.

In phthisis not only are the lungs damaged, but the whole body is wasted, inasmuch as the blood is tainted by the intrusion of pus, which infects gradually all parts of the body and renders the processes of nutrition ineffective. The same results, both local and general, may be brought about by the blood containing morbid humours. In this case, whether from an excess of bile, pancreatic juice, or saliva, or from all three, from chyle or lymph vitiated in any way, from serum not being secreted in the kidney and remaining in the blood, or from many other causes affecting the blood, tubercles frequently originate in the lungs, together with textural changes in their soft and spongy tissues.

In the Appendix to his "Practice of Medicine," a posthumous work, he develops his views still further. Not every wasting of the body, but only that which follows an ulcer of the lung, is to be called phthisis.

In addition to the general wasting of the body, other peculiar symptoms are observed in phthisis—a cough and spitting of pus, together with a hectic fever.

Phthisis may be primary when pus is generated in the lung itself or secondary when pus is introduced into the lung from without, the pus infecting and tainting the lung and thus leading to ulceration.

The causes of primary disease of the lung leading to phthisis are numerous, the proximate one being a perforation of blood-vessels, whether by a wound, stab, blow, rupture, fall, shouting, coughing, straining, erosion by acrid humours, or by diapedesis, or exudation through distension or slackness of vessels, or in any other way. In a subsequent passage he says that the proximate cause of phthisis is a persistent ulcer of the lung associated with low fever and wasting. Among the causes of ulcer of the lung, the first place is given to peripneumonia passing into an abscess or vomica, the second to neglected spitting of blood. The other causes include acrid, salt, acid or pituitous humours dropping down from the head into the trachea and ulcerating the lungs, acrid pus penetrating the lungs from the chest walls or from an empyema. But when the aforesaid causes take effect on the lungs previously damaged in their natural constitution and inclined to phthisis, that disease is the more easily and rapidly induced.

"Seeing that experience shows that whole families are so disposed to consumption, that few of their members escape this fell disease, it may justly be asked in what does this phthisical constitution consist? It is notorious that the complaint is hereditary, and passes from parents to children, but the nature of this disposition is not so well understood."

In another passage referring to abnormal formations of the thorax, whether congenital or acquired, and to the hereditary disposition to phthisis, he says that in order to understand this we must believe that the individual humours of the human body change gradually from day to day, and with the progress of years undergo very considerable alterations, also that the solid tissues of the body, including the viscera, are subject to important changes at different age-periods. These changes are most conspicuous in the various glands, some of which wax, while others wane, from day to day. Thus the thymus gland, so large in the fœtus, shrinks greatly in adult life.

"A study of phthisis shows that the lungs possess a peculiar constitution which changes with age, although, so far, it is not possible to describe this accurately or to explain its nature. But this constitution must imply a special susceptibility to the influence of the humours predominating at any particular period of life. This disposition is to be attributed less to the solids than to the fluids of the body. In proportion as individual humours become more or more less acrid at different ages, a varying tendency to disease is manifested. The chief explanation of phthisis attacking persons otherwise in good health without obvious cause is to be looked for in the manifold changes which take place in the humours of the body."

In a subsequent passage he says:—

"I have often found two glands called thyroid lying close beside the trachea which have a certain affinity with the parenchyma of the testes. I suspect that from these a certain juice is poured into the trachea which if preternaturally acid would easily affect the lungs. Changes in this juice at different periods of life may lead to phthisis, especially where there is an hereditary taint."

After recounting the causes of phthisis, which for him means an ulcer or vomica in the lung, he breaks new ground in the following important passage:—

"I will now candidly state what I have observed and what, in my opinion, a vomica is. I have often seen glandular tubercles, both large and small, in the lungs which contained pus. These tubercles being gradually transformed into pus and enclosed in a delicate capsule must, in my opinion, be regarded as vomicæ, and I have frequently seen phthisis originate in these structures. I do not hesitate to ascribe to these tubercles the hereditary and deadly disposition to phthisis exhibited in certain families, for tubercles increase in size in the course of time and pass into suppuration. From my observations I have formed certain conjectures concerning glands which in the natural state are so small as to be invisible, but when diseased become enlarged, and are then seen scattered throughout the viscera and tissues of the body.

These views were suggested by:—

1. The glands of the choroid plexus invisible except in morbid conditions when they may reach a considerable size.
2. The pulmonary glands or glandular tubercles.
3. The glands seen in various parts of the body in the strumous or scrofulous constitution, these glands being of the conglobate variety."

"Inasmuch as we have seen that the small glands of the lungs may swell and become visible in disease and give rise to vomicæ, I suspect that an hereditary disposition to phthisis exists in these bodies."

"In addition to the causes already given, medical writers speak of contagion, the air expired by phthisical subjects being inspired through the mouth and nose of those around and infecting them with its acrid and fœtid miasma, with the result that they ultimately drift into a similar disease. And if we consult our experience and observe accurately what is apt to happen to the more delicate and younger blood relations in immediate contact with the disease, we find that this is only too true.

Wherefore physicians properly warn such persons and particularly close relations to avoid catching the breath of phthisical subjects. The special liability of relations is to be found in the small glands of the lungs invisible under ordinary conditions, but when occupied by a mere viscid humour growing to such a size that they can be seen and felt."

Advances made by Sylvius.

We see from a study of Sylvius's writings how greatly he was dominated by the influence of Hippocrates. "Phthisis sive ulcus pulmonum" is a phrase he uses more than once. Like all previous writers, he attributes phthisis in most cases to peripneumonia or pleurisy, ending in suppuration. But he makes a great advance when he states that tubercles are often seen in the lung in cases of consumption. Still more important is his discovery that tubercles soften and suppurate to form vomicæ. In his view tubercles were nothing more than enlarged glands which he supposed to exist in the lungs and other parts of the body, the enlargement being due to accumulation of viscid humours or secretions in these glands. The origin of the humours is referred to many causes acting for the most part through the blood, especially to excess of various secretions, such as bile, pancreatic juice, or saliva, also to changes in the thyroid secretion, which, as he supposed, found its way into the trachea.

In his conjectures concerning glands which in the natural state are so small as to be invisible, but when diseased become enlarged and are then seen scattered throughout the viscera and tissues of the body, it is not improbable that he is describing cases of generalised miliary tuberculosis. The assumed glandular origin of tubercles in the lungs suggested a relation to scrofula or struma in which external glands were enlarged. The action of heredity is exerted through these glandular tubercles.

Varying conditions of humours, or, as we should say, secretions, at different ages are credited with powerful predisposing influence in the causation of phthisis. May there not be some truth in this? The varying activity and mutual relations of internal secretions, about which, as yet, we possess little accurate knowledge, have profound effects on the human organism, and who shall say that susceptibility to tuberculosis is not in some degree connected with these influences? The phthisical constitution or disposition is also attributed to changes in the humours or secretions of the body.

It seems, then, from the many-sided activities of Sylvius and from his important work on consumption that Baker is justified in describing him as one of the great original thinkers of the seventeenth century, of the period that produced Harvey, Descartes, Leibnitz, and Malpighi.

RICHARD MORTON (*c.* 1635–1698).

Richard Morton was born about 1635, the son of Robert Morton, minister of Bewdley Chapel, in Worcestershire.

According to Copinger, he was born in Suffolk. But in the "Dictionary of National Biography" it is stated that he was baptised at Ribbesford, the parish to which Bewdley belonged, on July 30th, 1637. He matriculated at Magdalen Hall, Oxford, in 1653-54, but migrated to New College, where he subsequently became chaplain, proceeding to the degree of B.A. in 1656-57, and M.A. in 1659. After this he was chaplain to Philip Foley, of Prestwood, in Staffordshire, who appointed him to the living of Kinver, in the same county. Having refused to sign the Act of Uniformity at the Restoration, he was ejected from his living in 1662.

He then turned his attention to medicine. The next thing we hear of him is that he was admitted to the degree of Doctor of Medicine on the nomination of the Prince of Orange in 1670.

I have been unable to obtain any information about his life between 1662 when he was ejected from his living, and 1670, when he received his degree in Medicine at Oxford. The Rev. Claude Jenkins, librarian at Lambeth Palace Library, has very kindly examined the Archbishop's Register and Subscription Book there, but he has been unable to find any record of Morton having received a licence to practise medicine from the Archbishop. Wood says that he was admitted M.D. Oxford in 1670, in which year he accompanied the Prince of Orange to Oxford as physician to his person. Mr. Jenkins suggests that he may have come over from Holland with the Prince after studying medicine at Leyden or Utrecht. I have examined Peacock's Index to English-speaking students who have graduated at Leyden University and the Album Studiosorum Academiæ Rheno-Trajectinæ, but I cannot discover any mention of Richard Morton.

It is strange that nothing should be known about the medical education of a man who afterwards became so famous.

Bishop Burnet in his history tells us that the Prince of Orange came to England in the winter of 1669 in the twentieth year of his age, about a debt owed to his house by Charles the Second. Charles seems to have given the Prince many promises to pay, but little else. That the association between Morton and the Prince was of a satisfactory nature is evident from the fact that the latter after his accession to the throne of England as William the Third appointed Morton one of his physicians-in-ordinary.

After graduating in Medicine at Oxford, Morton came to London and was admitted a Fellow of this College in 1679. He was Censor in 1690, 1691, 1697. In 1680 he was incorporated at Cambridge on his Doctor's degree. He lived in Greyfriars' Court, Newgate-street, where he practised medicine with great success. He died in August, 1698, and was buried in Christ Church, Newgate-street.

Morton's Views on Consumption.

Richard Morton was the author of two works, "Puretologia" and "Phthisiologia," of which the latter alone concerns us now. He defines a consumption of the lungs as

> "An universal wasting of the parts of the body caused by some distemper of the lungs, as a stuffing, swelling inflammation and ex-ulceration of them, and thereupon it is attended with a cough, difficulty of breathing, and other symptoms of the breast, and accompanied with a fever, which at first is slow and hectical, afterwards inflammatory, and at last putrid and intermitting."

> "The cause of a consumption of the lungs in general is a vitiated disposition of the mass of blood, and of the spirits of the nerves contracted gradually from several procatartic or predisposing causes in which the sharp or malignant serum or water of the blood being separated by the soft and glandulous substance of the lungs does stuff, inflame, and at length also ex-ulcerate the lungs themselves, which is the immediate cause of this distemper."

The procatartic or predisposing causes are numerous, and include stoppage of evacuations, passions of the mind, intemperance in eating and drinking, want of exercise, night studies and long watchings, sleeping in the day, an ill air, an hereditary disposition, an ill formation of the breast, infection, chalky stones and such-like in the lungs, or some preceding distemper.

The more immediate cause is a taking of cold. Speaking of infection he says:—

> "This distemper, as I have observed by frequent experience, like a contagious fever does infect those that lie with the sick person with a certain taint."

> "The degrees of this distemper are those which follow, to wit, first a stuffing of the lungs from the serum or water of the blood that is plentifully separated in them. Secondly, a hard swelling, but more especially in the glandulous parts of the lungs, arising from the same serum, distending those parts too much, and not having a free passage out of them: which tumour I take to be the crude tubercle mentioned by Galen; which tubercles, or crude and glandulous swellings I have often found in the dead bodies of consumptive persons, when the other parts of the lungs have been full of apostemes and ulcers. Thirdly, an inflammation of the lungs, arising from the heat and sharpness of this serum. And lastly, an imposthumation and ex-ulceration of these inflamed parts when the distemper comes once to its height and extremity."

Morton here clearly states his opinion that the formation of tubercles constitutes the first stage in the phthisical process. The origin of tubercles is treated as follows:—

> "If anyone shall be inquisitive about the original of the tubercles in the lungs, I shall give this general answer: that the substance of the lungs not only seems more obnoxious to a flux of humours than any other part of the body from the continual motion of these parts caused in respiration, but also by reason of its spongy softness (because it consists wholly of small bladders and vessels) is wont to suck in and retain the humours. ..... When I consider with myself, how often in one year there is cause enough ministred for producing these swellings, even to those who are wont to observe the strictest rules of living, I cannot sufficiently admire that anyone, at least after he comes to the flower of his youth, can die without a touch of consumption.
>
> And without doubt the breeding of these swellings is so frequent and common that a consumption of the lungs would necessarily be the common plague of mankind, if these swellings did not vanish, or were removed by art, as easily as they are bred at first; and indeed I have been used to think, not without reason, that as the more benign tubercles are wont to go off of their own accord, and that quickly, so none of them lay the foundation of the great disease of which I am treating, but only those which are in some degree malignant and ill-natured and that are wont to putrefy sooner or later from some peculiar quality of their nature."

Morton's belief in the great prevalence of tubercle and in the frequency with which spontaneous healing takes place has received striking confirmation in recent times.

> "The crude tubercles resulting from obstruction of the glandulous parts of the lungs undergo a further change. Stagnation of the humours in these glands, caused by the thick glutinous quality of the juice secreted by the glands, leads to a transformation of the tubercle into a dry matter like suet or honey. Inflammation and suppuration follow. Pneumonia or pleurisy, if improperly treated, may end in consumption through the formation of tubercles and abscesses."
>
> "Where a spitting of blood has preceded, a consumption of the lungs is wont to follow." But in this case, Morton says, "the consumption does not seem to have its original so much from the breaking or gaping of a small vessel as from the inordinate and hectical state of the blood."

When consumption follows hæmoptysis the lungs become stuffed with hard glandules or tubercles. "Chalky stones bred in the lung when they are sharp and angular," and other pointed foreign bodies such as nails or pins, may tear the lung and cause hæmoptysis, and thence ulcers in the lungs.

Morton distinguishes a special scrofulous variety of consumption in which—

> "the blood by reason of its preternatural acrimony being, as it were coagulated, and so unable perfectly to unite the new chyle to itself and, the solid parts, is wont to throw it in a larger quantity than is convenient upon the glandulous parts ..... and what happens in other glandulous parts happens also in the lungs themselves, which are everywhere full of innumerable glandules, but of some more conspicuous ones, upon the windpipe and the branches of it, though in their natural state they are not so easily discerned: so that 'tis no wonder if those that have the king's-evil, who are frequently subject to glandulous swellings in other parts, are likewise many times affected with such kind of tubercles even in the lungs themselves."

But, whether conscious or unconscious of a certain ambiguity in his description of this variety of the disease, he adds that the most certain diagnostic sign of this form "is to be taken from glandulous swellings in the external habit of the body accompanying of it, or at least preceding it." Morton says that this variety of phthisis was the commonest in his experience and furnished most cases of recovery.

Value of Morton's Work.

In estimating the value of Morton's work we must consider his relation to Sylvius, although he makes no reference to the writings of the latter. The Opera Medica of Sylvius were published ten years before the appearance of Morton's Phthisiologia, and it is unlikely that Morton was unacquainted with the older work, as the reputation and authority of Sylvius were then so great. Morton adopts Sylvius's view of the glandular origin of tubercles in the most thorough-going fashion, and follows him in other points. Sylvius, as we have seen, was far in advance of all previous authors in asserting that tubercles were often found in the lungs of consumptive persons, and in attributing the formation of vomicæ to the softening and suppuration of tubercles.

Morton went still further and maintained that tubercles were found in the lungs in all cases of consumption, whatever its origin might be. But in the seventeenth century the word tubercle was used in the etymological sense, and as yet possessed no specific pathological significance.

Both Sylvius and Morton insisted upon the contagious nature of this disease, a view which had long prevailed and seems to have been held by Galen and Aristotle.

(To be concluded.)

A GENERAL meeting of the Institute of Hygiene has decided to elect women to the governing body of the Institute.

THE STANDARDISATION OF THE WASSERMANN REACTION.

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WE may look at the Wassermann reaction from two standpoints—as a means for the diagnosis of syphilis and as a highly complex reaction involving the recognition of the presence, and if possible an estimation of the amount, of a hypothetical substance which occurs in the blood in syphilis and few other diseases. For the former purpose I see no reason to change my opinion that a method involving the use of crude serum is the best, and that its rapidity and freedom from certain possibilities of accidental error more than outweigh its disadvantages. This, however, is by the way. The so-called "original" method is now required officially, and I have now used for more than two years one of the recognised modifications of the test.

The Nature of the Problem.

I propose to discuss the theoretical basis which must underlie any attempt to bring about a standardisation of the process, so that an accurate measure may be made of the strength of the reaction in any given case, and so that the workers in different laboratories may get concordant results. There is a third problem intimately bound up with these two: What strength of reaction are we to regard as being necessary to diagnose syphilis? This cannot be solved until we have a standard by which we can compare our results.

In a Wassermann reaction which is just positive we may consider that the three reacting substances—syphilitic serum, complement, and antigen—are in a state of equilibrium. If we add a little more complement this remains free, but it can be absorbed by adding more serum or more antigen; if we add a little less antigen we can still get our positive reaction by using less complement, and so on indefinitely. We have to titrate our unknown substance, the strength of which we wish to determine, by means of two standard solutions, complement and antigen, the excess of either of which can be compensated for (within certain limits) by the corresponding excess of the other. Add to this the fact that in neither case can we standardise our reagents by ordinary chemical or physical processes, or obtain them in a state of purity, and it will be seen that the problem is one of extreme difficulty.

It is really even more difficult than this; for we test this absolute absorption of the complement by a test-reagent which is itself of extreme complexity, the mixture of red corpuscles and hæmolytic amboceptor. No two samples of red corpuscles are exactly alike; and even when we work with carefully preserved specimens of the same sample of blood we have no reason to know that this remains constant from day to day. Again, it is not easy to obtain exactly accurate emulsions of corpuscles, and I do not find that the point is gone into much in actual practice. The hæmolytic amboceptor, again, is a source of difficulty, in that it can only be standardised by the use of complement, which in turn can only be standardised by the use of amboceptor. We seem to have no starting-point. And the strength of the test-fluid is not a matter of indifference. A reaction which appears positive when corpuscles sensitised with a small amount of hæmolytic amboceptor is used may appear negative when the latter ingredient of the test fluid is increased.

The Significance of the Reaction.

The question may be asked, How, in face of these facts, is it possible to get even reasonably trustworthy results in actual practice? And how is it that the results in one laboratory agree very fairly with those from another? The answer is that the Wassermann reaction varies enormously in strength, and that most reactions are so strong that they can be estimated by any technique. Thus, if we call the strength of the smallest reaction which we regard as positive 1, we often find reactions of 22, or somewhat more; and most of the cases that come to us to be diagnosed have a reaction of 4 or more, a strength which can hardly be missed. It is in the weak reactions that we get discrepancies, and it is the object of this paper to show a method, and, I believe, the only method, by which these discrepancies may be avoided.

It must be borne in mind that this is not altogether, and perhaps not mainly, a matter of technique or of ingredients; it is largely a matter of the personal equation of the experimenter. He has to deal with sera which, under the conditions of his test, will absorb all amounts of complement, from the smallest to the greatest. Some of these amounts, he knows, do not indicate syphilis; others equally certainly do—Where is he to draw the line? Thus, under the conditions in which I work I may get an absorption of complement which varies between 1 and 3000. (I am taking arbitrary figures.) An absorption of 5, or 10, or 20 I know does not indicate syphilis; it is a clear negative reaction. I am equally certain that an absorption of 100 does indicate syphilis; it is a clearly definite, though not very strong, positive reaction. What am I to say to an absorption of 75 or 80? Of course, the history of the case may give me some clue. If the serum is from a patient with a doubtful sore, or from a patient who has just finished a course of treatment, the diagnosis is obvious: I have to deal with a weak positive reaction. But where the history is not forthcoming I cannot possibly say what the significance of the result may be, nor can anyone help me.

There is no authoritative guide, nor can there be one until a large mass of experience has been accumulated, taking absolute units and not the arbitrary figures I have used above for sake of example. Under these circumstances every serologist is a law to himself. If he is naturally of a cautious disposition he pitches his standard low, so that he can never by any chance diagnose a case as syphilis if it is not so; by so doing he will sacrifice some accuracy, but he will never make the mistake (which is often so serious) of accusing a person of having syphilis when he has not. He will, however, miss a few early cases, and he will occasionally say that a patient is cured when he is not. The pathologist who is more daring will get more accurate results in these early or late cases, but he will run the risk of occasionally diagnosing syphilis when it is not present. These cases where the reaction is weak or doubtful make up but a small proportion of the total number examined, and the results of the two workers will coincide in the great majority of cases.

The first essential is for us to agree on some unit, some standard, to which all results can be compared. It does not follow that the unit shall be one that is used in actual practice, or that the methods which are used in obtaining this standard shall be used by all workers; indeed, I think it would be a great pity if any uniform technique were imposed and made compulsory. But what is essential is that he shall be able to compare his results with a standard—to say, for instance, that his four pluses corresponds to McIntosh and Fildes's 4 4 0 0 0 0, and so on. When this has been done we shall be able to take the further step and to investigate on a large scale where the line is to be drawn between the positive and the negative, for we shall have a solid basis of comparison. As a matter of fact, it would be a great advantage if we could have as our unit the exact minimum strength necessary for the diagnosis of syphilis, so that we could report a positive reaction of 1 or 2 or 20 units, and we should in doing so convey to the clinician a very clear and definite understanding as to the strength of the reaction. Moreover, if this were done he would be able to send serum to one laboratory at one time and to another subsequently, and get results which he could compare directly the one with the other. This is an ideal, but it is one that can be obtained without much difficulty.

Description of Technique.

I shall now describe the technique which I use in general work, and which I have followed in the investigations which I am about to describe. In general terms I follow McIntosh and Fildes's technique very closely, the alterations I use being mainly dictated by convenience.

1. *Preparation of the Hæmolytic System.*

Here I use a 5 per cent. emulsion of sheep's corpuscles, the amount being measured by sucking up the required quantity in a graduated pipette. I do not centrifugalise to constant volume in a graduated tube, since I find that the mass of corpuscles thus obtained is sometimes very difficult to stir into a uniform emulsion, and may show a considerable amount of hæmolysis when emulsified. Moreover, the matter is not really an important one so long as the deviation from the 5 per cent. aimed at is not great; the whole process, including the standardisation of the complement, is carried

out with the same emulsion, and any trifling error is unimportant. It is highly advisable to prepare all the sensitised emulsion that will be required for the day at once, otherwise a small error may creep in.

The question of the dose of amboceptor.—Here we have our first difficulty. We can only standardise our amboceptor by means of complement, and we cannot standardise our complement until the strength of the amboceptor is known. The term "unit of amboceptor" by itself is meaningless, for by altering our unit of complement we can, within certain limits, alter our unit of amboceptor. The usual method is to estimate the strength of the complement in presence of an excess of complement: thus, McIntosh and Fildes estimate their amboceptor in presence of a 50 per cent. dilution of guinea-pig's serum, and repeat the test so as to avoid getting abnormal results from the use of a weak serum.

I standardise my amboceptor in presence of the same amount of complement as is used in the test (2½ units per c.cm.) in the following manner: knowing from previous experience, or from testing out with a previously studied batch of amboceptor serum, the approximate amount of serum required to sensitise 20 c.cm. of 5 per cent. emulsion of corpuscles, I estimate the strength of my complement in the way McIntosh and Fildes describe—i.e., by taking a 1 in 25 dilution of the serum, measuring out 2/20, 3/20, 4/20, &c., of a c.cm. and making up to 1 c.cm. with saline. To these tubes are added ½ c.cm. of the sensitised emulsion and the mixtures are incubated for half an hour. If necessary a second estimation is made, using double amount of a 1 in 50 dilution. This gives a unit of complement in relation to the emulsion of corpuscles used in estimating it.

The new amboceptor is now in its turn estimated, using the same strength of complement as is used in the test proper—that is, 2½ units—as already determined. To do this a solution is prepared containing 5 units of complement in 1 c.cm., and a series of tubes put up each containing ½ c.cm. To these are added various dilutions of the amboceptor to be tested, and then ½ c.cm. of 5 per cent. emulsion of corpuscles, and the mixture incubated as before.

	c.cm.	c.cm.	c.cm.	c.cm.	c.cm.	c.cm.	c.cm.	c.cm.
Complement*	0·5	0·5	0·5	0·5	0·5	0·5	0·5	0·5
Amboceptor†	1/100	1/1000	1/10,000	1/1200	1/1400	1/1600	1/1800	1/2000
Hæmolysis	Complete		Trace	Complete				Practically complete

* 2·5 units. † 0·5 c.cm.

Thus, each ½ c.cm. of amboceptor contains about 2000 hæmolytic units, or each c.cm. contains 4000 units—the units being estimated for 2½ units of complement per c.cm.

In actual practice I use 40 of these amboceptor units per c.cm. Where such a large excess is used small variations in the amount taken do not affect the result.

Where still greater accuracy is required the complement may be again standardised by means of the new unit of amboceptor thus obtained, and the latter re-standardised by means of the new unit of complement, and thus by a series of approximations very accurate figures may be obtained. It is necessary to emphasise the fact, however, that these are not fixed units, they are only relative the one to the other, and if it were necessary to make a complete fresh start there would be no means of getting the same standard as before. The saving point is the fact that the amboceptor serum varies but slowly, and owing to this fact the units used in any given laboratory maintaining a standard technique vary but slightly from time to time.

Having calculated the amount of amboceptor serum required, the necessary amount of corpuscles are placed in a graduate containing a little less than the required amount of saline, the serum is added and well stirred in, and the volume made up to the required total. Thus, to make 40 c.cm. take about 35 c.cm. of saline, add 2 c.cm. of corpuscles, 4/10 c.cm. of amboceptor (having the strength given above), and stir well; then make up to 40 c.cm. exactly. I prefer to begin work by preparing this mixture and letting it stand a little time before use, so that the corpuscles may get completely and uniformly sensitised. In hot weather it is a good plan to let it stand in cold water.

2. *Standardisation of the Complement.*

Prepare a 1 in 25 solution of the guinea-pig's serum, and place 2/20–3/20, 4/20, &c., of this dilution in a series of tubes as before, make up to 1 c.cm. in all cases, and add ½ c.cm. of the sensitised emulsion. Incubate, and read off in half an hour, holding the tubes against a dark background and looking at them by transmitted light. This is the most difficult part of the process if really accurate results are required, though it is not easy to go so far wrong as to give results which shall have any incorrect clinical significance. Greater accuracy may be obtained by using a dilution of 1 in 50, and a useful device is to allow the tubes to settle for an hour or so, so as to be able to compare the upper part of the tube, which will now in any case be clear owing to the subsidence of the undissolved corpuscles, with the lower part, and thus to see whether there is or is not a trace of undissolved corpuscles. Another method is to centrifugalise and see whether there is a sediment, but this does not give exactly the same results as the former. Whichever method is used it must be kept to throughout.

3. *Preparation of the Antigen-complement Mixture.*

Here I deviate a little from McIntosh and Fildes's method, in that I make up my mixture so that the necessary 2½ units of complement and the requisite amount of antigen are dissolved in 0·9 c.cm. and not in 1 c.cm., as in their method. I do this simply because I use 0·1 c.cm. of serum for the test, and I get, in all cases, the volume of the fluid to be tested, whatever it may be, to 1 c.cm. exactly, this being the amount used in the standardisation. The calculation is made just as if I were going to make up the amounts in 1 c.cm., but they are actually dissolved in 9/10 of the amount. Thus, to make nominally 50 c.cm. of mixed antigen-complement, supposing the amount of antigen required to be 4 per cent. and the complement to have a minimal hæmolytic dose of 5/20 c.cm. of a 1 in 25 solution, I proceed as follows. The amount of guinea-pig serum required is—

$$5/20 \times 1/25 \times 2\tfrac{1}{2} \times 50 \text{ or } 1{\cdot}25 \text{ c.cm.}$$

(The amount necessary for 50 c.cm. can always be found by dividing the figure representing the number of twentieths of a c.cm. of the solution necessary for complete hæmolysis by 4.) Into a graduated measure I put about 40 c.cm. of saline, then add the antigen (2 c.cm.), and then 1·25 c.cm. guinea-pig serum, mix well, and make up to 45 c.cm. exactly. This gives me in each 0·9 c.cm. the amount McIntosh and Fildes put in 1 c.cm.

Two questions now arise for discussion.

(1) Is there any advantage in standardising the complement in presence of the antigen? I think there is only this advantage: that you are enabled to state at once, and without calculation, what is the actual amount of complement you are using in the test. Thus I find by repeated observations that the fluid prepared as above with the antigen I use, and calculated to contain 2½ units of complement per 0·9 c.cm., actually contains 2 units, and this is the amount used, therefore, in the test. This is shown as follows:—

A complement-antigen mixture containing 2½ (calculated) units of complement is tested for complement in the usual way: 7/20, 8/20, 9/20, &c., of the mixture are placed in tubes, made up to 1 c.cm. with saline, and ½ c.cm. of sensitised emulsion added. If there were no absorption of complement there would be complete hæmolysis in the 8/20 tube, whereas, as a matter of fact, it is not complete until tube 9/20, so that there are two free units of complement in each 0·9 c.cm.

I have thought it necessary to describe the method used for determining the anticomplementary power of the antigen (or what comes to the same thing if the complement is also estimated in saline), since some of the methods put forward are not, in my opinion, of any value. For any method to be useful the conditions must be exactly the same as in the test proper.

(2) Is there any advantage in mixing the complement and antigen (both prepared of double strength) just before the test, and not making up a large volume of the test-fluid for use throughout the series of test? I do not find that there is any continued absorption of complement for the first two hours at least after the two fluids are mixed. There is a very rapid absorption of the amount I have stated, but after that the composition of the fluid remains constant for a considerable time. Where I have wished to carry out a prolonged series of tests with the same mixture I have kept it in a jar of ice-water, but as a rule and for ordinary purposes no appreciable error will come in if it is kept for an hour or two at room temperature.

I may point out that in the actual practice of the Wassermann reaction there is no great object in making these

estimations in too refined a way or of attempting too great accuracy, since the amount of anticomplement varies in different sera, and unless this is estimated in each case the observer does not know how much complement remains for specific absorption, however carefully he may have standardised them in the first instance. For research work or for the preparation of standards it is another matter, and every precaution should be taken at every stage of the process.

4. *The Actual Test.*

I work with only half the amount, but for the sake of simplicity will describe the method as if the full 1 c.cm. was used. The preparation of the sera follows on usual lines and needs no comment. They are placed, each tube carefully numbered, in a tray of plasticine with a blank space at the left hand end. Into the row just in front of the row of a Wassermann rack in which the holes are numbered 1, 2, 3, &c., is placed a series of tubes into each of which 0·9 c.cm. of antigen-complement mixture is pipetted. The first serum tube is taken out of the plasticine and 0·1 c.cm. withdrawn by means of a fine-pointed capillary pipette. This is washed out into the mixture in the tube, which is then placed in the hole just behind it, numbered 1, and the serum tube is placed in the blank space at the left, so as to leave an empty space between it and tube 2. The pipette is then washed out with saline and the process repeated, so that each serum tube is gradually shifted one place to the left, and each complement-antigen tube is moved one row back. By this method I think I reduce to a minimum the possibility of mixing the tubes; and this, I am convinced, is one of the chief errors of the Wassermann reaction, and will continue so long as human nature remains fallible and large batches are in vogue.

When the rack is filled in it is placed at once in the water-bath and incubated for 20 minutes. Then ½ c.cm. of sensitised corpuscle emulsion is added to each tube brusquely, and the rack returned to the incubator.

No controls are put up in the first instance, since it is unnecessary in the case of a negative serum; the only purpose that can be achieved by a control is the detection of anticomplementary substances in the serum, and if full hæmolysis takes place these are not present in excessive amounts. Where there is a positive result, and especially a partial positive, controls are necessary. For these I use 1¼ or 1½ units of complement per c.cm. in saline, again making up the solution in 9/10 of the calculated amount. These amounts leave, as I shall show, approximately one free unit of complement when 0·9 c.cm. is mixed with 0·1 c.cm. of most sera, and should therefore give complete, or almost complete, hæmolysis.

5. *The Quantitative Test.*

This is carried out as follows. Taking a series of 6 tubes, I place 0·9 c.cm. of complement-antigen mixture in the first and 0·5 in each of the remainder. To the first tube I add 0·1 c.cm. of the serum to be tested; this is pipetted carefully to the bottom of the fluid, so that it does not mix therewith at present, and the pipette washed out in the supernatant fluid. Then, with a pipette showing 0·5 c.cm. I mix the two fluids quickly and remove 0·5 c.cm., which is immediately carried over into the second tube and mixed in. This operation is repeated until I come to the last tube, when the last ½ c.cm. is rejected. The whole process is very quickly carried out, and gives a series of six tubes containing 0·5 c.cm. of fluid each, the first containing 1/20 c.cm. of serum, the second 1/40, and so on to the last, which contains 1/640 c.cm. (These figures would have to be doubled to be comparable with the qualitative test, which was given as if carried out in 1 c.cm. of total bulk.) It is rarely necessary to go beyond the sixth tube, but exceptionally a specimen may be found which is even stronger than this and gives partial deviation when 1/640 c.cm. of serum is present in 1 c.cm. of complement-antigen mixture.

The results are stated as in McIntosh and Fildes's method, calling complete inhibition (no hæmolysis), 4; nearly complete inhibition (a trace of hæmolysis), 3; hæmolysis of approximately half the corpuscles, 2; nearly complete hæmolysis, 1. Thus, a result stated as 444200 would indicate that 1/40 c.cm. of serum made up to 1 c.cm. with complement-antigen mixture would give complete inhibition, whilst a mixture of 1/80 c.cm. of serum made up to 1 c.cm. would leave enough complement free to hæmolyse about half the corpuscles.

We can, with no great degree of error, state our results in terms of the number of units of complement absorbed: thus, the result given above might be taken as indicating that 1/40 c.cm. of serum absorbed 2 units, or that 1 c.cm. would absorb 80 units. We may also read them off approximately in terms of "standard units": thus 400000 is equal to one unit, 440000 to 2, 444000 to 4, and so on. There are, however, some corrections which have to be made before regarding this as a scientifically accurate, though it is a fairly close, approximation. I will leave the question of these corrections for subsequent discussion; it is sufficient for my present purposes to explain the methods by which I have obtained the results I now have to quote.

Standardisation of Antigen.

Let us now revert to the main object of the inquiry, and see what fixed point we can find to act as a starting-point for the standardisation of our methods. The first and most obvious suggestion is the antigen. Would it not be practicable to have a standard antigen, issued by authority, which all workers might use, and thus obtain concordant results? Antigen is fairly constant (to say the least), and presents at any rate some approximation to a definite chemical substance.

The first question that arises is this: If we prepare antigens from similar materials by identical processes, will they be *equal, or approximately equal, in action?* I have carried out a good many experiments on these lines, and find that this is the case.[1]

For example, three antigens were prepared with 10 per cent. of sheep's heart in absolute alcohol (10 g. of heart-muscle with 90 c.cm. of absolute alcohol) and compared for their antigenic property. Mixtures were made of these three antigens with the same sample of 1 per cent. alcoholic cholesterin, and 4 per cent. dilutions were made with the necessary amount of complement, the same, of course, in all cases. Quantitative tests were then made with the same batch of syphilitic serum, and the results were found to be exactly the same; thus, in one experiment the serum (a very strong one) gave 44444430 with each sample of antigen, and when the seventh tube in each series (carefully selected so as to be of uniform width) was centrifugalised and the supernatant fluid compared with its fellows, no appreciable difference could be detected.[2]

These experiments have been frequently repeated, and as far as sheep's heart is concerned I have no doubt that an almost absolutely constant antigen can be prepared in this way. (I should say that I have always worked with fresh heart—not frozen—but that I have taken no especial care to see that it is equally fresh on all occasions.) There is one proviso: the solution of the active ingredient or ingredients is somewhat slow, and I find it takes at least a week for the antigen to get to its full strength, and it is better to leave it 10 days before use. I have made careful comparisons between two batches of antigen prepared from the same sheep's heart, the one part simply cut up into small pieces, the other minced fine and ground up with quartz sand, and then shaken for some hours; the latter attains its full strength more quickly, but the ultimate result is the same in the two.

In actual practice I use three extracts prepared from three hearts. They are kept separate, and I take 1 c.cm. of each, to which is added 2 c.cm. of cholesterin.

Secondly, as to the *keeping power* of the antigen. Strictly speaking, we cannot determine this, for we can only determine the antigenic power of an antigen by reference to a syphilitic serum, and we have as yet no assurance that this will remain sufficiently constant for our purpose. We can overcome the difficulty in this way: if we prepare several antigens at different times—say a month apart—and compare them from time to time, using them as antigens with syphilitic serum—any serum—then, if they remain constant, the results ought to be the same in all cases. This is what actually happens:—

Thus, antigen B was prepared on August 24th, 1917, and was therefore 1 month old at the time of the first test.

[1] This has already been stated by McIntosh and Fildes (Brain, vol. xxxvi., Part II.)

[2] The method by which the antigenic power of any antigen can be estimated in absolute units is deferred for subsequent publication.

Antigen C was prepared on Sept. 20th, 1917, and so was 4 days old. They were compared with serums X and Y on Sept. 24th, 1917. X gave 444442 with antigen B and 444442 with antigen C, but on a careful examination there was a minute trace of hæmolysis more in the last tube with antigen C; the amount was only just perceptible, and may have been due to the fact that full solution had not yet occurred. Y gave 444441 with antigen B and 444441 with antigen C. Here, again, the same minute difference could be detected on careful examination.

The test was repeated on Sept. 25th, with the same sera. X gave 444442 and 444442 with the two antigens, no difference being perceptible in the last tubes, and Y gave 444442 in both cases, there being a minute difference in the last tubes.

It was repeated again on Oct. 1st. Serum X gave 444442 with both antigens, but there was a minute difference in the last tubes; the same with Y.

The result of these preliminary experiments was to show that the antigenic power of the two antigens was practically identical, C being if anything a shade weaker than B, but the difference was extremely minute: it was hardly too large to be the result of experimental error, but it ran fairly constantly throughout the early part of the series, which was as a matter of fact larger than those I have published. Tests throughout November and December showed that both antigens had attained exactly the same strength.

They were tested again with other sera at intervals, and another antigen, D, was added to the series on Dec. 1st, 1917. This was found after a fortnight to have exactly the same strength as the other antigens, and on a standardisation on Jan. 15th all three antigens gave exactly the same readings with every serum with which they were tested, three in number. Thus, the last test (July 29th, 1918) was carried out with a comparatively weak serum, which gave 430000 with each antigen, and when the tubes showing partial hæmolysis were centrifugalised and compared, not the minutest difference could be seen between them.

Thus we find that three antigens prepared by identical methods from similar materials gave identical results when tested for their antigenic power within a fortnight after being made, and at intervals of 10 months in the case of two of them and 7 months for the other. I may say that the anticomplementary power (which is much less important) was also tested, and was found to be constant.

Now, of course, it is possible that all these antigens were altering exactly uniformly, and that when each began it happened by chance to be of just the same strength as had been reached by the preceding in their process of deterioration, but this was unthinkable. The only probable explanation, which I have no doubt is the correct one, is that antigen is a stable substance, and shows no falling off in strength in ten months at least.

There is one point on which I must lay emphasis, since in this my practice differs from that in use by most serologists. I always keep my antigen on the magma of heart from which it has been extracted. I have had sudden changes on many occasions in antigens which had been pipetted or filtered from the deposit, but, as I have said before, never in one that has been kept in contact therewith. I suggest that the substance or substances which act as antigens are sparingly soluble in alcohol, so that they form a saturated solution under the conditions of the experiment. If the stopper is kept out of the bottle, some of this active substance is thrown down; or if a little alcohol gains access when the pipette, wet with alcohol, is inserted, a little more is taken up. (Of course, no one would pipette up his antigen with a pipette wet with water.)

This fact appears to constitute an excellent starting-point for the standardisation of the Wassermann reaction; and so, within limits, it is. It will enable us to fix a constant unit for the reaction, one which can be reproduced at any time by anyone if the official standard is lost. I should suggest as a tentative unit *the strength of serum which will just give complete absorption of two units of complement when 1/10 c.cm. of the serum is incubated with 9/10 c.cm. of 4 per cent. antigen, prepared in the way I have described.* This is an excellent clinical standard. I have had experience of its use in some thousands of cases, and with one or two exceptions (in none of which could the presence of syphilis be excluded absolutely) I have never found a positive reaction, using this standard, in a non-syphilitic case. Whether it can be made a little delicate (say by lowering the amount of complement to 1·75 or 1·5) remains for future investigation.

But further consideration will show that the use of a standard antigen, though of great value, does not help us very much when we have to deal with serologists all over the country making Wassermann tests by very different methods. For if a worker uses the antigen in different strengths or in different proportions he will have to test out this standard antigen for himself, and he might just as well make it in the first instance. Again, it does not meet the indication of providing a fixed unit to which all results, by whatever method they are obtained, can be compared. For instance, a standard antigen such as I have described would be quite useless to anyone following Browning's technique, and any results obtained by him would still remain a sealed book to anyone who was used to other processes.

Standardisation of Serum.

We turn, therefore, to the third ingredient of the first stage of the reaction—the serum. If it were possible to prepare a standard serum of constant strength the problem would be solved. This would be of use in two ways.

In the first place, by using it as a control, worked out quantitatively in every batch of tests, it would be obvious if at any time the conditions altered and the results were not in series with those that had gone before. For example, if the standard serum gave a reaction of 444000 on previous occasions, and then gave only 440000, it would be obvious that something was wrong—probably either the complement had been estimated too high or the antigen had lost potency. The experimenter might then either recalculate his results on this basis or, preferably, scrap them and test them out again. I now use a standard control serum constantly for this purpose.

In the second place, the serum could be used for any method of testing and the results stated in absolute units. For example, suppose we take the unit I have suggested provisionally, and we have to deal with a serum giving 444000. This will be of about 4 units strength, since each 4 represents a serum of half the strength of its left-hand neighbour. When the serum is tested quantitatively by another method it might give a result which the experimenter might choose to express by saying that under the conditions of his experiment it had absorbed 12 units of complement. In this case each of his units would be equivalent to 3 standard units, and might be so expressed, so that his report would read "positive, absorbing 12 units of complement, equal to 4 standard units." I need hardly say that it would not follow that all his results need be worked out fully quantitatively. As a check on his method and to see whether his positives and negatives came out correctly it would only be necessary to do one full quantitative test—that one the control serum.

I believe this is quite practicable, indeed quite easy of accomplishment.

Constancy of the Serum.

The first question that presents itself is this: Does the serum remain constant for a length of time sufficiently long to allow it to be used in this way in practice? I shall show that it does.

The sera used in these observations were collected from syphilitics as a part of the intravenous injection of salvarsan products, and the greatest care was used in securing absolute asepsis. The specimens were collected in test-tubes (the angled tubes described in THE LANCET[3] were found to be of the greatest value in securing a full crop of serum), and after complete separation had occurred the serum was pipetted into a second tube until complete subsidence of the corpuscles had taken place or it was centrifugalised. It was then pipetted into sterile glass ampoules, white for choice, and the tips sealed, care being taken that no serum remained in the tip to become charred during the sealing. It was then heated to 58° C. for 15 minutes.

The first series of experiments dealt with samples of the same batch of sera kept: (1) at the room temperature, (2) in the ice-chest, and (3) frozen solid in ice and salt. Two sera, both from untreated secondary cases, were used, and each was tested with two antigens. One serum (176) gave 444420 with each antigen and the other (180) gave 444442. (There was a minute difference between the results with the same serum and the two antigens, due to the latter not being of exactly the same strength; this was very small, and apart from it all the readings were identical within the limits of experimental error.) This was on Sept. 21st, 1917, the sera having been collected on Sept. 18th and Sept. 20th respec-

[3] THE LANCET, 1917, i., 597.

tively. They were re-tested with the same results on Sept. 25th, Oct. 1st, and Oct. 16th. The experiment had then to be discontinued, owing to the stock of serum running low.

This experiment showed clearly enough that the change, if it took place at all, was very slow, and, further, that there is no advantage in keeping the serum in the ice-chest, or frozen, at any rate for a period up to three or four weeks. This is a great practical advantage. Of course, it may be suggested that the serum got weaker, but that the antigen altered simultaneously and *pari passu* with it. To assume this we should have to believe that eight substances (the two antigens and the six specimens of serum) all altered at exactly the same rate; this is extremely improbable, and the only tenable explanation is that all the specimens, antigen and serum, remained constant throughout the experiment.

This has since been abundantly confirmed, and I have now ample evidence that syphilitic serum, collected aseptically and free from corpuscles, will keep for at least a month without appreciable alteration. If kept indefinitely it does fall off gradually, and I am now investigating, as occasion arises, the speed at which it does so. Such experiments are naturally slow, and I have at present no figures to quote, but I may give the following figures of five sera which have been kept for considerable periods of time.

	207	208	209	212	233
Dec. 12	444420	443000	442000	430000	—
Dec. 19	444420	442000	441000	420000	—
Jan. 4	444430	442000	442000	430000	—
Jan. 11	444430	442000	442000	430000	443000
Jan. 18	444430	442000	442000	430000	443000
Jan. 29	444420	443000	442000	420000	442000
Feb. 5	444430	443000	443000	100000	441000
Mar. 19	444430	443000	442000	100000	441000

These observations, I may say, were carried out without any extraordinary precautions as to accuracy, as a part of the routine Wassermann examinations, which may account for the occasional discrepancy in the last significant figures. Here it will be seen that serum 212 (which was a weak one to start with) fell off nearly to nothing during the experiment, whilst the others remained practically constant. I may point out that a falling off of from 444440 to 444400 represents a diminution eight times as great as one from 440000 to 400000. I should also like to point out that I have seen in one serum at least indications of a decided rise after it had been kept for a long time. The subject teems with questions for further investigation, but for the present I will content myself with stating that Wassermann sera do not alter appreciably in strength for a month. I believe I am well within the mark.

The Question of Anticomplement.

Serologists to whom I have quoted my figures have objected that they were obviously impossible, since the serum *must* get stronger from the development of anti-complement. I need hardly point out that the usual teaching is that serum begins to get anticomplementary within a few days after collection, and that this property of bringing about non-specific destruction of the complement vitiates any results obtained except with fresh serum; the anti-complementary power, it is stated, can be destroyed by a fresh heating to 55° or 60° C.

I find myself quite unable to agree to either of these propositions, and I do not remember to have seen any detailed figures on which they are based. My experience is (1) that sera collected aseptically and free from corpuscles are never anticomplementary to an extent sufficient to nullify the Wassermann reaction when carried out as I have described above; and (2) sera kept aseptically either do not alter at all in their anticomplementary power, or, if they do so at all, only to an insignificant extent, and one hardly beyond the range of experimental error. To give the data on which these statements are based I must give my technique. There are two methods.

(1) Having tested out the complement in the usual way, prepare a dilution of such a strength that there is ½ unit in 0·9 c.cm.; it may be necessary also to use a solution containing 1 unit in 0·9 c.cm. if very strong anticomplementary sera are in question. To 0·9 of one of these solutions add 0·1 of the serum to be tested, mix and incubate for 20 minutes; then add ½ c.cm. of the emulsion of sensitised corpuscles and incubate until hæmolysis has gone on as far as it will. The process is slow, and about three-quarters of an hour is necessary. Prepare a series of tubes showing the effect of various fractions of a unit of complement thus: prepare first a solution containing 1 unit of complement per c.cm.; into a series of tubes put 1/20, 2/20, 3/20, &c., of this solution and make up to 1 c.cm.; add ½ c.cm. sensitised emulsion and incubate. When hæmolysis ceases centrifugalise the tubes; the clear solution will show the amount of hæmolysis given by 0·05, 0·1, 0·15, &c., of complement. Compare the hæmolysis in the tube to which serum has been added; the difference will show the amount that has been absorbed. Thus, if 0·1 c.cm. were added to 0·5 unit of complement and the resulting hæmolysis was equal to 0·2 unit, it follows that the serum absorbed 0·3 unit. The advantage of this method is that it requires only one tube for each serum to be examined, and when a series is to be tested it is very convenient. It is useless for sera showing hæmolysis.

(2) In the second method a series of solutions containing 1·125, 1·25, 1·375, 1·5, &c., units of complement per 0·9 c.cm. are prepared, and to each 0·1 c.cm. of serum is added. The mixture is incubated and the corpuscles are added in the usual way, and the point at which complete hæmolysis takes place is read off. This, less unity, gives the anti-complementary power of the serum. This method is rather wasteful in serum, but it gets rid of the troublesome process of preparing the standards, and it can be carried out with tinted serum.

Whichever method is applied the results are substantially similar, and the usual strength of a serum is about 0·25; that is to say, under the conditions of the Wassermann reaction about 0·25 of a unit is absorbed in the first tube by non-specific absorption by the serum. Very rarely the amount exceeds 0·5, but I have never found it as high as 0·75. Now, I may point out that in the Wassermann technique which I have described there are two free complementary units to start with, so that if a whole unit is absorbed non-specifically there will still be complete hæmolysis and a negative reaction if there is no specific absorbing substance present. I have never found it anything like that amount; I am speaking, of course, of reasonably clear sera. But it must also be borne in mind that in a strong serum the anticomplementary action is reduced by dilution until it is inappreciable. Thus if the anticomplement were 0·5 in the first tube it would be reduced to 0·00625 in the fourth tube.

As regards the alleged increase in the anticomplement on keeping, I can only say that I have examined sera of all ages up to seven months, and have never found it to occur. Sometimes I have thought there was a very slight rise, but, as a rule, it keeps reasonably steady within the limits of experimental error; certainly I have never seen anything that would throw out the test. I ought to say that my test sera are heated to 55° for half an hour, or to 58° for a quarter of an hour once for all when they are potted off, and are not heated subsequently. I prefer white bulbs, as any turbidity due to bacterial growth would be visible. The bulbs are kept in the dark, at room temperature.

Absorption of Complement.

A few words are necessary with regard to the assertion that complement varies in regard to the degree with which it is absorbed by antigen in the presence of syphilitic serum. I have never found this to occur, although I have been carrying out the technique I have described above twice a week at least for the last two and a half years, and must have had experience of at least 250 complementary sera; and I may point out that in the tables of the strengths of sera on different occasions given above it is obvious that it did not occur, or such constant results could not have been obtained. It is proverbially difficult to prove a negative, and if a hundred complementary sera were investigated and showed constant results with the same syphilitic serum and antigen it would be open to anyone to argue that the hundred and first would have shown something entirely different. But if this variability actually occurs two results follow: (1) it will be impossible ever to constitute an absolute Wassermann unit, and (2) the comparative method which I suggest by the use of standard sera will be additionally useful.

My complement serum is always used the same day, in fact as soon as it has separated. Rarely it is used on the second day as well, and I find it gives exactly the same results on the second day as on the first with the same serum and the same antigen, although the strength may have fallen off very decidedly.

Method of Testing Strength of a Standard Serum.

I will now give in brief outline the method of testing the strength of a standard serum so as to get absolute results. An actual example may be of interest.

Complement tested. Unit found to be 10/20 × 1/50, or 0·01 c.cm.

Antigen-complement mixture prepared by adding 1 c.cm. of antigen to about 20 c.cm. of saline, then adding 10/20 × 1/50 × 5/2 × 25, or 5/8 c.cm., of complement serum, and making up to 22½ c.cm.

This mixture had added to it 2½ units of complement per c.cm. To test the amount actually present 7/20, 8/20, 9/20, and 10/20 c.cm. were placed in tubes, made up to 1 c.cm. and ½ c.cm. sensitised emulsion added. The first two tubes showed slight haziness, the last two were clear, indicating that 9/20 c.cm. contained one unit, or 0·9 c.cm. two units, the amount required. (I may say that I am not certain that there is not a slight error here, tubes containing antigen not being easy to read off for complete hæmolysis; the error, if it occurs, is quite trivial.)

First approximation. The serum was tested by the technique already described, and found to give a reaction of 420000. Thus, 0·1 c.cm. of undiluted serum gave a complete reaction under the conditions of the experiment, whilst the same amount of a 1 in 2 dilution did not.

Second approximation. Dilutions of the serum of 1 in 1¼, 1 in 1½, and 1 in 1¾, were prepared. The first and second gave no hæmolysis, the last a trace of hæmolysis.

Third approximation. A dilution of 1 in 1⅝ was prepared. It gave no hæmolysis.

Lastly, the anticomplementary power of the serum was tested and found to be 0·125.

Thus the serum contains 1·625 units of reacting substance. If I were issuing this as a standard serum I should issue it as giving a complete reaction at 1 in 1¼, a partial one at 1 in 2, and no reaction at 1 in 3; and these figures, I believe, would hold whatever technique were used. Such sera should be issued periodically by authority. If any experimenters would like to have them, in order to be able to compare their units with my own, I shall be pleased to send them to them on a small scale as opportunities allow.

Conclusions.

In this paper, therefore, I have attempted to show:—

1. That it is possible to prepare a standard Wassermann unit by the use of antigen prepared in a definite manner. I suggest that until further experience is obtained the absorption of two clear units of complement, tested in the manner described, shall be regarded as a standard unit, this being found to give good clinical results.

2. That antigen prepared in the manner described remains remarkably constant, and that if several specimens are prepared from different batches of similar ingredients, they will give constant results.

3. That syphilitic sera, prepared aseptically and free from foreign materials, remain constant for at least a month, and probably for much longer, at room temperature.

4. That the use of such sera affords an easy means by which any experimenter can obtain comparable results from time to time.

5. That the use of such sera, accurately standardised, will enable workers by any technique to obtain results which are comparable.

6. I suggest that the Wassermann reaction should be reported in terms of Wassermann units, either those which I have described or some modification thereof, the figures given by each laboratory being the same whatever the technique, and such as will indicate the number of times the serum is stronger than the weakest serum which will just give definite proof that the patient has syphilis.

TUBERCULOSIS SOCIETY.—Sir Malcolm Morris will open the winter session with an introductory address on "Past and Future of the Fight against Tuberculosis" on Monday, Oct. 28th, at 8 P.M. The meeting will be held at the House of the Royal Society of Medicine, 1, Wimpole-street, London, W., and is open to all practitioners of medicine.

A MATINÉE of one-act plays will be given at the New Middlesex Theatre, Drury-lane, London, W.C., on Friday, Nov. 8th, at 2 P.M., in aid of the Vanguard Farm for Disabled Soldiers and Sailors at Sutton Valence, Kent. Tickets may be obtained from Miss H. M. Ironside, 50, Lincoln's Inn-fields, London, W.C. 2.

A NEW TECHNIQUE OF HEART MASSAGE,

WITH A CASE OF RESUSCITATION.

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IN reviewing the literature of heart massage we find that this procedure has repeatedly been done, and in many instances with complete success; but in the career of any one surgeon, however long it may be, the opportunity will present itself but once or twice, if at all.

The first reported case was not until 1898 and the first reported complete success was as late as 1902 by Starling and Lane, so that even now from a clinical point of view heart massage may be considered of fairly recent origin and application. Green[1] in 1906 reviewed the literature and gave an abstract of 40 published cases. Many cases have since been reported, but from the leading medical journals[2] of many countries it would be difficult to collect more than ten successful cases in the last ten years.

Early Operation.

Judging by the reported cases complete success depends upon prompt operation, only 6 to 8 minutes after heart stoppage. Mollison's case[3] made a good recovery after an interval of 13 minutes, but showed profound mental symptoms for several days. In view of modern physiological science and surgical skill, all will agree that heart massage should be done in cases of suspended heart action following an anæsthetic, which have failed to respond to the ordinary methods of resuscitation, and as these methods are in many cases of doubtful value they should not be relied upon. Schiff as early as 1874 demonstrated, by chloroforming dogs until the heart ceased to beat, that artificial respiration and stimulation by electricity were of no avail in restoring cardiac action, but that massage, directly applied, restored it after an interval as long as 11½ minutes; furthermore, that the shorter the interval of time that elapses before applying massage the higher the percentage of success.

The Methods Employed.

There has been a gradual evolution of methods of heart massage.

1. *The thoracic method.*—In this a flap consisting of the thoracic wall over the cardiac area is cut and turned back, the base being either inwards or outwards. The costal cartilages are cut through, the pericardium exposed, and sometimes opened. The proceeding is forcible and must accentuate shock. Many intercostal vessels and nerves are involved. Pneumothorax has occurred in several of the published cases, and it is not surprising that the successes were almost nil, and that the method has been abandoned.

2. *The abdominal route, subdiaphragmatic.*—It is a familiar fact that some pressure upon the heart can be effected from the abdominal side of the diaphragm, so it was a natural thought to apply such pressure when the heart's action was arrested during the progress of a laparotomy operation. When promptly applied the conditions were favourable to resuscitation (Gray, 1902; Igelsrud, 1904; Cohen, 1903; Sencert, 1905; Depage, 1905; Smith and Daglish, 1905; Ramsay, 1906). This method has probably been used at an early stage in many unpublished cases, and the promptitude has won success. It is also possible that some of these cases might have recovered without massage. It has been demonstrated that in a child whose thorax is small and tissues elastic compression is possible though difficult; but in the adult it would rarely be effective, as only the cardiac apex can be reached, and it slips away upward. Hence the need for the trans-diaphragmatic method to reach the base of the heart where the auriculo-ventricular nerve ganglia are situated.

Heart massage is a complex performance. In its lightest rhythmical form it may undoubtedly stimulate the cardiac nerves, but a gentle squeeze of the organ does more: it empties the blood from the flaccid, perhaps distended auricles into the ventricles, the blood current acts as the physiological stimulus to these, and then the coronary arteries supply fresh blood to the cardiac muscles; thus a

healthy circle is re-established, and is reinforced by the artificial respiration, which should be carried on the whole time.

3. The *trans-diaphragmatic abdominal* route has been several times adopted, probably only unsuccessfully because too late. It need not be condemned on the statistics hitherto available. As above pointed out, the successful cases of subdiaphragmatic massage were those in which an abdominal operation was being performed at the time of the heart failure. It was the facility and the promptitude which secured the success. The diaphragm was only incised in the late stages of the worst cases, as, for example, Green's second case, in which an hour after apparent death from diphtheritic syncope he incised the pericardium through the diaphragm, and by massage started a few contractions. What more could have been expected? or Mauclaire's cases after tracheotomy and other measures carried out for 30 minutes?

The trans-diaphragmatic incision seems in these cases to have been approximately antero-posterior, splitting the muscle fibres and gaining direct access to the pericardium. There is some difficulty in executing this manœuvre on account of the left lobe of the liver and the stomach; there is also some risk of injuring the musculo-phrenic artery and having concealed hæmorrhage; and the suturing of the opening in the pericardium and diaphragm is as difficult as it is also necessary.

Hence the advantage of the horizontal incision behind the left costal margin which we here describe.

Description of the New Technique.

The abdominal incision is made four inches long in the median line, extending from above the umbilicus well up into the xipho-sternal notch. The left costal cartilages are well retracted, bringing the anterior diaphragmatic insertion well into view. There should be a pillow under the waist. A two-inch incision, beginning one inch to the left of the median line, carried outwards behind the costal margin, cuts the fibres of the diaphragm near their insertion. A blunt instrument pushed in opens the pleural cavity, and the opening is rapidly dilated with two or three fingers of the right hand, so that the whole hand can then be passed into the thoracic cavity anterior to the pericardium. The hand is passed upward, the thumb behind the sternum and the fingers embracing the entire organ in the pericardium. The thumb compresses the right auricle and ventricle, and the base of the heart is effectively massaged. No vessels are injured in this incision, as the superior epigastric artery is internal to the incision and passes into the rectus muscle, and the musculo-phrenic branch enters the diaphragm through the cellular tissue behind the eighth or ninth costal cartilages and passes backwards, deeper than the incision. The liver and stomach, even if prominent, offer no obstruction to this route, nor is the pericardium in risk of being opened. During the massage the parts can be pressed round the wrist of the operator so that air is not sucked in, and there is no tendency to collapse of the lung.

Closure.—The incision is easily closed and made air-tight. The costal margin is retracted and the cut diaphragm pressed up while a continuous catgut suture is inserted by means of a strong curved needle and holder. While this is being done the assistant can make rhythmic pressure during inspiration relaxed during expiration so that any contained air may be expelled and no more be allowed to enter. The abdominal wound is then closed in the usual way.

Abstract of a Case.

Pte. M. P., aged 37, was severely wounded on Oct. 26th, 1917, both knee-joints being involved. There were prolonged treatment and several operations. By March, 1918, both knees were healed, the left knee ankylosed, and he was allowed up. A week later some vague shifting abdominal pains began to appear, with tenderness and some rigidity, first on right flank then on left, and an irregular temperature. He also had a cough. Diarrhœa alternated with constipation. A week later he had retention of urine, and the orderly officer passed a catheter; there was some pyuria and diminished quantity of urine. No casts were found. He was thin and losing ground, with a blood pressure of 155 mm. and leucocyte count 12,000. In consultation it was decided to perform laparotomy to determine the presence of any abdominal abscess, and the condition of the kidneys, some metastatic sepsis being suspected.

Operation.—On March 30th, after a preliminary hypodermic of atropine 1/100 gr. and morphia 1/6th, chloroform was slowly and carefully administered by the open method by an experienced anæsthetist.

Time-table.—11.45: Began anæsthetic. 11.55: Almost under. Anæsthetist asked the surgeon to wait a minute as the patient was not yet fully relaxed. 11.58: Respiration ceased, pupils dilated, and colour changed to waxy. No pulse could be felt. Artificial respiration at once begun, with rhythmical traction of his tongue, and head of table lowered. 12.0: Strychnine and ether hypodermically. Auscultated, no heart sounds. 12.10: Artificial respiration pumps air well into chest, but nothing spontaneous. Eyes staring open, pupils dilated and insensitive. Captain Bost made a 4-inch epigastric incision, passed his gloved hand in, and pressed on the heart through the diaphragm. The heart felt quite flaccid and slipped upwards so that only the apex could be pressed, and there was no response. 12.15: Artificial respiration continued, and some rhythmical heart pressure first by Captain Bost, then by Major Neve. 12.20: The case appeared hopeless, but Captain Bost proposed to insert his hand into the thorax, and did so, incising the diaphragm as described above; he passed his hand up under the sternum, outside the pericardium to the base of the heart, which he could then completely grasp, and began slow pressure. 12.25: At first the organ was completely flaccid; after perhaps 12 seconds a sort of muscular twitch was felt, followed by a very feeble contraction, which in a few more seconds became strong and regular. 12.30: Pulse felt, colour returned, and massage stopped; injected pituitrin; artificial respiration continued. The diaphragm was sutured. A rapid exploration of the abdomen was made by Major A. Neve. There was some free clear fluid and no pus nor any inflammatory adhesions. The kidneys felt large. The wound was sutured and dressings applied. 12.45: Bandaging completed. Breathing slowly. Strong visible cardiac pulsation. 1.15: Back in ward. Blood pressure 145 mm. 1.30: Continuous proctoclysis was begun. He lay comatose.

March 31st: Still in same state, pupils medium size, sluggish. April 1st: Still same state; has had no convulsions. Has slight emphysema over left chest. Takes only 1 or 2 ounces of peptonised milk at the time, as he swallows badly. Pulse still strong and rapid. April 2nd: Emphysema had disappeared. He is more comatose. Died at 5.30 P.M., 77 hours after the operation.

Post mortem (April 3rd).—The laparotomy wound was well closed and quite clean; also the incision in the diaphragm, which was quite air-tight. There was no pneumothorax and the chest looked healthy except some septic metastatic foci at the base of both lungs. The pericardium and heart looked healthy. Both kidneys showed small calculi and pyelo-nephrosis. The left ureter was partly blocked by the pus and gravel at the bladder orifice.

REMARKS BY MAJOR NEVE.

The striking success of Captain Bost's procedure in this case as regards the resuscitation of the heart's action after 25 minutes' absolute cessation proves the value of efficient heart massage. Without that the man was already dead. It was clear to all the five surgeons who were present that we were dealing with a case of primary heart failure under chloroform narcosis, due to the toxæmia of the patient's disease.

We could carry on the respiration without his muscles, but not the circulation. Subdiaphragmatic massage was inefficient, because it did not stimulate the cardiac nerve ganglia at the base; but after incising the diaphragm and grasping the base of the heart, 10 or 12 gentle squeezes started regular contractions, and the strong apex beat became visible to all onlookers. We have discussed the technique elsewhere. The incision was one which Captain Bost had previously planned on a cadaver.

It is unfortunate that this method was not adopted a few minutes earlier, as the prolonged pause in the cerebral circulation was probably in part responsible for the onset of coma; but had the kidneys and lungs been healthy the patient might well have recovered.

Conclusions.

1. We consider that this case illustrates the unique value of heart massage, and that the human heart can be resuscitated after a variable length of time—in this instance after 25 minutes. Nothing else could have re-started the cardiac action in this case.

2. *Type of cases for massage.*—All cases of suspended heart action following an anæsthetic, regardless of theoretical etiological factors, after a certain interval. Cases of asphyxia should also fall within this group.

3. *Length of interval.*—This should probably vary with individual cases, but should rarely be done under five minutes (unless the abdomen be already open), and certainly after eight minutes, though a longer interval need not bar the operation. The simpler methods of resuscitation, such as artificial respiration, tongue traction, sharp percussion over the cardiac region, and inversion of the patient, should begin in the first minute, but not be uselessly persevered in to the neglect of more efficient measures.

4. Subdiaphragmatic massage may suffice, especially in children, and if very promptly undertaken. But if only the apex is reached and the heart remains unresponsive the diaphragm should be incised and the base of the heart be massaged without further delay.

5. That no surgeon, even if relatively unskilled, should be content to abandon a case without giving his patient the benefit of direct cardiac massage.

6. We claim that this new technique offers a simpler method of approach and is a decided improvement upon

all other ways of doing direct heart massage, as it involves less risk of hæmorrhage, trauma, and shock, and can subsequently be more quickly and satisfactorily closed.

We are indebted to Lieutenant-Colonel Bond for permission to publish this case.

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A MODIFICATION OF
WEBSTER'S TEST FOR THE PRESENCE OF T.N.T. IN URINE.

BY FRANK TUTIN.

(*From the Department of Biochemistry and Pharmacology, Medical Research Committee.*)

IT has been shown by Webster[1] that T.N.T., when taken by the mouth, or otherwise absorbed into the system, is excreted in an altered form in the urine, where its presence may readily be detected. The urine to be examined is first extracted with ether, then acidified with a mineral acid and again extracted with ether. In the latter extract the presence of the azoxy-compound formed by metabolisation from T.N.T. is readily shown by the development of a violet tint on the addition of alcoholic potash.

Possible Source of Error.

There is one possibility of confusion which, though it has probably been recognised by a number of workers, has apparently not hitherto been mentioned in published literature. Various purgatives (rhubarb, senna, cascara, &c.) contain substances (anthraquinone derivatives) which, when excreted in the urine, give under the conditions of Webster's test a red or reddish-violet colour, which might be mistaken for that produced by T.N.T. It is well known in medical practice that the urine of patients taking purgatives of this group will directly give a red colour with alkali, and this is rather loosely attributed to "chrysophanic acid." Chrysophanic acid is only one, and not the most important, of the substances concerned, and it seemed desirable to investigate the whole group from the point of view of their excretion and colour-producing properties, and to devise some modification of the T.N.T. test which would eliminate the possibility of confusion.

The results of this short investigation form the subject of this note. When I had completed it and had found that a slight modification of Webster's test made possible a clear distinction between the colour reaction due to T.N.T. and that due to any of the anthraquinone derivatives occurring in purgatives, I heard from Mr. Webster that he had himself come across the same possibility of error, that he had adopted the same modification of his test as that which I here suggest, and that he had found, like myself, that its introduction in any case sharpened and improved the T.N.T. reaction, whether anthraquinone derivatives were present or not.

My experiments were made firstly with the pure anthraquinone derivatives which occur in the different purgatives of this class, and secondly with doses of rhubarb root, since this drug contains all the known substituted anthraquinones present in the group.

The pure principles in question are rhein, aloe-emodin, emodin,[2] and chrysophanol ("chrysophanic acid"). They are all closely related chemically, the relation being briefly as follows: chrysophanol is a methyldihydroxyanthraquinone, aloe-emodin is the corresponding hydroxymethyldihydroxyanthraquinone, rhein the carboxylic acid yielded by the oxidation of aloe-emodin, and emodin is chrysophanol containing one additional, strongly phenolic hydroxyl group. These substances were each administered by the mouth in 0·1 g. doses, and in each case the urine subsequently collected, when examined by Webster's method, gave a strong colour reaction which might easily have been mistaken for that produced by T.N.T. On further investigating these four samples of urine it was found that the rhein had been rapidly excreted unchanged, whilst the other three anthraquinone derivatives had each undergone more or less oxidation, the aloe-emodin being entirely, and the chrysophanol partially, converted into the corresponding carboxylic acid (rhein), whilst a portion of the emodin appeared to be oxidised to the corresponding trihydroxyanthraquinone carboxylic acid, a substance which has not hitherto been known. In all cases, however, it was found that an ethereal liquid could be obtained which yielded no colour with alcoholic potash if the extracts obtained from the acidified urine were washed with dilute aqueous sodium carbonate before being treated with the stronger alkali. It was, moreover, found that the azoxy-compound formed from T.N.T., which is the substance which yields the characteristic "Webster reaction," is not removed from ether by treatment with dilute aqueous sodium carbonate.

Description of Modified Test.

These results, therefore, indicate a method by which anthraquinone derivatives may be eliminated from the ethereal extract to be tested by Webster's method, and it is recommended that the test should be conducted in the following modified manner:—

The urine should first be extracted with two successive portions of ether. This treatment removes any T.N.T. which may be present from accidental contamination, and also chrysophanol. The urine is then acidified with hydrochloric or sulphuric acid and again extracted with ether. During these extractions the addition of alcohol is usually necessary to cause the separation of emulsions. The ethereal extract of the acidified urine must then be extracted twice with dilute aqueous sodium carbonate, washed with water, and then treated with alcoholic potash, when the characteristic violet colour will be produced if derivatives of T.N.T. were present in the urine. If anthraquinone derivatives were present the sodium carbonate extracts will have a reddish-violet colour.

The method as originally described by Webster, and the modified procedure given above were then applied to samples of urine from three people who had previously taken respectively (*a*) 0·01 g. T.N.T., (*b*) 0·01 g. T.N.T. + 1 g. rhubarb root, and (*c*) 1 g. rhubarb root. When following Webster's procedure all three samples gave a positive reaction, but after treatment with sodium carbonate (*a*) and (*b*) gave reactions due to T.N.T. only, whilst (*c*) gave no reaction. Moreover, the colour yielded by (*a*) after treatment with sodium carbonate was a much purer violet and appeared more intense than before this treatment. This was due to the fact that sodium carbonate removes from the ethereal extract small amounts of substances which give a yellow or brownish colour with alkali, and therefore mask, to some extent, the characteristic colour of the "Webster reaction." The employment of the modified test here proposed would therefore appear to be desirable on all occasions when examining urine for T.N.T., even when the possibility of the presence of anthraquinone derivative is known to be precluded.

In conclusion, the author wishes to express his indebtedness to the Wellcome Chemical Research Laboratories, who supplied the specimens of pure anthraquinone derivatives which have been mentioned.

[1] THE LANCET, 1916, ii., p. 1029.

[2] Emodin monomethyl ether, another constituent of rhubarb, was not separately investigated, since this substance always behaves exactly similarly to chrysophanol, unless it suffers demethylation, when, of course, it yields emodin.

THE death is announced of Miss Agnes E. Weston, G.B.E., the "Sailor's Friend," at the Royal Sailor's Rest, Devonport, at the age of 78.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).—The University Entrance Scholarship in Anatomy and Physiology (value £50) has been awarded to Miss A. M. Freeman.

THE NATION'S TRIBUTE TO NURSES.—A meeting in support of the Hon. Sir Arthur Stanley's appeal to the nation for £100,000 as a tribute fund for nurses was held in Belfast on Oct. 17th. It was addressed, among others, by Mr. Henry McLoughlin, of Dublin, organising secretary of the movement in Ireland. The money raised in Ireland is to be invested in four Dublin trustees, and the interest is to be used on behalf of Irish nurses. It was decided to appeal for funds in Belfast, and office-bearers were appointed.

A NOTE ON

"ACUTE YELLOW ATROPHY" (?)

IN A MUNITION WORKER WITH A PSEUDO T.N.T. URINE REACTION DUE TO RHUBARB.

BY ERNEST GLYNN, F.R.C.P. LOND.,

CAPTAIN, R.A.M.C. (T.); PROFESSOR OF PATHOLOGY, UNIVERSITY OF LIVERPOOL.

(*Report to the Medical Research Committee.*)

THE patient was a female munition worker, aged 20, unmarried, and was employed in a T.N.T. factory from January, 1917, to June, 1918. Up to September, 1917, she worked in a "filling" room; here shells were filled with blocks of T.N.T., amatol coated with wax, and exploder bags containing T.N.T. Her duty was to handle the filled shells—she wore neither cap nor gloves. During this period her health was reported good—confirmed by her mother's statement. On Sept. 10th, 1917, for administrative reasons, she was transferred to a "cleaning" room, where she remained till death. She cleaned new or exploded brass cartridge cases for shells, which were covered with a small quantity of grease, by means of a weak watery solution of "nitre cake"; this is "the residue resulting from the manufacture of nitric acid and is an acid sulphate of soda containing 30 per cent. of its weight of sulphuric acid." She only handled the outside of the cases.[1]

Her health remained good until June 5th, when she vomited; on June 7th, as the vomiting persisted and slight jaundice appeared, she did not go to work; on June 12th she was unconscious, and next day was admitted to the Royal Infirmary under the care of Dr. J. C. Matthews, comatose, moderately jaundiced, temperature 101° F. Two ounces of urine removed with a catheter contained bile pigment and leucin, but no albumin; the biochemical laboratory reported that it gave the reaction of T.N.T. by Webster's test. The patient's temperature soon rose to 107°; there is no record of it before admission. She died 18 hours after admission—i.e., seven and a half days after stopping work and nine months after leaving the "filling" room.

Post-mortem.—The post-mortem was made 14 hours after death. Peritoneum: 4 oz., clear, slightly blood-stained, straw-coloured fluid. Very extensive petechial hæmorrhages becoming confluent over mesentery of small intestine and posterior surface of parietal peritoneum; a few hæmorrhages on visceral and parietal pericardium and posterior surface of visceral pleura. Liver: 41 oz., capsule not wrinkled, surface yellow ochre mottled with small capsular hæmorrhages; on section very soft and uniformly yellow; no fibrosis or compensatory hypertrophy. Gall-bladder: normal (the liver became much greener after preservation in formalin). Spleen: 6 oz., firm, normal. Stomach: post-mortem autolysis, a few hæmorrhages. Ileum: lower end intensely congested, a few hæmorrhages. Suprarenals: normal. Pancreas: normal. Kidneys: 5½ oz., rather pale. Ovaries: small hæmorrhages. Uterus: normal. Bone marrow of shaft of femur yellow and normal. Heart: soft and pale, 11 oz., no fatty degeneration. Lungs: posterior portion of both mottled, with numerous small hæmorrhages about half a centimetre in diameter, but tissue just floats; no pleurisy.

*Microscopical examination.**—Liver: There is very extensive focal necrosis affecting about a third of each liver lobule, central portion; many of the cells are reduced to fragments. Diffuse, uniform, fatty metamorphosis, about one-third of the whole liver staining red with Sudan III. In the non-necrotic areas the fat is deposited in the cell in fairly large droplets, but the nucleus is often lateral and stains normally; in the necrotic areas, however, where much fat is also present some of the surviving cells are uniformly loaded with it, apparently a deposit of small droplets, but the nucleus is central and shows marked chromatolysis. There is a slight but definite portal cirrhosis and a slight increase in "bile-ducts," with localised infiltrations of lymphocytes and a few plasma cells, but no leucocytes. A few collections of amorphous green bile-pigment present in the canaliculi and smaller bile-ducts; some of the liver cells contained brown granules; there is a moderate number of small dense clusters of fine brown acicular crystals, most probably hæmatoidin crystals; they are best seen in thick sections and on the borders of the necrotic areas. These crystals are not tyrosin because they do not resemble it in colour or shape, neither do they give the characteristic pink reaction with a mixture of mercuric acetate, sodium nitrite, and acetic acid. Professor Ramsden demonstrated that the tyrosin which has been acted on by formalin—the fixative used in this case—*does* give the characteristic tyrosin reaction.[2] Lungs—*Hæmorrhagic* areas: Alveoli and bronchioles filled chiefly with erythrocytes; also small localised collections of polymorphs; a few catarrhal cells and traces of fibrin; a considerable amount of hæmatoidin pigment in certain areas—some being in crystals similar to the crystals in the liver; smaller blood-vessels contain unorganising red thrombi. *Non-hæmorrhagic* areas: Often congested, sometimes alveoli contain erythrocytes or occasionally leucocytes and a little blood pigment. There are a few dense clusters of Gram-positive diplococci, most probably pneumococci, and occasionally Gram-negative bacilli, probably colon group; these bacteria are most numerous in the hæmorrhagic areas.

The macroscopic and microscopic appearances strongly suggest that the hæmorrhages are due to the leaking of the capillaries, their distribution being determined by gravity, and they occurred at different dates, while the pneumococci invaded the damaged tissues *after* the hæmorrhage. Similar hæmorrhages have been described in spirochætosis (Stokes and toxic jaundice (Stewart).

Comments.

The patient's occupation, her short acute illness, and the appearances of the liver exclude *death* from chronic T.N.T. poisoning. Nevertheless, it is highly probable that T.N.T. absorbed before September, 1917, caused the slight cirrhosis—there is no history of alcohol or syphilis. On the other hand, death might possibly be due to acute T.N.T. poisoning or to latent T.N.T. poisoning, perhaps assisted by an infection or other poison. Professor Stuart McDonald reports a small epidemic of five cases of acute yellow atrophy in syphilitics, treated with "606" *plus* mercury, and suggests that some bacterial infection might have precipitated the liver disease. Finally, death might be entirely due to poisoning with arsenic, phosphorus, &c., to spirochætosis ictero-hæmorrhagica, sometimes called Weil's disease, or, lastly, to "acute yellow atrophy."

Poisoning with arsenic, phosphorus, &c.—Though none of the workers in the "cleaning" room had ever suffered from toxic symptoms, it was thought advisable to eliminate the possibility of death from arseniuretted hydrogen. Phosphorus might conceivably have been taken with suicidal intent. The appearances of the liver were quite distinct from that of a case of phosphorus poisoning I once saw in a girl who took a large quantity of rat poison and died in three days. Here the liver weighed 64 oz., was uniformly affected; the nucleus was in the centre of the liver cells and showed marked chromatolysis. Mr. Roberts, Liverpool city analyst, reported that "the liver was free from phosphorus, arsenic, and poisonous metals."

Acute T.N.T. poisoning.—This seems to be out of the question.

Latent T.N.T. poisoning.—Dr. W. J. O'Donovan describes a fatal case where toxic symptoms suddenly developed two months after leaving a T.N.T. factory. J. A. P. Barnes alludes to a woman who had been filling bags with T.N.T. and "left for a country holiday in apparently excellent health." Three days later she developed toxic symptoms and only recovered in three months.

A third remarkable case, described as latent T.N.T. poisoning, is that of a woman who "after two months' work in processes in the manufacture of T.N.T. was transferred to another department where she was employed in filling drums with benzol and toluol. Over seven months later she met with an accident—a spanner falling on her head. Toxic jaundice developed one week later and proved fatal in a fortnight." *The liver weighed 23 oz. and showed some "gamboge patches." The patient had been away from the T.N.T. room through illness on three occasions from 1 to 3 weeks. Once the doctor certified she was suffering from "laryngitis from nitrous fumes"; he also said, "as she could not stand the work" she was "removed to the benzol department where she worked for 7 months." During this time she kept "her clothes in the same cloakroom as the T.N.T. workers" but "apart from them."*[3] If death was due to T.N.T. poisoning it is not conclusively proved that it was "*latent.*" Dr. Legge informs me that benzene is

[1] Through the courtesy of Mr. Foggo I visited the factory in company with Dr. Mary Deacon, medical officer to an adjoining munition factory.

* Micro-photographs will appear in a later issue.

[2] The writer has examined, macroscopically and microscopically, the liver in two cases of acute yellow atrophy before the war—for one see Bradshaw, Brit. Med. Jour., 1901, vol. ii., p. 1587. One case of acute phosphorus poisoning and two of toxic jaundice due to T.N.T.

[3] The information between the two asterisks was obtained from the inquest report kindly provided by the factory inspector.

certainly toxic, both in acute and chronic form. In the acute, it produces rapid unconsciousness; in the chronic, aplastic anæmia precisely like that of T.N.T., with terminal symptoms of purpura hæmorrhagica. No cases, however, of "*jaundice or atrophy of the liver*" have been recorded either in Great Britain, the United States, Austria, or Sweden.

My case differs greatly from this, notably in the absence of symptoms when exposed to T.N.T., the longer "latent"? period—viz., 9 months—the short terminal illness, and the different liver changes. Latent poisoning is almost excluded.

Bacterial infection most probably did not precipitate the illness, for no bacteria were demonstrated in the liver and the spleen was small and firm. The pneumococci almost certainly invaded the lungs after the hæmorrhages had occurred, though they may have caused the terminal pyrexia.

Spirochætosis.—Immediately after the post-mortem many films from the liver and spleen—but, unfortunately, not the kidney—were examined by the dark ground for spirochætes, but the results were negative. A stale specimen of urine obtained post mortem was not injected into guinea-pigs owing to the difficulty of obtaining them.

In the fatal cases of this disease recently described in our Army, the liver has sometimes been slightly enlarged, though in the majority there was "an absence of any definite anatomical changes." In two cases, however, described by Sir Bertrand Dawson and W. E. Hume the liver cells were "dissociated" and "many markedly enlarged," but there was *no necrosis*, only a *little* fat, and the cellular infiltration of the portal areas contained *leucocytes* as well as lymphocytes. Thus, apart from the fact that the liver in our case was diminished in size, the pathological changes are markedly different. Careful inquiries, moreover, showed that the patient had seen no soldiers from abroad for a long period.

"*Acute yellow atrophy*."—The available evidence renders it probable that the patient died of "acute yellow atrophy"—whatever that is. The comparatively slight diminution in the size of the liver, the absence of red atrophy or of regeneration, and perhaps the excessive amount of fat, may be explained by the short duration of the illness.

Urine reaction.—If death was not due to T.N.T. poisoning the presence of the T.N.T. urine reaction requires explanation, especially as such reaction is apparently always absent in T.N.T. workers when toxic jaundice supervenes. The specimen was therefore sent to Professor Benjamin Moore, who reported that there was no T.N.T.; the misleading pink was due to some drug, e.g., phenolphthalein. On inquiry I found the patient had never taken phenolphthalein either before or after admission to hospital, but rhubarb and soda had been given before. My assistant, Dr. A. L. Robinson, indicated that rhubarb should give the test.

Dr. Matthews kindly administered a little rhubarb and soda for two or three days to four hospital patients. Their urine when tested by Webster's method gave a pink reaction, or pink-purple if strong—three of the urines were tested before administering rhubarb, with negative results; this colour appears to be due to chrysophanic acid or its derivatives.

The T.N.T. reaction is described as "purple" in the official communication,[4] and as "pink" in the Medical Research Committee Report, No. XI.—the Causation and Prevention of Tri-nitro-toluene (T.N.T.) Poisoning, p. 17.

Summary.

A young female munition worker, previous health always good, died suddenly of acute toxic jaundice (?) nine months after leaving the T.N.T. filling room. The liver, however, was much larger, more fatty, and more necrotic than in T.N.T. poisoning, and regeneration was absent. Poisoning with phosphorus or arsenic was excluded; latent T.N.T. poisoning with or without bacterial infection was almost excluded; spirochætosis ictero-hæmorrhagica is probably excluded. Death is therefore probably due to "acute yellow atrophy"—whatever that is. The pseudo T.N.T. reaction in the patient's urine was evidently due to rhubarb.

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[4] Brit. Med. Journ., Dec. 16th, 1916.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF INTRAPELVIC OSTEOMA NECESSITATING CÆSAREAN SECTION.

BY VIOLET I. RUSSELL, M.B., B.S. LOND.,
RESIDENT MEDICAL OFFICER, QUEEN CHARLOTTE'S LYING-IN HOSPITAL.

AN osteoma arising from the pelvis is a sufficiently rare complication of labour to be worthy of record. The chief interest of the following case consists in its illustration of the importance of a routine examination of the pelvis during pregnancy in a primigravida; the tumour was causing no symptoms and might easily have remained undiagnosed until labour was advanced, when the prognosis for mother and child would have been much less favourable.

The patient, aged 19, was first seen when 28 weeks pregnant by Dr. Frances Huxley in the antenatal department of Queen Charlotte's Hospital. External pelvic measurements were approximately normal—interspinous 9 in., intercristal 10 in., and external conjugate 7¾ in. The fœtus was presenting by the vertex, the head being movable above the pelvic brim. On vaginal examination a bony tumour was felt occupying the left side of the pelvis; it was causing no symptoms. Mr. Clifford White examined the patient under anæsthesia when the osteoma was found to arise by a stout pedicle from the inner surface of ischium at the level of the acetabulum. It measured about 1½ × 2 in. in diameter, was uniformly hard, irregular in outline, and obviously proved an insuperable obstacle to delivery by the natural passages.

Cæsarean section was performed at term by Mr. Clifford White and a female child weighing 6 lb. 10 oz. was delivered. The internal relations of the growth were then defined. It was felt projecting between the layers of the broad ligament on the left side and was crossed by the left ureter; the origin of the tumour was in close relation with the bifurcation of the left common iliac artery, the external iliac vessels passing in front of growth and the internal iliac artery lying behind it.

Convalescence from operation was uneventful, and mother and child were discharged in good condition. The tumour has shown no increase in size since patient has been under observation and has never caused any symptoms.

I have to thank Mr. Clifford White for his kind permission to publish the case.

PNEUMOCOCCUS ARTHRITIS; VACCINE TREATMENT; RECOVERY.

BY C. E. CAMPBELL-HORSFALL, M.B., CH.B. VICT.

THE following case is of interest: first, because its commencement was very unusual—there had been no previous illness, nor was any focus of infection found; secondly, the method of treatment led to prompt recovery.

The patient, a middle-aged woman, was seized with pain in right knee; there was no history of injury or previous illness, and the condition was treated as a simple synovitis. The condition, however, did not subside, and a further diagnosis of rheumatoid arthritis was made and treatment carried out. No improvement took place, and gradually other joints were implicated. After several months' futile treatment she came under my care. At this time patient was utterly helpless and unable to move; even the upper extremities could only be moved with great pain. She was in a state of profound sepsis with typical septic temperature, skin a pale earthy colour, and marked anæmia of mucous membranes. Practically all joints were involved, the most marked changes being in knees, ankles, wrists, and shoulder-joints. The phalangeal joints were swollen, painful, and spindled-shaped. No reddening of any joints. Knee-joints distended with fluid; appetite poor.

I advised aspiration of knee-joint for diagnostic purposes. This was done and a bacteriological examination made of the fluid, this latter being a thick turbid material, greyish-yellow in appearance. On culture this showed a mixed infection of pneumococci and streptococci. A vaccine was made and treatment begun. She was kept in bed, given the maximum of fresh air, her bed being moved out on to a balcony when the weather was suitable. Her improvement as soon as vaccine was started was remarkable. Temperature steadily decreased, appetite returned, skin and blood condition improved, and pain abated. As soon as temperature became normal gentle message of limbs was commenced but joints were left severely alone at first. Later the latter were rubbed and moved. Progress was uninterrupted, and from an apparently dying woman she was restored to her former health, and at the present time it is impossible to realise that she had ever been so ill. She has free movement in all her limbs and can close her hands with ease.

The majority of pneumococcus arthritis cases are surgical and often one or two joints are affected. Surgical treatment in this case with a multiplicity of joints affected, even if successful, would have been very tedious, and much disuse of joints would have ensued. The termination of this case with its perfect recovery emphasises the necessity of having the joint fluid examined in every case of multiple arthritis when practicable. I can find no record of any case treated with a vaccine with such a pleasing result.

My thanks are due to Professor Walker Hall, of Bristol, who examined the fluid for me and prepared the vaccine.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

AT a general meeting of the Fellows of the Royal Society of Medicine on Tuesday, Oct. 15th, Sir RICKMAN GODLEE, the retiring President, introduced the new President, Surgeon Rear-Admiral Sir HUMPHRY ROLLESTON, and invested him with the President's badge (the gift of the late Sir Edward Sieveking, M.D., former President of the Society), and with the President's gold master-key (the gift of Mr. J. Y. W. MacAlister, the secretary). Sir Humphry Rolleston then took the chair and briefly thanked the Fellows for the honour of his election, and asked for the sympathy and support of all of them in the discharge of his duties during what might prove to be a very trying period. The ordinary business of the meeting was then proceeded with and a number of new Fellows upon ballot were elected.

On this occasion there was a pleasing innovation before the meeting, which, it is hoped, will become the custom. Tea was served in the President's private room, and Sir Humphry Rolleston received the Fellows who had come to attend the meeting; in this way becoming personally acquainted with those whom he had not previously met, and renewing many old acquaintances.

COMBINED SECTIONS OF MEDICINE, PATHOLOGY, AND EPIDEMIOLOGY.

Encephalitis Lethargica.

THE occurrence in the earlier part of this year of numerous cases characterised by lethargy, asthenia, and paralysis, usually of the cranial nerves, aroused widespread interest at the time, and has led to a large amount of research. At a joint meeting of the Medical, Pathological, and Epidemiological Sections of the Royal Society of Medicine held on Oct. 22nd the results of these investigations were discussed at length. A brief summary of this discussion follows, the detailed report being reserved for a later issue.

The *stages in the development of our knowledge* of the disease may be stated thus: After a short period, during which the striking lethargy led to the somewhat sensational diagnosis of "botulism" the failure to find the *Bacillus botulinus*, together with the discovery of areas of perivascular infiltration in the central nervous system, caused many to assume that the disease was acute poliomyelitis of the cerebral type occurring in epidemic form. This assumption was all the more natural because the observers of epidemics of the latter disease had laid special stress on the protean character of the symptomatology, Wickman describing no less than seven types. At an early stage, however, clinical observers began to note that the disease possessed a characteristic symptomatology which differed from that of acute poliomyelitis. The extensive investigations which have since been carried out appear from the discussion to have led to the almost unanimous adoption of the view that the disease is not acute poliomyelitis but is sui generis, with a symptomatology of its own, varying according to the precise areas of the central nervous system affected in individual cases, with a characteristic pathological picture and definite epidemiological peculiarities.

The *onset* is frequently sudden, but more often there is a prodromal stage lasting a few days, with lassitude, headache, and sometimes vomiting of the cerebral type. The patient then passes into a lethargic condition, from which, however, he can be roused and in which he remains conscious of what is passing around him. Nocturnal wakefulness with or without delirium is not uncommon. There is general asthenia, with definite local paralysis, particularly of the ocular muscles, the muscles of the face, and, less frequently, of the pharynx, giving rise to strabismus, nystagmoid movement of the eyes, dysarthria of speech, dysphagia, and a mask-like expression. The onset of the local palsies is described as "wandering," first this, then that, group of muscles being affected. The headache, vomiting, delirium, dysarthria of speech, occasional katatonia, and incontinence have caused individual cases to be initially diagnosed as "functional," G.P.I., or tuberculous meningitis. The course of the disease is variable; in some instances death takes place within a few days of onset through paralysis of respiration, but in most recovery has ensued after an illness lasting several months.

The typical *pathological lesions* are hæmorrhagic foci with lymphocytic infiltration of the small vessels. They are found mainly in the midbrain and pons, but may occur anywhere in the cerebrum, cerebellum, or spinal cord. Colonel F. W. Mott (who also communicated the results of investigations carried out by Professor Marinesco) describes these lesions as differing markedly from those found in acute poliomyelitis, particularly in the rarity of neuronophagia and in the hæmorrhagic nature of the lesions. He found no organisms. The cerebro-spinal fluid shows lymphocytosis in some cases, in others none; the discrepancy may be explained by the fluids having been examined at different stages in the disease. Blood is found frequently; its presence may be considered characteristic of acute cases of the meningeal type.

The *epidemiology* of the disease presents features which distinguish it clearly from acute poliomyelitis. As a result of the findings of the Local Government Board inquiry held by Sir Arthur Newsholme, Lieutenant-Colonel S. P. James reported that the disease occurs at all ages and shows no preference for the young; its seasonal incidence shows a maximum in the spring, whereas acute poliomyelitis is at its height in August and September; the distribution of cases in England and Wales shows no correlation between the two diseases. The report of the Local Government Board will be issued shortly. It is to be hoped that the compulsory notification of Encephalitis lethargica will be as successful in adding to our knowledge as it has been in other instances. So far research has chiefly resulted in clearing the ground, and practically everything constructive remains to be done, particularly in regard to treatment.

SOCIÉTÉ DE BIOLOGIE, PARIS.

THE following is a summary of the papers read at a meeting of this society held on Oct. 12th:—

DUJARRIC DE LA RIVIERE: Bacteriological Diagnosis of Influenza.

Prélever 10 cm.c. d'urine aseptiquement, ensemencer en milieu eau peptonée (sang de poule). Alors que les autres procédés échouent, la présente technique décèle le B. de Pfeiffer dans presque tous les cas.

R. J. WEISSENBACH: A New Medium for Differentiating the Enterococcus from Certain Streptococci.

Les streptocoques non hémolytiques se comportent comme les streptocoques hémolytiques quand ils sont ensemencés en eau peptonée glucosée, additionnée de bile. Alors que l'entérocoque, après 18 à 24 heures d'étuve à 37° cultive abondamment dans ce milieu, les streptocoques pyogènes hémolytiques et non hémolytiques ne donnent naissance à aucune culture en 18, 24 heures et au-delà. A défaut du pouvoir hémolytique, qui constitue dans la pratique un des meilleurs caractères différentiels entre l'entérocoque et la variété hémolytique du streptocoque, la plus fréquemment en cause en pathologie humaine, le résultat de l'ensemencement en eau peptonée glucosée à la bile constitue pour le streptocoque hémolytique, un excellent élément de différenciation.

GERARD: Thermal Instability of Syphilitic Antibodies.

En évaluant les limites maxima de déviation du complément produites par un même sérum chauffé à 56° et non chauffé, on s'aperçoit de la constance thermolabilité des anticorps syphilitiques. Le pouvoir de déviation pout être abaissé des trois quarts. Conclusion: Associez toujours dans les Wassermann les deux méthodes au sérum chauffé et non chauffé. Réduisez, dans la méthode complète, le temps de chauffage à 56° pour destruction du complément à un quart d'heure au lieu du temps classique de une demie-heure.

LATAPIE: Experimental Influenza.

Les bacilles de l'influenza restent vivants pendant 4 mois dans les abcès provoqués expérimentalement chez les cobayes et 22 mois en sac de collodion chez les mêmes animaux. Chez une chèvre soumise à l'immunisation pendant onze mois, le sérum se montre même curatif: des cobayes inoculés avec une dose plusieurs fois mortelle de microbes dans le péritoine et devant mourir en moins de 24 heures pouvaient être préservés par du sérum injecté dans les veines trois heures avant la mort. L'auteur met en garde contre la toxicité du sérum récolté peu de temps après l'injection des microbes; passé le délai de trois semaines depuis la dernière injection, cette toxicité n'existe plus.

M. NICOLLE: Restitution of Agglutinability.

Quand les pneumocoques et les gonocoques ont perdu leur agglutinabilité, on peut la leur restituer en les traitant par l'acide chlorhydrique en les chauffant, enfin en les neutralisant par la soude.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, QUEEN-SQUARE, LONDON.—Founder's Day will be celebrated on Monday, Nov. 4th, when the wards will be open to inspection from 3 to 6 P.M.

Reviews and Notices of Books.

The Evolution of National Systems of Vocational Re-education for Disabled Soldiers and Sailors. By DOUGLAS C. MCMURTRIE. Washington, U.S.A.: Federal Board for Vocation Education. 1918. Bulletin No. 15 (Re-education Series No. 3). Pp. 265.

As the title denotes, this report traces the evolution of the systems of vocational re-education for disabled soldiers and sailors in the countries where such systems exist. The material for the sections relating to France and Belgium has been prepared by Miss G. G. Whiteside, to Great Britain by Dr. J. C. Faries, to Italy and Germany by Miss R. Underhill, and to Austria by Mr. A. Gourvitch. In the introduction Mr. McMurtrie emphasises the part played in the evolution of these systems by the Belgian trade schools for crippled victims of industrial accidents. The obvious corollary, the extension of the facilities for disabled soldiers to industrial cripples, has recently been suggested in the British lay press. As Mr. McMurtrie points out, the dictates of national gratitude and national economy coincide as to the need for systems of re-education. As the result of a review of the various systems he has drawn various conclusions. He holds it to be axiomatic that a man should be given his course of training in a locality near his home. He is not in favour of compulsory re-education; the unwilling pupil learns but little. "If a competent visitor has been in touch with the man's family during his absence at the front the members of the home circle can be easily convinced of the wisdom of his re-education; this will make all the simpler persuasion of the man himself." The choice of a particular trade must meet with the full approval of the soldier himself; Mr. McMurtrie would allow the man, within reasonable limitations, to change to another trade if the subject prove definitely distasteful. To persuade him to undertake training the disabled man should be informed of the progress of men with similar physical handicaps, but this information must be accurate and not relate to freak successes. "It would seem inadvisable to train a man for an occupation which he can pursue only by means of specialised apparatus adapted to individual motor limitations imposed by his deformity. While a badly crippled man may be taught to operate a lathe with special treadles his opportunities for employment will be precarious." Many of those interested in the problem will not agree with Mr. McMurtrie in this conclusion, especially if State workshops be provided for men with severely crippled arms. The American Red Cross Society, however, appear to be more optimistic than we are as to the possibility of industrial firms providing work for this class of man. An interesting commentary is that the training provided must be thorough; there would be an unjustified disturbance of the labour market and its wage-standards if a school thrusts into a trade, as professedly skilled operatives, a crowd of under-trained men. As regards employment disabled soldiers must be considered as a special class. The transition from military to civilian life which takes place on a man taking up his first job is a more radical step than the change made when the civilian employee goes from one position to another. For this reason Mr. McMurtrie advocates the appointment of specially trained employment officers for placing and following up disabled men.

The section on the work in Great Britain contains some racy comments on our ways of doing things, but pays a tribute to the system which has ultimately been evolved. Although the writers of the report do not make the comment, we have something to learn from Germany in our treatment of one-armed men. In no less than 14 trade schools, scattered over the various German states, special courses are held for one-armed men. After preliminary instruction of about six weeks in the ordinary acts of every-day life, and a course of left-handed writing, if necessary, the men take up trade training. Again, in the larger matter of simultaneous medical treatment and re-education we are behind other countries. In Germany re-education is undertaken by civilian care committees working in military hospitals. The section on France tells us that the schools which admit soldiers only when completely cured have considerable difficulty in obtaining pupils, while the schools at Montpellier and Bordeaux have found their usefulness increased since they have been linked up with hospitals. Coöperation between hospital and school has from the beginning been carried out successfully at Saint Maurice, the Grand Palais, and Maison Blanche. Dr. Kresser, head of the school at Maison Blanche, writes: "The best recruiting agency for the schools is the example of the man who works at a trade during the day and who, on his return to his pavilion in the evening, tells his companions what he has been doing and what he has earned." The excellent results obtained at the South African Military Hospital, Richmond Park, show the value of coincident medical treatment and vocational re-education. The percentage of disabled men who undertake training is extremely high—over 90. If the commanding officer of the hospital considers a man will not become fit for further military service no time is lost in commencing his re-education. The training does not stop when the man is discharged from hospital; he is accommodated at a hostel and continues his course; during this time the men continue to wear their uniform and remain under military discipline.

An appendix contains a comprehensive bibliography of the subject. As a review of the systems of re-education the report is unique; it cannot fail to be of the greatest value to the workers in the United States of America for whom it was written.

Clinical Diagnosis: A Manual of Laboratory Methods. By JAMES CAMPBELL TODD, Ph.B., M.D., Professor of Clinical Pathology, University of Colorado. Illustrated. Fourth edition, revised and reset. London and Philadelphia: W. B. Saunders Co. 1918. Pp. 687. 14*s*.

THIS work is a practical manual which treats of the more important methods employed in the investigation of those problems of diagnosis which are now customarily submitted to the clinical laboratory. In reviewing earlier editions of the book[1] a favourable opinion was expressed as to its merits, and practical use of this work in the reviewer's laboratory has confirmed this opinion. The methods selected are usually good and the directions clear and precise, while the deductions drawn from the results of the investigations are judicious.

A considerable number of additions and alterations have been made in the present edition which have improved it and brought it up to date without undue increase in size or price. On the other hand, some methods have been omitted and these include Abderhalden's protective ferment reaction to which exception was taken in the review of the 1914 edition. Important additions are to be found in the section on blood examination. These include the methods for recognising blood by spectroscopic and chemical means, for the vital staining of blood cells and for testing the resistance of red cells. The methods used in the selection of blood for the purposes of transfusion and for matching bloods are now given, together with a short account of the theoretical basis for these methods. The plan devised by Bass and Johns for facilitating the search for malarial parasites in the blood by concentration is described and recommended. An illustration shows the satisfactory results obtained. In the examination of cerebro-spinal fluid two new tests are proposed—Lange's colloidal gold test and the "mastic test"—for the purpose of distinguishing pathological changes in the central nervous system, especially those caused by syphilis. Changes and simplifications in the technique for carrying out the phenol-sulphone-phthalein test of the functional activity of the kidneys are described, and further details are given as to the clinical interpretation and value of the test. There are many other additions, including Schick's test for immunity to diphtheria, Craig's method for the complement deviation test for tubercle, the estimation of urobilin in fæces, which is useful in the diagnosis of pernicious anæmia, and of amylase in fæces, useful in suspected pancreatic disease.

The illustrations have always been an important feature of this book, and in the present edition there has been a marked improvement effected by substitution for the less satisfactory plates and figures of better ones and considerable additions of new figures, among which may be mentioned a representation of Curschmann's spirals, as seen in the usual naked-eye examination of asthmatic sputum, and one of *Entamœba gingivalis*. The production of the book leaves little to be desired.

[1] THE LANCET, April 10th, 1915.

THE LANCET.

LONDON: SATURDAY, OCTOBER 26, 1918.

Our Present Knowledge of Epidemic Catarrh.

EPIDEMIC catarrh has once again become pandemic in character. Reports are being daily received of its prevalence all over the world, some of them of a highly alarmist nature. The issue of an authoritative Memorandum on epidemic catarrh, including influenza, by the medical officer of the Local Government Board is therefore peculiarly opportune, especially as the document has been sent to all the local authorities in the country, with a suggestion to the health officer to prepare precautionary instructions for use in his district. After discussing certain statistical facts in relation to the deaths from respiratory diseases in general, and alluding to the micro-organisms generally associated with a "common cold," Sir ARTHUR NEWSHOLME reminds us that influenza has been identified historically for several centuries past, appearing and causing great havoc in many countries at intervals which have been so prolonged as to create the impression on its reappearance that a new disease had emerged. Dr. F. G. CROOKSHANK has, in fact, given the title of "The Story of a New Disease" to the Chadwick Lectures which he is delivering, and Sir RICHARD DOUGLAS POWELL, presiding at one of these lectures, emphasised the remarkable coincidence between epidemics of influenza and outbreaks of poliomyelitis, a coincidence which should lead to a more careful scrutiny of influenza as a syndrome of many diseases yet to be accurately defined and demarcated. Dr. W. COLLIER, of Oxford, calls attention in our correspondence columns to certain unfamiliar features in the cases under his observation. A study of Dr. FRANKLIN PARSONS'S classical reports to the Local Government Board on the pandemic of 1889–92 shows the impression then prevailing of a novel disease, although 43 years earlier (1847–48) and in 1803, 1833, and 1837–38 epidemics of influenza occurred in this country. Dr. W. H. HAMER has adduced evidence of the same experience in even earlier literature.

The difficulty of defining influenza is, of course, great, its most characteristic feature being its occurrence at long intervals as an epidemic which spreads rapidly from country to country and from continent to continent, and which affects a much higher proportion of the total population than any other known infectious disease. The Memorandum of the Local Government Board takes the view that the question whether Pfeiffer's bacillus is the specific cause of influenza is still an open one. Unfortunately, no specific agglutination tests are yet available in connexion with this micro-organism. That it causes much of the mischief produced by the disease is proved by its frequent presence in large numbers in immediate relation to minute lesions occurring in the lung. It should be noted, however, that the Pfeiffer bacillus is occasionally discovered in bronchial secretions when there is no suspicion of influenza; but, on the other hand, the bacillus has not been found, or has only been discovered in a very small minority of the total cases, in a considerable number of outbreaks indistinguishable clinically from influenza. The Memorandum itself does not state whether this is the case in the present epidemic, but information from several sources suggests that Pfeiffer's bacillus has not often been identified. Failure to isolate the bacillus may be due in certain instances to want of a suitable culture medium, as was pointed out recently in our columns by Dr. JOHN MATTHEWS. In outbreaks in which this bacillus is absent the *M. catarrhalis*, the pneumococcus, or a hæmolytic streptococcus has generally been the predominant micro-organisms. It is difficult, therefore, to establish an accurate bacteriological test for influenza, and on account of its multiform clinical symptoms a definite diagnosis is not always easy. This fact stands greatly in the way of any specific treatment of the pandemic malady, although much attention has been given to this aspect of the problem. On another page of this issue of THE LANCET an account is given of a Conference held at the War Office to discuss the utilisation of vaccine for the prevention and treatment of influenza, and a précis of the conclusions arrived at by the bacteriological experts who attended this Conference is embodied in an appendix to the Local Government Board's Memorandum. At this Conference it was unanimously agreed that inoculations with a suitable vaccine might be expected to be of value, although there is at present no vaccine on which dependence can be placed to give immunity against influenza.

General precautions, fortunately, are on a sounder footing, and the Memorandum of the Local Government Board rightly points out that control over the disease is only practicable by the active coöperation of each member of the community. The measures suggested are largely such as a sensitive hygienic conscience would direct. Most persons attacked by influenza do not recognise for several days the serious nature of their illness, and it is probable that infection is chiefly spread during the earlier stages. This, and the fact that one attack does not appear to confer any great degree of immunity against further attacks, render the application of preventive measures far from easy. In view of the difficulty in securing early and decisive diagnosis, especially in connexion with the milder cases for which medical guidance is not obtained, notification cannot be recommended as likely to be of practical use. The isolation of all persons suffering from fever, with or without catarrh, is recommended in the Memorandum; but, however desirable such a course might be, it would be difficult to accomplish on a large scale. As infection is probably conveyed in part by the fine spray of mucus ejected in the act of coughing or sneezing, it is advised that a handkerchief should be held before the mouth at such times in order to intercept the droplets of mucus, and that the handkerchief should afterwards be boiled. Disinfection of premises after

influenza is not recommended, but a thorough washing and cleansing of rooms and their contents and washing of articles of bedding or apparel are desirable. The familiar advice is given that the patient should go to bed on the first onset of the symptoms and remain there till all fever has gone. The only safe rule is to regard all catarrhal attacks and every illness associated with rise of temperature as infectious, and to adopt at once precautionary measures. The wet cleansing of all infected places is important. Indiscriminate spitting is dangerous, and prolonged mental strain or over-fatigue, and still more alcoholism, are all conditions which predispose to attack. As a prophylactic measure gargling the throat with a solution of 1 in 5000 permanganate of potassium in water containing 0·8 per cent. of common salt night and morning is useful. It is pointed out that sanitary authorities have power, with the Local Government Board's sanction, to provide nursing assistance for those who are unable to obtain it for themselves. The possible public provision of a prophylactic spraying apparatus, such as is used in the Army, is considered. The view is expressed, however, that the "spray room" cannot yet be regarded as reducing for certain the incidence of attacks in exposed persons, and unless precautions are taken to separate patients from healthy persons it may even be the means of disseminating infection. The final, and probably the most important advice of all is that bedrooms and living rooms should be constantly flushed with fresh air, and that overcrowded rooms and places of amusement should be avoided. The aggregation of large numbers of persons in one room, especially for sleeping, is dangerous when catarrhs are prevalent, even though the floor space for each person may appear to be adequate.

Sir ARTHUR NEWSHOLME'S Memorandum presents us with an admirable summary of the outstanding features of influenza epidemics, so far as they have been ascertained, and of the prophylactic measures to be employed in connexion with that disease. It helps us also to realise how little is yet known about the epidemic catarrhal conditions which are the cause of so much illness and death, and emphasises the urgent need for further investigation.

Juries on Trial.

BY the Juries Act, 1918, which came into force on July 30th the right to a jury is limited in civil cases during the war and for six months afterwards. Under this Act every "action, counterclaim, issue, cause or matter in the High Court of England requiring to be tried" is to be tried by a judge sitting alone. This does not affect any power to order a trial by two or more judges, or a judge with an assessor, or any such special tribunal as heretofore. It is also subject to the proviso that in cases in which fraud is alleged, or where the claim is in respect of libel, slander, malicious prosecution, false imprisonment, seduction, or breach of promise of marriage, either party is entitled to have a jury upon applying for one in the prescribed manner. Also in other cases than the above a judge may order the trial to be with a jury on the application of a party, if the case appears to him to be more fit for trial with than without one, and a jury is to be granted, if applied for, in certain contested matrimonial causes and in certain causes in the Probate Court. Trial without a jury is ordered upon practically similar terms in county courts and other courts of inferior jurisdiction. This may seem a more sweeping change than it really is. The general public, familiar with the phrase that the jury is the palladium of liberty, and interested mainly, as far as civil cases are concerned, in those of the more sensational kind, does not realise how much the jury has been dispensed with. In the Courts of Chancery and Admiralty there is never a jury, and in a great number of important commercial causes, as well as in the majority of divorce cases and of trials in the county court, there is none either; and though criminal cases are not affected by the new Act, very many more criminal charges are disposed of without a jury than with one. The tendency to diminish the number of trials by jury is not a new one. In the Common Law courts, since the Judicature Acts were passed towards the end of the last century, many cases, besides the commercial causes already referred to, are now heard by judges alone for which juries would formerly have been necessary, and no one has complained. It would seem, therefore, as if the jury, once a bulwark of the people against the aggression of the Crown or the executive or any other oppressor, was coming to be regarded as a cumbrous survival.

Few will deny that without a jury many trials would be shorter; while men unwilling to serve, unwilling to give full attention to, or, perhaps, unable to understand the evidence may be present on a jury and prevent justice being done. Judges are human it is true, and liable to human sympathies and prejudices, but so in a greater degree are juries; and although sympathy may be an excellent thing in individuals it can lead to absolute injustice in 12 men assembled to try, not whether a plaintiff has suffered and the defendant *can afford to pay* compensation for that suffering, but whether the defendant is legally responsible for that suffering, so that in justice he *ought to pay* for it. Juries also fail sometimes to arrive at unanimous verdicts, or members of them have to be cajoled by their fellows into agreement which is contrary to their honest judgment. Either happening is undesirable, and the former leads to delay and increased expense for the parties to the trial. It may be observed also that it is after long trials contested at great expense that disagreement on the part of the jury most frequently occurs. The action against the British Medical Association recently tried by Mr. Justice MCCARDIE may be referred to as a case in point. This was one of those long-drawn-out and hard-fought trials, in which sympathisers with the British Medical Association in its effort to maintain its ethical standards might have found themselves on a jury pitted against others with preconceived views antagonistic

to doctors, and hence determined from the first to regard the plaintiffs as men unjustly oppressed, for whom no damages could be too ample. A disagreement in such circumstances would have been in no way surprising had the decision been left to a jury, and this would have been very expensive to both parties; a verdict for the plaintiffs, such as Mr. Justice MCCARDIE found, but with damages of unjust and disproportionate magnitude, would have been a second likely issue. We do not know whether an appeal may follow in this case or whether the fact of no appeal being entered will indicate the acquiescence of the losers with the learned judge's statement of the law and his application of it to the facts before him; but in ordinary circumstances in libel cases we believe that a jury is unnecessary for the assessment of damages and that a fairer and more satisfactory result may be arrived at without one.

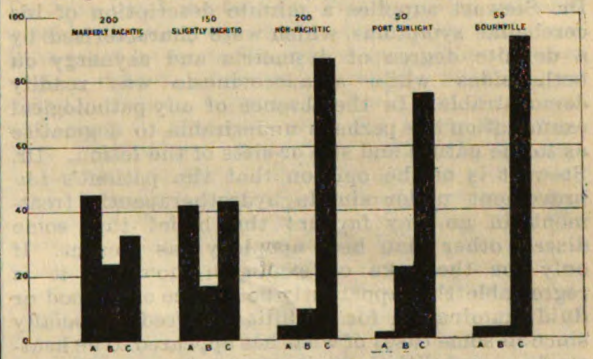
Dr. F. J. WALDO, the coroner for the City of London and the Borough of Southwark, appears to have been questioned recently by a juryman as to why he was continuing to summon juries to sit at inquests when other coroners were availing themselves of the Act above referred to and dispensing with their services. In making a reply to this question at the close of an inquest Dr. WALDO explained that a discretion was allowed to him, in the exercise of which he was guided by what he believed to be principles of public policy and usefulness. At inquests in the course of which it appeared that murder or manslaughter was to be suspected, he was still obliged to summon a jury, and according to his experience in the majority of the inquests that he held questions of culpable negligence were likely to arise. This was due to the fact that a large number of the deaths which he inquired into were caused by accidents in factories or elsewhere, when the presence or absence of negligence was the essential fact to be ascertained. In such cases he believed that the public interest was best served and the public confidence retained by the course which he followed. Here we agree with him, while we congratulate him on being able to refer in such complimentary terms to the quality of the juries in the areas for which he is coroner—men, he described them, who are well able to follow and weigh the evidence laid before them. Not all juries are as intelligent or as competent to discharge their functions as those of the City and of Southwark, but such busy areas as these are even less able than others to supply persons who can be spared from their usual avocations. It seems likely to us that coroners will have to be prepared for a continuance of conditions imposed in view of the new and unprecedented state of affairs which has recently prevailed, and we have no doubt that they will be fully equal to the occasion. They can obtain for their guidance in all difficult cases the evidence of expert pathologists as well as that of medical practitioners equipped by modern training, and they are themselves either men with medical qualifications, or who, in the practice of their previous professions, as barristers or solicitors, have learnt to grasp and to appreciate the essential points in scientific and other evidence laid before them. The medical witness has not always been handled with courtesy or intelligence by coroners, but it is the uneducated juryman whom he really fears and whose disappearance he will not regret.

Annotations.

"Ne quid nimis."

RICKETS AND FRESH AIR.

THE most striking chart in the Medical Research Committee's study of the causation of rickets[1] is that dealing with the effect of air and exercise. For the purpose of this inquiry Miss Margaret Ferguson divided the children whose social and economic state she was investigating into (A) those who were not taken out at all; (B) those who were taken out a little; and (C) those who were taken out sufficiently. In the series of 200 markedly rachitic Glasgow children, over 40 per cent. had not been taken out into the fresh air at all, while in a similar series of 200 non-rachitic children only 4 per cent. had been confined indoors. These observations are made graphic on the chart which we reproduce here, along with a comparison with groups of children at Port Sunlight and Bournville. The conclusion drawn from these observations by Professor Noël Paton and Dr. Leonard Findlay, reviewing the evidence (the report states) "as a small



jury," is that inadequate air and exercise seem to be potent factors in determining the onset of rickets. The report frankly admits the possible fallacies in any purely observational method of inquiry, and suggests that the significance of "lack of air and exercise" in causing rickets can only be determined in terms of specific physiological processes by methods of experiment. The weight of evidence in Miss Ferguson's social inquiries is against a close association between deficient diet and the rickety condition, whereas in Dr. Edward Mellanby's study of experimental rickets in dogs (summarised in the Research Committee's last annual report) accessory factors in food appeared to play a large part. These are matters of first importance to large masses of our industrial population, especially under war-time conditions, and the Medical Research Committee cannot do better with the funds of the National Health Insurance than devote them to the elucidation of such problems.

CEREBELLAR SYNDROME FOLLOWING HEAT-STROKE.

WITH our various extensive campaigns in tropical and subtropical zones heat apoplexy or heat-stroke (thermic fever, siriasis) has come into prominence as a cause of incapacity, and the toll it has already taken of some that the profession could ill spare is added reason for its careful investigation. In the current number of the *Review of Neurology and*

[1] A Study of Social and Economic Factors in the Causation of Rickets. With an introductory historical survey. Special Report Series, No. 20. 1918. Price 2*s*.

Psychiatry is a paper by Dr. R. M. Stewart, describing in detail the clinical phenomena in a case the sequelæ of which were peculiar and perhaps unique.

The patient, a soldier, aged 32, was in Egypt in October, 1914, and after a 26 hours' journey by train with his regiment marched to barracks, a distance of about a mile. The men wore sun-helmets, thick serge uniforms, and carried their full equipment on their backs. The temperature was 109° F. in the shade. Shortly after his company had been dismissed he was found lying outside a barrack-room, deeply unconscious. He was at once admitted to hospital, where he was seen to be comatose, flushed, with stertorous breathing and with occasional irregular clonic epileptiform movements. His body temperature was 109·2°. For a week it remained high, varying between 100° and 103°. During this time he was profoundly unconscious and nasal feeding was resorted to. Some ten days from the onset he began to show signs of recovery, but his sentences were mere gibberish; he was childish, and incontinent of urine and fæces. By Dec. 10th he had improved considerably and sphincter control was normal. He was then noted as having developed a spastic paresis of the legs, with marked ataxia of all four limbs. A careful examination on his admission to a military hospital in England in April, 1915, showed that the condition was one of spastic paraplegia, with double extensor response, lateral nystagmus, extreme dysarthria, involuntary movements of the limbs more or less athetoid in type, ataxia in voluntary movements; in addition he was childish and distinctly emotional, laughing in a silly manner.

Dr. Stewart supplies a minute description of his cerebellar symptoms, which were characterised by a definite degree of dysmetria and asynergy on both sides while adiadococinesia was readily demonstrable. In the absence of any pathological examination it is perhaps undesirable to dogmatise as to the nature and site or sites of the lesion. Dr. Stewart is of the opinion that the patient's improvement under simple hydrotherapeutic treatment in no way favours the belief that some disease other than heat apoplexy was present. If only for the sake of exclusion, however, it is regrettable that apparently no chance of a blood or fluid examination for syphilis occurred, especially since in some cases of what has appeared to be heat-stroke a syphilitic basis has been present. Experimental investigation has shown that the effect of extremes of heat on the organism is to produce a state of coagulation-necrosis of nerve cells. Pathological changes consisting in meningeal congestion, minute hæmorrhages in the white matter, coagulation-necrosis of nerve cells, with chromatolysis of the Nissl substance and swelling and disintegration of cell nuclei, have been described in recent cases of heat apoplexy. The possible localisation of the symptoms in Dr. Stewart's interesting case is a matter of some difficulty. He concludes that some of the symptoms were clearly due to implication of the cerebrum, notably the epileptiform attacks, the spastic paralysis, the speech disturbances, the emotional condition, and "weakmindedness." The residual symptoms, which chiefly characterised the patient's clinical state when he came under observation, are attributable, according to Dr. Stewart, to organic disease of the cerebellum. It might be suggested that much of the clinical syndrome appears due to involvement of areas in the supply of the basilar artery and its branches. A case reported (in a shorthand journal) by the late Sir William Gowers, of occlusion of the basilar from an endocarditic embolus bears a close resemblance, as far as the involvement of ponto-cerebellar and ponto-medullary mechanisms are concerned, to Dr. Stewart's case. In it, further, there was an initial body temperature of no less than 110° F., carefully verified by more than one thermometer, though, of course, heat apoplexy was out of the question. Evidently, however, in the case of the soldier the condition was widespread in its beginning. Of its organic nature there is no question. The occurrence of such organic nervous changes in association with heat-stroke is worthy of note. Dr. Stewart has reported a case of considerable clinical importance and of much interest.

ETHER DAY IN LONDON, OCTOBER 16.

IT was a happy thought on the part of the old house physicians and surgeons of the Massachusetts General Hospital, attached to various American base hospitals in England, to celebrate the introduction of surgical anæsthesia. Ten years ago the trustees of the Massachusetts General Hospital decided to set apart Oct. 16th as "Ether Day" in commemoration of the first public demonstration and the practical introduction of anæsthesia in surgery. The occasion is worthy to be held in everlasting remembrance. John Collins Warren (the second of the name of the distinguished family, five generations of which have adorned the profession of Boston) performed the operation and realised the extraordinary importance of a discovery that would awaken, as he predicted, the gratitude of the present and of all coming generations. To keep alive the memory of the occasion is the object of Ether Day, and already important addresses have been given by Professor Welch, President Eliot, and others in commemoration of the event. About 20 Massachusetts Hospital men assembled at dinner recently under the chairmanship of Colonel Washburn, the superintendent of the hospital, and now in charge of American hospitals in England. General Winters and Sir William Osler were the only guests. The latter told the story of the introduction of surgical anæsthesia, and showed what an old practice it was and how, time out of mind, patients had been rendered insensible by potions or vapours, without any one man forcing any one method into general acceptance, or influencing in any way surgical practice. Before Oct. 16th, 1846, surgical anæsthesia did not exist; within a few months it had become a world-wide procedure. The original papers of Bigelow and Warren, and those of William T. G. Morton (to whom the full credit for the introduction was given) were exhibited.

PHLEBITIS DUE TO EFFORT

APART from traumatic subcutaneous rupture of veins thrombo-phlebitis is generally regarded as due to infection. However, cases have been recorded in the upper limbs, principally on the right side, which were apparently spontaneous in origin, there being no source of infection. Such cases have been described, sometimes improperly, as phlebitis due to effort. In the *Progrès Médical* M. Jean Murard has reported the following case:—

An artilleryman, aged 24 years, was admitted to hospital for a swelling of the right upper limb. A fortnight previously he had to do some urgent work on his battery which necessitated great efforts of the right arm for two days and nights, with only short intervals of rest. After this he had a sensation of great fatigue in the whole upper limb and noticed small varices in the upper third of the arm. On the following days the sensation increased and the limb felt heavy. Two days before admission he noticed œdema of the arm, which extended to the forearm and then to the hand. A medical man ordered hot fomentations and painting with tincture of iodine. As there was no improvement he diagnosed phlegmon and sent the patient to hospital for incision. On examination the limb was œdematous from the deltoid region to the fingers. The œdema was greatest in the region of the elbow. The whole circumference of the upper third of the arm showed a series of varices. On palpation the œdema was hard and did not take the impression of the finger. In the line of the great vessels there was a tender spot. The general condition was good, the temperature was normal, and minute examination

of the viscera, particularly of the heart, was negative. The limb was put up in a splint. Eleven days later the varices had disappeared in an œdema which was a little more marked. Six weeks later the œdema was slightly less, but six days after this it was in the same condition and the patient had to be evacuated.

In several of the published cases of phlebitis due to effort the influence of the latter is doubtful. Here it was undoubtedly the cause. M. Murard adopts the theory of Lenormant that fatigue leads to muscular contractions which are less regular and harmonious and produce dragging and small ruptures of collateral veins at the point of entrance into the main vein, at which points the thrombosis originates. Phlebitis due to effort would thus be a variety of traumatic phlebitis.

STANDARDISATION OF PATHOLOGICAL METHODS.

IN an original article in our present issue Dr. W. d'Este Emery deals at length with the important matter of the standardisation of the Wassermann reaction, suggesting that, whatever the technique employed, the results should be reported in terms of Wassermann units. The value to the clinician of reports in such a form can hardly be exaggerated. A further substantial contribution by the Medical Research Committee to the present-day needs of pathologists and through them to clinical medicine, appears in the series of Special Reports (No. 19), which contains two memoranda of the Committee upon the Standardisation of Pathological Methods. The first of these deals with the laboratory diagnosis of gonococcal infections, in which the assistance of Lieutenant-Colonel L. W. Harrison, R.A.M.C., has been available. After enumeration of the localities to be examined for the presence of gonococci, methods are recommended for their microscopic identification and cultivation. Jensen's modification is preferred to the original Gram's method, and an excellent coloured plate is given of the appearances of gonococcal pus thus stained. For the cultivation of the gonococcus three media have been found eminently satisfactory in a series of comparative tests made by Captain David Thomson, R.A.M.C., at the Military Hospital, Rochester-row, London. These are (1) Thomson's human plasma-glucose agar; (2) Cole's tryptic blood agar; and (3) Gordon and Hine's trypsinised pea-extract agar. Full details of preparation are given in an appendix. Caution is enjoined in regard to the production of a focal reaction by the employment of a gonococcus vaccine or by the introduction into the urethra of a solution of silver nitrate for diagnostic purposes. Much space is given to a full consideration of the complement fixation test. Four methods have been selected, and they are described in the actual language of their originators. The first, taken from the *American Journal of Medical Sciences*, is the method of Schwartz and Meheil; the second, quoted from the *Journal of the Canadian Medical Association*, is the method of Major J. J. Ower, C.A.M.C.; the third is Kolmer's method, and is abstracted from Dr. Kolmer's "Practical Text-book of Infection, Immunity, and Specific Therapy"; the fourth method is communicated to the committee by Captain Thomson, who carried out the work at the Military Hospital, Rochester-row, under Colonel Harrison. This test promises well as an aid to the diagnosis of gonococcal infections, and the committee have acted wisely in bringing together within one cover the methods employed by those who have most closely studied the subject. The second report deals with methods for the detection of spirochætes. The subject is a more familiar one, and perhaps on this account less attention has been paid to clarity in choice of language and illustration. Dark-ground illumination is described, as well as the methods for staining spirochætes or rendering them visible by the Indian-ink, Congo-red, and silver-nitrate methods. The two reports will fill a gap in the working bookshelf of laboratory investigation of venereal disease.

SANITARY INSTRUCTION IN CHICAGO.

THAT our American Allies are fully alive to the importance of sanitary instruction as a means of safeguarding the people's health is proved in the case of Chicago, the health department of which city issues weekly a bulletin showing the mortality from several important diseases in a population exceeding 2½ millions. The data in the present bulletin refer to the several months of the current year up to and including August. The bulletin sets forth the remarkable fall in mortality in the first eight months of this year in contrast with that of the corresponding period of 1917. The life saving is represented by a total of 3835 persons. Dr. John Dill Robertson, the Commissioner, presents a table showing the deaths from pneumonia and from what he terms the chief degenerative diseases—viz., cancer, diabetes, cerebral hæmorrhage, organic heart disease, cirrhosis of the liver, and chronic nephritis. He also gives the relative "morbidity" from the principal diseases. In the eight months of the present year there were 1167 fewer deaths from pneumonia, representing a reduction of 31·2 per cent., as compared with the mortality from this cause in the corresponding period of last year. Although the rates now given are not strictly comparable with the rates of a full 12-month period, they are instructive as showing the remarkable reduction in mortality recently achieved. The degenerative diseases taken together caused 297 fewer deaths in the eight months under notice as compared with the same period of last year. Indeed, all the diseases of this category showed decrease, with the single exception of cancer, which, in Chicago as elsewhere, is regarded as the *bête noire* among diseases, being less amenable than other conditions to sanitary control, in spite of the intensive study now devoted to its nature and causation. Dr. Robertson draws attention to the necessity of early resort to surgery as the one hopeful means of arresting the condition when once its existence has been ascertained. If the war goes on it is inevitable that America will have to face enormous losses among her soldiers; and as these losses can only be made good from the ranks of the children now being reared, it is imperative that measures should be taken to save the infant lives which are now being needlessly sacrificed. The Chicago weekly bulletin does good service by pointing out these ancient truths to the public. When the public knows that many thousands of infants who now die might be saved by certain well-known preventive methods, and that much of the waste of infant life occurs in the early days after birth, because of the lack of suitable care of the mother before and during confinement, it is certain that well-devised efforts to remedy such scandals will be witnessed. It is the duty of the constituted authorities to convince the public of the necessity of saving young life by pre-natal and obstetrical care for the mother, and the bulletins of the Chicago health department are excellently drawn up for this purpose.

DISPENSARY SUPERVISION IN PULMONARY TUBERCULOSIS.

BY GEORGE JESSEL, M.A., M.D. OXON., D.P.H.,
TUBERCULOSIS OFFICER TO THE LANCASHIRE COUNTY COUNCIL; TUBERCULOSIS OFFICER, WIGAN; AND MEDICAL ADVISOR, WIGAN INSURANCE COMMITTEE.

THE interim report of the Departmental Committee on Tuberculosis contains the following passage:—

"It should, however, be borne in mind that a short stay in an institution in which the patient may be educated, followed by a course of home treatment in shelters, &c., under close supervision is a form of sanatorium treatment which has certain advantages and which may be successfully adopted in a large number of cases."

Home treatment was, of course, prior to this report the principal if not the only form of treatment in the great majority of cases, but the element of close supervision was probably rarely exercised except as regards the middle and upper clases; furthermore, there is reason to believe that the precise manner in which this supervision should be exercised was not generally understood, even in cases where the family doctor was able to enforce a discipline which is admittedly irksome to many patients.

The aim of this paper is to indicate in some degree the value, both to patient and doctor, of systematic dispensary supervision as exercised from Wigan, over an area of about 40 square miles, for over five years.

Criticisms of Home Treatment.

There are still some who condemn home treatment as dangerous and impossible, and figures are from time to time brought forward which are intended to prove this conclusion. Thus, Dr. O. M. Holden has recorded a series of 1956 patients, of whom 794 gave a definite history of tuberculosis occurring amongst 1081 intimate members,[1] and more recently[2] he has published additional figures, the purport of which is to show that home treatment is a menace to the other inmates of the house. Holden's figures, however, as they stand by no means make out a case against home treatment. Alleged secondary cases occurred in about two-fifths of his first series, and the alleged secondary infection affected only 1¼ of a family out of the average 4¼. In addition, Holden apparently ignores all the other factors—viz., second cases occurring from the same source as the original case, or from quite other sources as the result of insufficient or improper feeding, insanitary homes, overwork, intemperance, individual susceptibility, &c. Furthermore, the total number of individuals (suffering and non-suffering) in the families concerned is omitted.

Holden's figures are thus inconclusive and of little scientific value. Even if they could stand the test of close examination, it would still be necessary to show that in the families concerned that element of close supervision, without which home treatment is admittedly often useless and dangerous, was present. In the experience of the writer secondary cases in the same home are by no means common where supervision is exercised in the home. This, indeed, is what would be expected in the light of modern knowledge. Apart from individual cases of unusual susceptibility, massive infection and lowered resistance are the principal factors in the causation of secondary cases of tuberculosis. Dispensary supervision, if properly applied, will usually effectively counteract these elements.

Home Treatment in Wigan.

Although no case has been made out against home treatment on the ground of danger, the question may fairly be asked whether there is any proof that patients suffering from phthisis can have their immediate surroundings and way of living brought into any reasonable degree of accord with sanatorium practice, this being of course, the aim of home treatment. Sir William Osler has tersely summed up the essentials of treatment as "education, control, and a rigid regimen," and it is essentially in these directions that the efforts of the general practitioner can be assisted at, and in connexion with, the dispensaries.

The problem of sleeping accommodation is often a very difficult one, and it is usual to find the patient in bed in the kitchen at the first visit of the dispensary staff after a case has been notified. Similarly, patients are found to be very careless with their sputum. It is necessary to conclude either that clear and definite instructions on these and kindred topics have not been given by the medical attendant or that, if given, they have not been enforced. The improvements that were effected by three of the dispensary nurses of the Lancashire County Council in 1915 with regard to 361 new cases have already been published.[3] They may be summarised as follows:—

Results obtained by Three Dispensary Nurses in 1915.

—	(A)	(B)	(C)	Total.
On nurse's first visit	157 = 43·49%	57 = 15·78%	147 = 40·72%	361 cases.
,, last ,,	262 = 72·57%	53 = 14·68%	46 = 12·74%	

Results obtained by Four Dispensary Nurses in 1916 and 1917.

Results in 1916 ..	799 = 68·8%	186 = 15·9%	179 = 15·3%	1164
,, 1917 ...	1150 = 70·26%	286 = 17·7%	179 = 11·08%	1615

(A) Separate bedroom—i.e., complete isolation. (B) Separate bed, not separate bedroom—i.e., partial isolation. (C) Not satisfactorily isolated.

That this was no spasmodic effort is shown by the results obtained by four dispensary nurses in the Wigan area during 1916 and 1917. Thus in 1917 complete isolation was obtained in over 70 per cent. of 1615 cases of phthisis occurring in an average industrial area of Lancashire, while partial isolation was obtained in an additional 18 per cent. It is clear that the dispensary nurses have accomplished a great work as the result of tact and perseverance. Home treatment is thus possible and safe in about 70 per cent. of cases occurring in the industrial areas of Lancashire at any rate, and the remaining 11 to 15 per cent., which were not satisfactorily isolated, is a measure of the need for isolation and treatment in hospitals as distinct from sanatoriums.

The Exercise of Dispensary Supervision.

Dispensary supervision is largely exercised through the frequent regular and periodic visits of the nurses to patients' homes. These visits vary in frequency according to the urgency of the need, but cases with active disease are visited without notice at least once a month, and sometimes much more frequently. During 1916 the five dispensary nurses paid 12,308 visits to 2306 cases of tuberculosis (all forms, many quiescent or arrested), and during 1917 13,179 visits to 2722 cases.

This, however, is by no means the only way in which dispensary supervision is exercised. All cases with active disease are examined by me as tuberculosis (consulting) officer once in two to three months, either at home or at the dispensary. When visits are paid to the home it is possible to see that the supervision is being properly exercised and that the advice and instructions given are being carried out. The dispensary nurses report upon each case after every visit, and any difficulties that may be met with can then be conveniently discussed. Patients who are not working and who are fit and able to attend the dispensaries are encouraged to do so every fortnight to get weighed, and to have their temperature records checked.

The supervision is not confined to preventive measures, but also concerned with regard to treatment. Thus, in addition to the provision of paper handkerchiefs and bags for sputum, thermometers and record cards are provided for suitable patients, and the large number of properly kept temperature records is remarkable.

Dispensary supervision is not only exercised by means of direct access to the patients. There is close association with the general practitioners, and every effort is made to work in close accord with them. They receive intimation of place and time of each medical examination, and some regularly attend in consultation in spite of the strain of existing war-time circumstances; otherwise, a letter is sent whenever there is anything to communicate on either side.

In addition to the above, the six care committees are of the greatest value, as has been elsewhere described,[4] in rendering home treatment possible by the provision of nourishments, clothing, bedsteads, bedding, &c., and many of the cases are visited by a member of the committee. Patients thus have additional encouragement and inducement to carry out their treatment properly. There is a growing list of patients receiving dispensary supervision only—i.e., patients whose disease is arrested or quiescent. These are kept under surveillance by occasional visits or communications.

Elements of Success.

It is clear that the success of dispensary supervision depends upon the close attention to detail that is given with regard to each individual case. Every patient needs special consideration and must be studied in relation to his environment. Dr. Pratt, of Boston, U.S.A., has achieved no little success by means of close supervision exercised in connexion with his "tuberculosis class." Thus, during the years 1906 to 1913, 165 patients were discharged, 35 of whom had tubercle bacilli in their sputum at some stage of the illness. In 1915, 58·2 per cent. were well and working, free from all symptoms of disease. Of the 35 cases in which tubercle bacilli were found, in 1915 74·3 per cent. were well and working.

In the experience of the writer, efficient dispensary supervision has resulted in a considerable measure of success in spite of the fact that a large proportion of the cases come under notice when already in an advanced stage of disease. There is every reason to believe that with earlier diagnosis and notification, home treatment under close supervision, such as apparently can usually only be obtained through the dispensary organisation, will fully justify on a large scale the conclusions of the Departmental Committee.

References.—1. Holden: Medical Officer, Feb. 28th, 1914. 2. Idem: British Journal of Tuberculosis, April, 1918. 3. Jessel: British Journal of Tuberculosis, April, 1916. 4. Idem: Medical Officer, August 28th, 1915.

THE UTILISATION OF VACCINE FOR THE PREVENTION AND TREATMENT OF INFLUENZA.

AT a Conference on preventive vaccination for influenza held at the War Office on Oct. 14th the following were present: Colonel Sir William Leishman, K.C.M.G., C.B., F.R.S., K.H.P., in the chair; Deputy Surgeon-General P. W. Bassett-Smith, C.B., C.M.G., R.N.; Lieutenant-Colonel D. Harvey, C.M.G., R.A.M.C., officer in charge, Vaccine Department, Royal Army Medical College; Major F. W. Andrewes, F.R.S., R.A.M.C. (T.), pathologist, St. Bartholomew's Hospital; Captain S. R. Douglas, late I.M.S., Inoculation Department, St. Mary's Hospital; Dr. J. W. H. Eyre, Director of the Bacteriological Department, Guy's Hospital. Professor W. Bulloch, F.R.S., pathologist, the London Hospital, was unable to attend.

The Director-General, after welcoming the members, explained to them the object with which they had been called together, and the great and urgent importance of their endeavouring to formulate definite recommendations as to the employment of vaccines, in view of the probability of an extension of the epidemic of influenza.

The committee then proceeded to discuss the items of the agenda form, which had been drawn up by the chairman, and reached the following conclusions:—

1. After discussing the available evidence as to the bacteriology of the present epidemic, the majority of those present were agreed that there was considerable doubt as to the primary etiological significance of the *Bacillus influenzæ* of Pfeiffer, and considered that the existence of some as yet undiscovered virus must be regarded as possible. They had, however, no doubts as to the very frequent presence of Pfeiffer's organism in this epidemic, nor as to the great importance of the part which it played in the production of the symptoms and complications of the disease. The organisms most frequently associated with the *B. influenzæ*, and in their opinion, chiefly responsible for the gravity of the secondary pulmonary complications, are pneumococci and streptococci.

2. The general question of the employment of a bacterial vaccine for the control of the incidence and severity of the epidemic was discussed, and it was unanimously agreed that inoculations with a suitable vaccine might be expected to be of value in both directions.

3. The appropriate constitution of such a vaccine was then thoroughly discussed in the light both of the personal experience of the members of the Conference and of the information available from medical literature. It was agreed that the three following organisms only should be employed, the *Bacillus influenzæ*, the pneumococcus, and the streptococcus. In each instance it was decided that a number of different strains and types of each organism should be utilised in the preparation of the vaccine, and that these strains should have been recently isolated from cases occurring during the present epidemic and should be submitted to strict tests as to race and type prior to use.

4. The relative proportions of the different organisms and the dosage of the vaccine were then dealt with, and it was agreed that the following should be its constitution and dosage:—

	1st dose.	2nd dose.
B. influenzæ	30 millions.	..... 60 millions.
Pneumococcus ...	100 ,,	..... 200 ,,
Streptococcus	40 ,,	..... 80 ,,

The vaccine should be sterilised by a temperature of 55° C., maintained for half an hour, and 0·5 per cent. of carbolic acid should subsequently be added as an antiseptic.

5. Whenever possible, both doses of the vaccine should be given at an interval of 10 days. It was thought that the reactions to be expected from this vaccine would, in the majority of cases, be either trivial or non-existent. It was, however, considered to be of great importance that, in the case of soldiers, a period of 24–36 hours' light duty should always be given.

6. As regards the conditions under which this prophylactic vaccine should be employed, the Conference were unanimous in considering that, whilst it would be preferable to carry out the inoculations before exposure to infection, there do not exist any adequate grounds for withholding it in the case of a body of men amongst whom influenza had already appeared, provided that care was taken not to inoculate any individuals who have fever or are obviously ill, or those who are at the time suffering from catarrh. At the same time, a careful watch should be kept for any evidence of a period of increased susceptibility following upon inoculation, and should this become manifest it is advised that instructions be given to lower the doses recommended above.

7. The Conference made the following recommendations as to dosage of the vaccine in the special cases mentioned below:—

(*a*) *Children.*—It is not advisable to inoculate children under the age of 3. For older children the following doses may be given:—

From 3–7 years	...	¼ of the full dose, as detailed in para. 4.
,, 7–16 ,,	...	½ ,, ,, ,,
Above 16 ,,	...	the full dose ,, ,,

(*b*) *Colonial Troops.*—In this case they recommend three doses at intervals of 10 days, as follows:—

1st dose	...	½ of the "first dose," as detailed in para. 4.
2nd ,,	...	the "first dose," ,, ,,
3rd ,,	...	the "second dose," ,, ,,

(*c*) *Native Contingents.*—Here, too, they recommend three doses at intervals of 10 days, as follows:—

1st dose	...	the "first dose," as detailed in para. 4.
2nd ,,	...	the "second dose," ,, ,,
3rd ,,	...	the "second dose," ,, ,,

8. The Conference then discussed at length the question of employing the vaccine for the treatment of severe cases of influenza and its complications. On this they make the following recommendations:—

(*a*) The vaccine is most likely to be of service in the treatment of subacute and of chronic cases; in this class of case the initial dose which they recommend is 1/5 of the "first dose," as detailed in para. 4.

(*b*) The use of the vaccine in the treatment of severe cases of secondary broncho-pneumonia cannot at present be recommended, in view of the dangerous rapidity and severity of many of these cases. Should it, however, be desired to try the vaccine in such cases it is advised that the initial dose should not exceed 1/20 of the "first dose," as detailed in para. 4.

9. A profitable discussion then followed upon technical details and upon the investigations bearing upon the subject which were felt to be desirable and likely to lead to practical improvements in respect of the employment of vaccine. These hardly admit of summary, but it was agreed that among the most important were the questions of the unity or multiplicity of types of the *B. influenzæ* and of the identification of this organism, and some arrangements were made between the members for exchange and collection of cultures, which it was hoped would lead to progress in these directions.

10. The committee then considered the practical steps to be taken for the preparation of the vaccine on the assumption that considerable demands might be made for it at an

early date. Thanks to the generous assistance offered by the members of the Conference, this was placed upon a satisfactory basis, it being agreed that the numerous strains of the organisms which were in possession of most of the members, and which had been obtained from recent cases, should be sent to Captain Douglas, at St. Mary's Hospital, where he has kindly consented to put them through the necessary tests as to purity, type, &c. Those selected will then be passed on to Lieutenant-Colonel Harvey at the R.A.M. College, who will arrange for the preparation of the vaccine for Army purposes, and also to Deputy Surgeon-General Bassett-Smith at the Royal Naval College.

11. In order to ascertain the degree of protection given by the vaccine the Conference recommend strongly that the necessary administrative steps be taken to secure statistical records dealing with the following matters:—

(*a*) The reactions following the inoculations.
(*b*) The occurrence of any cases of severe illness within 48 hours of inoculation.
(*c*) The incidence of the disease among the inoculated and uninoculated.
(*d*) The incidence of complications among the inoculated and uninoculated.

CONFERENCE OF THE BRITISH HOSPITALS ASSOCIATION.

The Voluntary System and the Ministry of Health.

A CONFERENCE of members of this association was held on Oct. 18th at St. Thomas's Hospital under the chairmanship of Mr. H. WADE DEACON, of the Liverpool Royal Infirmary. There was a good attendance, and those present included Sir Arthur Stanley, M.P., Sir George Makins (representing the Ministry of Health Committee of the Royal Colleges of Physicians and Surgeons), Sir Henry Burdett, and the Rev. G. P. Cronshaw.

Sir GEORGE MAKINS proposed the following resolution:—

That the British Hospitals Association welcomes the proposal to form a Ministry of Health. The Association is strongly of opinion that the interests of the patients and of the community as a whole, the progressive education and training of doctors and nurses, and the prosecution and advance of scientific research, will be best served and provided for in the scheme by the retention of the voluntary hospital system.

He said the proposal to form such a Ministry was meeting with the support of the nation and the medical profession alike. The interest of this meeting was mainly in the future of the voluntary hospital system, a system that was one of the links with the past of which the nation had most reason to be proud. In this country the voluntary hospitals had been the home of medical training, and had exerted a great influence in making the general practitioner a highly skilled man. It had been said that a central administration of medical schools would tend to uniformity and increased efficiency. But while something might be said for that view, it would tend to reduce every institution to the same level, possibly a dead level, and they would be cramped and hampered by official administration; and such a change would remove the spirit of emulation between schools and between hospitals which had done so much to advance medical teaching and treatment. During a long life as teacher and examiner he had always felt he gained much knowledge and experience from having come into contact with students from various schools. And a side which he feared would be lost if all hospitals were to be massed under one central administration was the social side, and especially the fine work of the hospital almoner, whose efforts were directed to the patient's welfare after his or her departure from the hospital to insure the best results from the treatment which had been received. The hospitals had done a great work in connexion with maternity and infant welfare and in getting the treatment of tuberculous patients put upon a proper basis. That was largely because these hospitals were individual institutions, free to undertake any enterprise which seemed to promise well; this was less likely to be done by a central administration. Voluntary hospitals owed much of their success to the very strong sympathy which existed between the general public and the charitable aims of the hospitals. He thought the expression "charitable work" ought to be interpreted in the religious sense—not so much a matter of receiving money as one of doing good to others. This feeling of sympathy was the channel along which sentiment was developed into action, and sentiment was, after all, responsible for many of the greatest things which had ever been accomplished.

The Rev. G. P. CRONSHAW seconded the resolution. He said the voluntary hospital principle in this country was the envy of the whole world. America was now trying to get back to it after a trial of the State administration of hospitals; and Australia and New Zealand were coming to the same conclusion. Our hospitals had now to set their houses in order, for they would be required to do something more than in times past. The middle classes were asking very pertinently why only the poorest in the land should have the advantage of specialist knowledge, skill, and equipment. Middle-class people could not afford to pay a specialist, but they could contribute something. The Association would welcome a Ministry of Health, because it would obviate dealing with a variety of different departments according to the subjects concerned. He welcomed also a system by which every doctor would be able to follow his own patients into the hospital. Hospitals could accept money from public funds without losing their voluntary character. In the matter of National Insurance the voluntary hospitals had stood between the nation and the complete collapse of the Act. He looked for the time when nurses engaged on special work could periodically re-enter their hospital for the purpose of keeping themselves up to date.

Sir HENRY BURDETT warmly supported the resolution, and advocated the Association applying for a Royal Charter. There would have to be payment of what were now the honorary staffs of hospitals, especially if the hospitals catered for all classes of the community. He spoke highly of the work of the almoners' department, and thought every hospital should have a medical superintendent, who should, however, have no concern with the finances. In America such an individual received more than he was likely to earn by the exercise of his profession outside, and such posts were very carefully filled.

A number of suggestions were made by various speakers. These included a more extensive hospital propaganda, more working-class representation on hospital boards, the coöperation of large hospital funds, the establishment of pay wards at moderate fees, the organisation of parties of hospital visitors, the throwing of the voluntary hospitals on the mercy of the Charity Commissioners to preserve their character as against the Poor-law institutions which would be taken over by the new Ministry, and the bringing of all hospitals up to a high standard, so that the authorities would be very unwilling to alter them.

Sir ARTHUR STANLEY considered that the meeting was thoroughly agreed that a Ministry of Health would come and that the voluntary hospitals had got to remain. They had nothing to fear from the new Ministry, and Dr. Addison had told him in conversation that those in charge of the Bill had no intention of trying to enforce any particular principle or doctrine of their own. The voluntary hospitals needed a good advocate, and he suggested the formation of a Parliamentary Committee to watch the Bill, for the Association could now claim to represent practically all the voluntary hospitals of the country. He agreed that a Royal Charter, if well and clearly drawn, would be a good weapon for the Association to possess. He made these recommendations with the more freedom as he did not intend to be in the next Parliament.

The resolution was unanimously accepted.

The following further resolution was also passed:—

That the Council be requested, when the terms of the Ministry of Health Bill are known, further to consider the question with reference to its provisions; to take such steps as, at their discretion, they may determine; and report.

The meeting concluded with votes of thanks to the governors of St. Thomas's Hospital for the use of the room, and to the chairman for presiding.

LONDON ASSOCIATION OF MEDICAL WOMEN.—A meeting was held at the Medical Society of London on Oct. 8th, Lady Barrett, the President, being in the chair. The annual report was read, and the new constitution and rules read and approved. Dr. Constance Long read a paper on "The Significance of Phantasy in the Production of the Psycho-neuroses." A discussion then followed, in which Dr. Helen Boyle, Dr. Jessie Murray, Dr. Mary Bell, and Lady Barrett joined.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

A MEETING of the Executive Committee of this Fund was held at the offices of THE LANCET on Monday, Oct. 21st, Sir RICKMAN GODLEE being in the chair.

The HON. SECRETARY reported that the 12 City Livery Companies had been approached with a request for financial help. No answers had been received from four of the Companies, and in the case of the remainder the reply amounted to a qualified refusal in all except one.

The munificent gift of £200 monthly from the American Red Cross was gratefully acknowledged by the Committee. Mr. Ernest P. Bicknell, Commissioner for Belgium of the American Red Cross, wrote to the chairman in August last announcing this intention, and asking to be kept informed of the progress of the Fund. A statement of the activities of the Fund and its existing position having been sent to him by the Hon. Secretary, a letter was received from the American Red Cross confirming the subsidy of £200 per month to the Fund until the end of the year, and alluding to a possibility of its continuance for a longer period. The Committee, while acknowledging with gratitude this magnificent gift, felt certain that the British medical and pharmaceutical professions would continue to contribute their share to the Fund.

In regard to the new situation created by the Allied advance, Sir RICKMAN GODLEE understood that local Belgian Committees would continue to act in the regained territory, although doubtless the need would not be so urgent as in the parts of Belgium still occupied.

The HON. TREASURER presented an audited cash statement from Dec. 1st, 1917, to August 31st, 1918, showing that £3924 0*s.* 3*d.* had been expended in relief and £161 0*s.* 7*d.* in administration, including the cost of the recent Special Appeal, leaving a balance in hand of £1289 17*s.* 1*d.* He added that the first part of the Second Appeal in the New Year had brought in about £963; the circular letter to the medical profession then produced a further £1715; and a special article in the medical press £1455; a total of about £4134—a sum exceeding the auditors' statement, inasmuch as £286 had been subscribed since Sept. 1st. The monthly payments, which began in May, were bringing in £16 3*s.* 6*d.* per month.

It was decided to continue to send to Belgium a mensuality of £400 a month until the end of the year.

URBAN VITAL STATISTICS.

(Week ended Oct. 19th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 20·7, against 12·6 and 15·1 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 20·1, or 6·2 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 5·4 in West Bromwich, 6·0 in Smethwick, and 6·4 in Rotherham, to 46·0 in Birkenhead, 46·2 in Liverpool, 48·3 in Gloucester, 58·3 in Southampton, and 68·6 in Portsmouth. The principal epidemic diseases caused 212 deaths, which corresponded to an annual rate of 0·7 per 1000, and included 89 from infantile diarrhœa, 61 from diphtheria, 20 from whooping-cough, 16 from measles, 15 from scarlet fever, and 11 from enteric fever. The deaths from influenza numbered 1895 and included 371 in London, 215 in Liverpool, 178 in Portsmouth, 81 in Southampton, 71 in Hull, 69 in Sheffield, and 62 in Cardiff. The 1241 cases of scarlet fever and 1205 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 93 and 23 above the respective numbers remaining at the end of the previous week. The causes of 55 deaths in the 96 towns were uncertified, and included 21 in Liverpool, 5 in Birmingham, and 3 each in Portsmouth, Hull, and South Shields.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 28·3, against rates steadily increasing from 10·6 to 24·7 per 1000 in the five preceding weeks. Of the 1303 deaths from all causes, 63 were classified to influenza, which was also stated as a contributory cause in 426 deaths classified to other diseases; in the previous week these numbers were 45 and 339 respectively. The 820 deaths in Glasgow corresponded to an annual rate of 38·4 per 1000, and included 10 from whooping-cough, 5 each from diphtheria and infantile diarrhœa, and 1 from measles. The 83 deaths in Edinburgh were equal to a rate of 13·0 per 1000, and included 2 from whooping-cough and 1 each from scarlet fever and diphtheria.

Irish Towns.—The 295 deaths in Dublin corresponded to an annual rate of 38·6, or 14·0 per 1000 above the rate recorded in the previous week, and included 8 from infantile diarrhœa, 4 from whooping-cough, and 1 from diphtheria. The 83 deaths in Belfast were equal to a rate of 11·0 per 1000, and included 5 from infantile diarrhœa and 2 each from scarlet fever and diphtheria.

Correspondence.

"Audi alteram partem."

A NEW TYPE OF INFLUENZA.

To the Editor of THE LANCET.

SIR,—Surely we are seeing a type of influenza quite different from anything we have seen before. Side by side with influenza of the ordinary type we are meeting with cases which exhibit the following symptoms and physical signs. Within a few hours of seizure the patient's temperature runs up to 105° or over, while the pulse ranges round 90; a high temperature with a slow pulse; the lips and face exhibit marked cyanosis, and epistaxis frequently occurs. In the course of a day or two the patient begins to spit up a quantity of frothy sputum tinged with bright blood. In spite of the fever the pulse is regular, of good volume, and fairly strong, and the rate is generally below 100, at times below 90. On examination the area of cardiac dullness is not increased, and there is no evidence of distension of the right side of the heart. For the first day or two the physical signs in the lungs are very indefinite and point to capillary bronchitis rather than to a bronchopneumonia; later on there may develop signs of patches of consolidation. During the past six days among a large number of patients I have seen about a dozen cases such as I have described. In two instances I have seen the changes exhibited on the post-mortem table. In both cases the lungs were emphysematous and showed signs of recent pleurisy. Scattered patches of purpura were present. On section patches of capillary bronchitis appeared to surround small patches of consolidated lung, which sank in water; distinct areas of hæmorrhage into the lung tissue were present. I well remember the severe epidemic in 1889–90, and attended a large number of cases, but the signs and symptoms to which I refer, and which have been exhibited by patients I have attended during the past few days, are quite new to me.

Are we dealing with a new organism or with the recognised organisms of influenza which have for some reason attained greater virulence?—I am, Sir, yours faithfully,

Oxford, Oct. 23rd, 1918. WM. COLLIER.

NASO-PHARYNGEAL INFECTION AT THE ONSET OF CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—I do not intend to be drawn into a long correspondence upon side issues. If, however, you think that the scientific basis of the discussion has any general interest I will re-state my case shortly and, I hope, clearly as follows:—

Origin of discussion.—Statement made by Lieutenant-Colonel M. H. Gordon: "Every case of cerebro-spinal fever is ..... an instance of a carrier developing the disease." This was a statement of epidemiological importance. Exactly similar views were also held by two authorities quoted by Surgeon S. L. Baker and myself in No. 17 of the Special Report Series of the Medical Research Committee.

Cause of the discussion.—Observations made by Temporary Surgeon Baker and myself published in THE LANCET of Oct. 20th, 1917. These had the effect of disputing the scientific accuracy of the above statement of Colonel Gordon.

1. Twenty-six cases of cerebro-spinal fever were swabbed before the onset of the disease. All were negative. The number has since mounted to 43.

2. Four hundred and eighty-five proved carriers failed to develop cerebro-spinal fever. The number has since mounted to about 700. These carriers were both chronic and transient.

Beginning of the discussion.—Statement in a letter to THE LANCET by Colonel Gordon that we had misunderstood him. We thought we had not, and therefore did not reply, to avoid a polemic.

Outbreak of polemic.—Letter by Major J. Dorgan to THE LANCET nearly a year later, also disputing Colonel Gordon's statement. In the course of his argument he made, independently, exactly the same points as we did and another point relating to the presence of meningococci in the throat *after* the onset of the disease. On this matter we agree with Colonel Gordon rather than with Major Dorgan, but not for the reasons Colonel Gordon advanced and against which I protested in THE LANCET of Sept. 14th.

I am interested only in seeing the idea established that cerebro-spinal fever develops almost immediately upon the occurrence of a naso-pharyngeal infection. If it does not develop immediately it does not develop at all, and the man either becomes a carrier or recovers from the local infection. This seems to me to be quite a different idea from that expressed by Colonel Gordon. He, recognising that the coccus is nearly always to be found in the throat at or shortly after the onset of the disease, says that this implies that the disease has developed in a carrier, and maintains this view against us by saying that he purposely did not bind himself to the *length of time* during which the case had carried; it might have been a very short time, say 24 hours.

This, however, in our opinion, is a totally abnormal and incorrect use of the word "carrier." You do not call a man an "anthrax carrier" during the interval between infection and the appearance of the first signs, nor a man a "pallida carrier" during the incubation period of the disease. Neither can you call a man a "meningococcus carrier" between the time of acquisition of the coccus and the onset of meningitis. If you do, it appears to us to be a confused concept or a quibble. At any rate, it is liable to lead to justifiable misconception.

I am, Sir, yours faithfully,

P. FILDES,
Staff Surgeon, R.N.V.R.

R.N. Hospital, Haslar, Sept. 22nd, 1918.

MEDICAL MEN IN PARLIAMENT: CAPTAIN DONALD CAMPBELL'S CANDIDATURE.

To the Editor of THE LANCET.

SIR,—I have been officially adopted as prospective Parliamentary candidate for North Paddington at the next General Election by the Paddington Branch of the National Federation of Discharged and Demobilised Sailors and Soldiers.

I would like to appeal to my medical brethren for funds to enable me to carry out my political campaign fully and bring the whole to a successful issue. I would respectfully suggest that if a thousand medical men contributed 5*s*. each (as a single, limited, and non-recurring subscription) it would produce £250. Of course, this will be nothing near what it will cost me, but, on the other hand, it will help towards my election expenses, and at the same time be a source of moral comfort during the strain of the elections.

I have done a good deal of spade-work in my constituency, and have a large and weighty following (outside the profession), and with my political experience I am convinced that anyone contesting North Paddington purely as a "medical candidate" would not have the slightest chance of election, and further, in my opinion, of even being reimbursed his £150.

I am willing to speak before any medical gathering, and if the profession hope and intend that some of their members go towards the constitution of the next House of Commons I submit something concrete should be done immediately. Failing this, it just means that those of us who get elected to the House purely as politicians, without the blessing and support of our professional confrères, go to the House qua politicians, and the medical profession still remains unrepresented in the sense desired by a large number of the faculty. We want unity; let us show that we do. I am willing to do my share and more than my share.

I am, Sir, yours faithfully,

DONALD CAMPBELL,
Captain, late R.A.M.C.

70, Sutherland-avenue, Paddington, W. 9, Oct. 18th, 1918.

THE PAY OF TEMPORARY R.A.M.C. OFFICERS.

To the Editor of THE LANCET.

SIR,—I notice a fresh appeal is to be made for medical men both in Ireland and England. Those who come up now will, as in no other branch of the service, receive the same pay as those who have borne the heat and burden of the day. The R.A.M.C. is practically the only corps wherein a man has no expectation of increased pay after three or four years' active service. Is it too late to suggest that the only increase in pay since 1914—viz., children's allowances—should no longer be cut in two because of the fact that we are on consolidated pay instead of pay and allowances?

I am, Sir, yours faithfully,

TEMPORARY CAPTAIN.

Oct. 18th, 1918.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeon Lieutenants: R. H. O. B. Robinson, E. G. T. Holden, S. C. Woodhouse.

ARMY MEDICAL SERVICE.

Col. J. Meek retires on retired pay.

ROYAL ARMY MEDICAL CORPS.

Capt. (acting Major) J. Patrick, R.A.M.C. (T.F.), to be temporary Lieutenant-Colonel whilst specially employed.

Temp. Lieut.-Col. H. A. T. Fairbank (Captain, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

To be temp. Majors: G. E. Waugh, W. P. S. Branson, F. N. G Starr.

Capt. E. G. H. Cowen to be acting Major whilst specially employed.

Temp. Capt. W. V. Robinson relinquishes the temporary rank of Major on re-posting.

Temporary Captains to be acting Majors whilst specially employed: E. McCulloch, A. C. Norman, H. M. Gray, H. E. Gamlen.

The rank of Temp. Capt. C. G. Seligman is as now described.

Temporary Lieutenants to be temporary Captains: J. Menzies, S. G. Trail, A. L. White, E. Reavley, F. S. Adams, J. E. Richards.

To be temporary Captains: A. G. Payne, J. B. Orr, F. W. Twort, W. C. Mayo, P. G. Simpson, W. W. Linnington, H. T. Thomson, H. R. Phillips, P. A. Dykes, P. W. Ashmore, G. R. Lawless, F. H. Cooke, W. H. Weir, Temp. Hon. Capt. D. M. Stone, A. Dingwall-Fordyce, F. P. Grove, E. A. Morgan, H. H. Fairfax.

To be temporary Lieutenants: A. R. Wade, W. Anderson, P. P. Galea, J. A. Martin, E. S. Litteljohn, T. Wallace, C. A. Whitfield, R. Walker, R. L. Wilcox, D. C. Macaskill, F. C. S. Bradbury, R. H. Wace, S. G. Platts, C. W. Branson, W. H. Brooks, R. Tilbury, M. J. Gibson, A. J. Beattie, D. J. Crowley, R. F. Higgin, W. H. Croly, J. E. G. Calverley, G. E. Froggatt, F. Campbell, J. Eadie, A. W. G. Clark, B. G. Reynolds, G. S. Ward, M. Wheeler, G. H. Winch, J. D. Russell, W. F. Waugh, J. Shaw, W. L. Stuart, W. H. Jones, C. P. Lankester, G. Holman, J. D. Walker, J. W. Clyne, J. Dwan, M. D'Albon, A. R. Moore, W. Knapp, J. E. Rea, W. F. Murphy, A. S. L. Biggart, H. W. Hackett, A. J. Hynd, J. Craig, E. Walsh, D. I. McNaughton, R. P. Parker, D. Ferguson, B. F. Howlett.

F. N. Smith to be temporary Honorary Captain.

P. A. E. Sheppard to be temporary Honorary Lieutenant.

R. McL. Gibson to be temporary Honorary Lieutenant whilst serving with No. 11 Stationary Hospital.

H. A. Lownds to be temporary Honorary Lieutenant whilst employed with the British Red Cross Society in France.

Officers relinquishing their commissions: Temp. Major E. C. Stabb (having ceased to be employed at the Manor (County of London) War Hospital); Temp. Capt. (acting Major) H. Dudley (on account of ill-health, and is granted the honorary rank of Captain); Temp. Capts. I. Vandandaigue, R. C. Pitt, A. D. Clinch, W. G. Thomas, A. H. Clough. Temp. Lieut. M. Briscoe.

SPECIAL RESERVE OF OFFICERS.

Lieutenants to be Captains: H. B. Dykes, D. McK. Sutherland, E. N. P. Martland, N. Kietz, R. D. Aylward, W. Eldinow, E. S. Phillips, W. D. Mackinnon, E. J. Coombe, J. Berry, R. F. C. H. Buchanan.

To be Lieutenants: C. C. H. Cuff, J. H. E. Moore and D. A. Dyer (from Leeds University Contingent, O.T.C.), C. D. Hewer (from University of London Contingent, O.T.C.), T. Colley, E. S. Gawne, and F. L. Whincup (from Manchester University Contingent, O.T.C.), B. Sergeant (from Durham University Contingent, O.T.C.).

Hon. Lieut. R. Graham to be Lieutenant.

To be Lieutenants: L. H. Duguid, G. Whittaker, S. H. Kemp.

Major T. W. A. Daman relinquishes his commission on account of ill-health, and is granted the honorary rank of Major.

Major (Brevet Lieut.-Col.) (temp. Lieut.-Col.) C. Rundle relinquishes his temporary rank on ceasing to be specially employed.

Capt. P. W. Edwards relinquishes his commission on account of ill-health, and is granted the honorary rank of Captain.

General List.—Capt. T. Graham, M.C., to be acting Major whilst specially employed. Capt. C. S. Lee relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

TERRITORIAL FORCE.

Capt. H. A. T. Fairbank is restored to the establishment on relinquishing his temporary commission in the R.A.M.C.

Capt. (acting Major) J. Patrick is now seconded whilst holding a temporary commission in the R.A.M.C.

Capt. (acting Major) A. C. F. Turner to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Capts. A. M. Davie and W. Scott to be acting Majors whilst specially employed.

Capt. W. B. Secretan is now seconded for duty overseas.

Capt. (Hon. Col.) Sir Thomas C. English is seconded whilst holding a temporary commission in the R.A.M.C.

Capt. W. G. Paget to be Major.

TERRITORIAL FORCE RESERVE.

Capt. (acting Major) E. B. Hinde, from R.A.M.C., to be Captain.

ROYAL AIR FORCE.

Medical Branch.—Lieut. F. H. Wallace to be Captain. H. A. Hewat (late temporary Surgeon, R.N.) is granted a temporary commission as Captain. T. D. J. Augustine Fuller is granted a temporary commission as Lieutenant. Administrative: Lieut. G. G. Coury, V.C., to be temporary Captain whilst employed as Captain.

THE American Red Cross has given £500,000 to the Joint Committee of the British Red Cross Society and Order of St. John "Our Day" Fund.

THE MEDICO-LEGAL SOCIETY.—A meeting of the society will be held at the rooms of the Medical Society of London, 11, Chandos-street, W., on Thursday, Nov. 14th, at 8.30 P.M., when the President, Dr. F. J. Smith, will deliver an address on Pensions and Their Allotment, to be followed by a debate.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Killed.

Lieut. D. G. K. Garrett, R.A.M.C., practised in Canada, and came over with the Expeditionary Force.

Capt. E. L. Jones, R.A.M.C., attached Highland Light Infantry, was a student at Guy's Hospital and qualified in 1913.

Capt. W. S. B. Hay, R.A.M.C., attached R.F.A., qualified at Belfast in 1914. For a short time he practised at Belfast, and joined up early in 1915.

Capt. C. L. Dold, R.A.M.C., attached S. Wales Borderers, qualified at Edinburgh in 1914, and joined up on the outbreak of war.

Capt. J. James, R.A.M.C., attached Highland Light Infantry, was a student at King's College, London, and qualified in 1903. He held appointments at the Westminster Hospital, at the Seamen's Hospital, Greenwich, and at the Western Dispensary, London, and joined the R.A.M.C. in 1908.

Capt. J. M. McLaggan, M.C., R.A.M.C., attached Royal Fusiliers, qualified at Aberdeen in 1913, and joined up on the outbreak of war. The award of the M.C. was recorded in THE LANCET of Nov. 13th, 1915, p. 1112.

Drowned.

Capt. D. Burns, R.A.M.C., qualified in Ireland in 1912, and prior to joining the R.A.M.C., was in practice in Dublin.

Lieut. R. J. Bassett, R.A.M.C., qualified in Ireland in November, 1917, and joined up shortly afterwards.

Capt. R. E. Lee, R.A.M.C., qualified at Dublin in 1910, and held an appointment at the Bootle Borough Hospital. Prior to joining the R.A.M.C. on the outbreak of war he was in practice at Blackrock, Dublin.

Major C. W. Duggan, R.A.M.C., qualified at Edinburgh in 1887, and early chose the Army Medical Service for his professional career.

Capt. M. Murphy, R.A.M.C.

Died of Wounds.

Capt. G. M. Cowper, R.A.M.C., attached Dorset Regiment, was educated at Cambridge and at St. Bartholomew's Hospital, London, and qualified in 1914, and joined up on the outbreak of war.

Capt. W. B. Jack, R.A.M.C., was educated at Glasgow University, and qualified in 1905. He held an appointment at the Glasgow Royal Infirmary, and at the time of joining the R.A.M.C. was in practice at Kendal, Westmorland, where he was honorary medical officer to the County Hospital, police surgeon, and medical officer and public vaccinator to the Grayrigg District of the Kendal Union.

Capt. A. A. Parker, M.C., Canadian A.M.C., qualified at Toronto in 1914, and prior to joining the Expeditionary Force was on the staff of the Hospital for Sick Children at Toronto. The award of the M.C. was recorded in THE LANCET of March 23rd, 1918, p. 450.

Capt. J. W. Frew, R.A.M.C., was a student at Edinburgh University and qualified in 1906. He was in practice for some years at Edinburgh, and afterwards proceeded to Barkly East, South Africa, where he was in practice prior to joining up.

Major S. S. B. Harrison, M.C., R.A.M.C., was a student at Guy's Hospital, London, and qualified in 1914. The award of the M.C. was recorded in THE LANCET of May 19th, 1917, p. 776.

Died.

Capt. G. Finch, R.A.M.C. (T.F.), was a student at St. Thomas's Hospital, London, and qualified in 1905. He held appointments at the Royal Westminster Ophthalmic Hospital, London, and at the Brompton Consumption Hospital, and was at one time school medical officer to the East Sussex County Council. At the time of going on active service he was assistant M.O.H. of East Suffolk. He died at Basra, Mesopotamia, of pleuro-pneumonia.

Lieut. E. H. Glenny, R.A.M.C., was a student at St. Bartholomew's Hospital, London, and qualified in July, 1917, and joined up forthwith. He died of pneumonia.

Capt. G. S. Brock, I.M.S., qualified in Edinburgh in 1910, and before joining the I.M.S. in 1912 he was in practice with his father in Rome.

Col. G. H. Van Zyl, South African Medical Corps, died at Wynberg from pneumonia.

Wounded.

Lieut. W. Hickey, R.A.M.C., attached East Surrey Regt.
Capt. F. B. Day, Canadian A.M.C.
Lieut.-Col. M. R. Taylor, D.S.O., R.A.M.C.
Capt. A. Wilson, R.A.M.C.
Lieut. H. G. D. Mathur, I.M.S.
Capt. A. L. McLean, Australian A.M.C.
Capt. R. F. Matters, Australian A.M.C.
Capt. I. D. Stubbs, R.A.M.C., attached London Regiment.
Lieut.-Col. W. W. Boyce. R.A.M.C.
Capt. W. A. Coats, R.A.M.C.
Capt. W. E. R. Dimond, R.A.M.C.
Capt. S. Hodgson, M.C., R.A.M.C., attached R.G.A.
Capt. M. L. Farmer, R.A.M.C., attached R.F.A.
Capt. G. Moore, R.A.M.C., attached Worces. Regiment.
Lieut. F. L. Richard, R.A.M.C., attd. S. Staffordshire Regt.
Capt. F. N. K. Falls, Canadian A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Major W. Y. Hunter, Canadian Infantry, killed in action, son of the late Dr. W. Hunter, of Margate.

Second Lieut. F. B. Atkinson, R.F.A., killed in action, younger son of Dr. J. A. Atkinson, of Newnham-on-Severn.

Lieut. E. C. Comley, M.C., Royal Munster Fusiliers, accidentally killed, son of the late Dr. J. M. Comley, of Calcutta.

Second Lieut. B. Daunt, Royal Sussex Regiment, killed in action, eldest son of Capt. W. Daunt, R.A.M.C., of Hastings.

Major J. C. L. Young, Alberta Regiment, killed in action, son of Lieut.-Col. J. Young, R.A.M.C., of Alexander-square, London, S.W.

Capt. D. C. B. Cotes, North Staffordshire Regiment, died of wounds, only son of Dr. D. F. B. Cotes, of Burton-on-Trent.

Capt. G. S. Brock, I.M.S., died at Rawul Pindi, India, only son of Dr. G. S. Brock, of Rome.

Lieut. D. R. Campbell, R.N., drowned at sea, younger son of Dr. D. Campbell, of Brixton-hill, London, S.W.

THE HONOURS LIST.

The following awards to medical officers are announced. All are members of the R.A.M.C. except where otherwise stated :—

Distinguished Service Order.

Temp. Capt. WILLIAM GRAHAME COBB, attached K.A.R.—For conspicuous gallantry and devotion to duty in action. For six hours, in the middle of a desperate fight at close quarters, he maintained his dressing station and attended the many wounded. Enemy's fire was coming from three directions, and the only cover was two ant-heaps. He frequently went forward to the firing line and brought in wounded at great personal risk. He undoubtedly saved many lives by his perseverance and determination, all the wounded being safely evacuated under the greatest difficulties.

Temp. Capt. (acting Major) JOHN GREENE, M.C.—For conspicuous gallantry and devotion to duty during an enemy attack. Although his advanced dressing station was heavily shelled and gassed he continued at duty, encouraging all by his courage and resourcefulness. He worked continuously for 30 hours, visiting his bearers' posts under heavy shell fire, and only rested when all wounded had been evacuated. His magnificent devotion to duty saved many lives.

Second Bar to the Military Cross.

Temp. Capt. (acting Major) DANIEL MCKELVEY, M.C.—For conspicuous gallantry and devotion to duty as liaison medical officer. He constantly kept touch with brigade and battalion headquarters, moving over roads and ground exposed to heavy shelling. His tireless energy, organising ability, and disregard of danger were largely instrumental in the successful clearing of casualties from the line.

Bar to the Military Cross.

Capt. VERNON CARLISLE BROWN, M.C., Australian A.M.C.—For great courage and resource in evacuating wounded from a forward area. The routes were being heavily shelled, and he established bearer relay posts in suitable positions after a full reconnaissance of the ground. During the whole operation his perseverance and initiative contributed largely to a quick evacuation of the wounded, while his energy and example stimulated the men.

Temp. Capt. JOHN CHARLES BOILEAU GRANT, M.C.—For conspicuous gallantry and devotion to duty. He attended to wounded men lying in the open under heavy fire, and subsequently for three days and nights, with little rest, he was constantly out with stretcher-bearers searching for and removing the wounded. He was undoubtedly the means of saving many lives, and his fine example was of the greatest value at a very trying time.

Temp. Capt. JOHN NELSON HUMPHREY, M.C.—For conspicuous gallantry and devotion to duty during an enemy attack. As bearer officer he repeatedly led his men up to the front line under very heavy fire. When the normal line of evacuation was broken he carried out a reconnaissance in full view of the enemy, and established a new means of communication, himself assisting to remove a tree across a road which was being heavily shelled. By his courage and resource he contributed largely to the rapid evacuation of the wounded, and saved many lives.

Temp. Capt. CHARLES CLOUSTON IRVINE, M.C.—For conspicuous gallantry and devotion to duty. When the shelter in which he was working received a direct hit from a shell, the explosion of which killed his sergeant and an orderly who were helping him, he was severely shaken but rallied himself and continued to attend to the wounded. A panic which might have ensued among the wounded and shell-shocked soldiers was averted by his courage and determination.

Temp. Capt. WILLIAM GRAEME DENROCHE McCALL, M.C.—For conspicuous gallantry and devotion to duty. When the enemy put down a heavy barrage, causing many casualties in his own and other units, he arranged for the collection of wounded, and attended them with the greatest coolness in the open, which necessitated his remaining in the barrage. Throughout the operations his energy and devotion to duty were admirable.

Capt. (acting Major) CAMPBELL McNEIL McCORMACK, M.C.—For conspicuous gallantry and devotion to duty. During an important engagement he organised the evacuation of the wounded with great skill and devotion to duty, proceeding frequently himself in charge of bearers, through heavy shelling, to the rear aid-posts. It was largely due to his able organisation and fine example of self-sacrificing gallantry that the numerous casualties were evacuated so expeditiously.

Military Cross.

Capt. (acting Major) GALVIN ALEXANDER ELMSLIE ARGO.—For conspicuous gallantry and devotion to duty. While in charge of a light section of a cavalry field ambulance during an attack he performed most useful work. His brigade sustained considerable casualties, and he organised a stretcher party and rescued several wounded, though the ground was being shelled at the time. He showed great coolness and devotion to duty.

Capt. ISAAC MANLY BARROW, Australian A.M.C.—Under heavy fire he dressed wounded in an open trench, and when the battalion attacked he advanced with them and established his dressing station behind the front line. When two of his bearers were wounded carrying a casualty he dashed forward under direct machine-gun fire to their assistance. Later he was severely wounded. Throughout the operations he showed conspicuous gallantry and devotion to duty.

Capt. GEORGE ALBERT BLUMER, Australian A.M.C.—For conspicuous gallantry and devotion to duty. When the R.A.P. was heavily shelled, a direct hit causing casualties amongst the staff, he succeeded, single-handed, in getting the wounded away, and attended to many cases in the area of the bombardment. Throughout the period his courage and devotion saved many lives.

Temp. Capt. STANLEY ARTHUR BULL.—For conspicuous gallantry and devotion to duty in helping under continuous shell fire to dig out several men who had been wounded and buried. He attended men under conditions which demanded considerable nerve and determination.

Capt. JOHN VICTOR LIVINGSTONE GRANT.—For conspicuous gallantry and devotion to duty when his ambulance was attacked on the march by enemy aeroplanes. A large ammunition dump at the side of the road was exploded, igniting a lorry loaded with petrol, and the fire spread to the ambulance wagons. He immediately collected men and for two hours worked coolly and fearlessly near the exploding dump, under repeated bombing attacks from aircraft, tending and removing the wounded.

Capt. ROBERT LAWSON.—During several days' operations he worked continuously at high pressure under heavy shell fire. His energy and care for the wounded under the most difficult circumstances were beyond all praise, and he showed great gallantry and devotion to duty in organising his bearers and collecting wounded from a heavily-shelled area, thereby saving many lives.

Capt. BENJAMIN LYON, Canadian A.M.C.—For conspicuous gallantry and devotion to duty in action. After a charge by two squadrons up a road this officer followed on foot and attended and evacuated the wounded under heavy artillery and machine-gun fire, remaining there until all the wounded were brought in.

Temp. Capt. HENRY LESLIE MESSENGER.—For conspicuous gallantry and devotion to duty while an exceptionally heavy shoot was being carried out on a battery. He crossed 400 yards in the open under heavy barrage to attend to a wounded man. On his way he was knocked down by an exploding shell, but in spite of this he proceeded with his duties. He showed great grit and determination.

Capt. WALTER JAMES ELLIS MINGIE, Canadian A.M.C.—For conspicuous gallantry and devotion to duty during an attack. He maintained close touch with all the regiments, and under heavy shell and machine-gun fire he evacuated all casualties with wonderful rapidity. Hearing that an officer was seriously wounded in the front line trench, he immediately went forward and succeeded in dressing and removing him. He showed the greatest coolness and resource throughout.

Temp. Capt. STANLEY ANDREW WOOLLASTON MUNRO.—He organised his advanced dressing station and stretcher-bearing parties under very difficult circumstances, and when it was found necessary to withdraw the battalion to the original position he reorganised the stretcher-bearers and himself took up a post in the front line where he could better render assistance to the wounded. He also went and bandaged a wounded man who was lying in a position that was being shelled and had him conveyed to safety. Throughout his cheerfulness, energy, and disregard for his own personal safety had a most inspiring effect on all.

Temp. Capt. ANDREW NEILSON.—For conspicuous gallantry and devotion to duty when a number of wounded were left after a cavalry charge. He took two light ambulances and a bearer party right up to the front line and cleared five wounded lying out in front. This was done under continuous machine-gun fire directed on the road in the dark. He showed great courage and initiative.

Temp. Lieut. WILFRED PATON PHILIP.—During an attack he showed great gallantry in attending to a large number of wounded. He three times had to move his dressing station on account of shell fire, but stuck to his duties with great determination and saved many lives.

Temp. Capt. (acting Major) CLIVE JUSTIN HICKS SHARP.—For conspicuous gallantry and devotion to duty. He most ably supervised the evacuation of wounded during a rapid advance. Moreover, on hearing that one of the advanced dressing stations had been hit by a bomb, he at once went to the spot and helped with the wounded, and his coolness and energy were of the greatest assistance in reorganising the dressing station under shell fire, so that the evacuation of the wounded proceeded uninterruptedly.

Temp. Capt. JOHN PATRICK SHAW.—For conspicuous gallantry and devotion to duty. Under severe enemy shelling he carried on his work in the open, his aid-post affording neither space nor protection. He did invaluable service under most trying circumstances, as his was the collecting station both for his own battalion and for the brigade front. He showed magnificent energy and devotion to duty.

Capt. (acting Major) JAMES MARTIN SMITH.—For conspicuous devotion to duty when an enemy shell exploded an ammunition dump near his dressing station. He rushed to the spot, organised a rescue party regardless of exploding shells, and continued to attend to the wounded until all were removed to safety. He saved many lives by his gallant conduct.

Temp. Capt. ANDREW WILLIAM PALETHORPE TODD.—During an attack this officer, who was stationed at the advanced collecting post, behaved with great gallantry under the heavy artillery fire to which his post was subjected at frequent intervals during the day. He dressed and attended to large numbers of wounded men with unremitting devotion to duty, and also went forward under heavy fire with stretcher-bearers to the aid-posts, and by his able leadership rendered valuable service in evacuating the wounded.

Military Medal.

Dr. PHŒBE CHAPPLE, R.A.M.C., attached Q.M.A.A.C.—For gallantry and devotion to duty during an enemy air raid. While the raid was in progress Dr. Chapple attended to the needs of the wounded regardless of her own safety.

MENTIONED IN DESPATCHES.

In a despatch received from Sir Douglas Haig, dated July 20th, 1918, and dealing with the period following the actions in the vicinity of Cambrai in the first week of December, 1917, and leading up to the set-back to the Allies in March last, the following reference to the medical services is included:—

Much additional work, also under circumstances of unusual difficulty and danger, has necessarily been thrown upon the medical and nursing services. The conduct of the Royal Army Medical Corps and Medical Corps of the Overseas Dominions has again been beyond all praise, while the efficient organisation of the medical services as a whole proved itself fully equal to the occasion. I take this opportunity to acknowledge the lasting debt due in this connexion to Lieutenant-General Sir A. T. Sloggett, K.C.B., K.C.M.G., K.C.V.O., K.H.S., until recently Director-General of Medical Services, with whom the work of the medical services has so long been identified.

Medical News.

UNIVERSITY OF CAMBRIDGE.—The following candidates have satisfied the examiners in both parts of the Examination in Sanitary Science:—

Andrew Grant, Captain, R.A.M.C.; Joan Hardy; William Athol Desmond King, Captain, R.A.M.C.; Aloysius Dominic MacMahon; Mary Helen Routledge; Hilda Mary Scarborough; Percy Stocks; Shankarlal Vaidya; John David Whitfield; and James Herbert Wright, Staff-Surgeon, R.N.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates have passed the Triple Qualification Examinations:—

THIRD EXAMINATION.

John Stevenson, John Rorrison McCubbing, Agnes Macilwraith Hill, Thomas Poole, Veeravagu Kathiravelu Paramanayagam, Henry Aidan Newton, Daniel Augustine Dias, James Sydney Alexander Rogers, and Walter Granville Carew.

Pathology.—Hamish Russell Fisher.

Materia Medica.—Alexandra Mary Limont and Peter Fraser Fairley.

FINAL EXAMINATION.

Thomas Talmage Read, John Wilson Gaston, Rebecca Goodman, George Thomas Graham Boyce, Don Alfred Walpola, Anup Singh Narula, Apcar Galustian, Sylvester Henry Meiring, John Birchmans Bourke, Arthur Stanley Hughes, and Fergus Donald Yourell.

Medicine.—William Gibb, Victor Albert Rankin, and Krishna Abaji Deodhar.

Surgery.—Victor Albert Rankin.

Midwifery.—Thomas Hardie and William Gibb.

Medical Jurisprudence.—Alexander Forsyth Caddell, Mayberry Hugh Carleton, James Maxwell Adams McVey, Andrew Francis Brigimen, John Stevenson, and Thomas Poole.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on Oct. 17th the following gentlemen, having passed the requisite examinations between July 1st and 5th, were admitted Fellows:—

Thomas Hood Wilson Alexander, Jan Martimus Beyers, Edward Stanley Brentnall, Francis Davidson Cairns, Harold Liat Him Lim, Thomas Robert Gray Melrose, George Robertson, Cecil Michell Rolston, Baron Theodore Rose, Thomas Henry Sanderson-Wells, John Zacherias Truter, William Robert Elsteb Unthank, and Batukdeva Prasad Varma.

At the annual meeting of the College Dr. Robert McKenzie Johnston was re-elected President for the ensuing year.

DONATIONS AND BEQUESTS.—By the will of the late Dr. Louis Albert Dunn, of Gerrards Cross, Bucks, the testator left to Guy's Hospital the gold medal presented by London University when he took his degree as Master in Surgery, being the first of its kind ever won by a Guy's man; and the residue of his property in trust for his two brothers for life, with remainder to the survivor for life, with ultimate remainder to Guy's Hospital for the Medical School. The gross value of the estates is £68,000 and the net personalty £56,000.

THE BELL FUND.—Dr. S. A. Kinnier Wilson asks us to acknowledge a donation to the Dr. J. H. Bell Fund of £1 1s. from Dr. H. J. Norman. Subscriptions should be sent to Dr. Wilson, at 14, Harley-street, London, W.1.

MEDICAL SOCIETY OF LONDON.—A meeting of this society will be held at 11, Chandos-street, Cavendish-square, W., on Monday, Oct. 28th, at 8.30 P.M., when papers will be read on "Rheumatoid Arthritis": The Pathology, by Mr. T. S. P. Strangeways; the Treatment, by Dr. A. P. Beddard. Medical officers of the Allied Forces will be welcome at the meeting.

MEMORIAL TO THE LATE DR. FRANCIS MCKEE.—On Oct. 17th a portrait of the late Dr. Francis McKee, of Dromore, co. Down, was unveiled at the Cowan Heron Hospital, Dromore, and a memorial bed was presented to the institution in his memory. Both have been given by Dr. McKee's friends to commemorate his services as honorary surgeon to the hospital from its opening in 1900 to 1915.

THE annual general meeting of the Army and Navy Male Nurses' Co-operation will be held at 52, Welbeck-street, London, W., on Monday, Nov. 4th, at 4 P.M. The honorary treasurer's annual statement reports an improvement in the financial position of the Co-operation.

MEDICAL DEFENCE UNION.—Sir John Tweedy, LL.D., ex-President, Royal College of Surgeons of England, has been again re-elected President of the Medical Defence Union; Mr. Gunton Alderton re-elected honorary treasurer; and Dr. A. G. Bateman and Mr. W. E. Hempson re-elected secretary and solicitor respectively. There have been added to the Vice-Presidents Surgeon-Commander C. T. Baxter, R.N., and Surgeon Lieutenant Commander H. B. Hill, R.N., as representatives of the Navy Medical Staff; the sister Service has been well represented for some years. The annual general meeting was held on Sept. 19th, when the annual report was presented and adopted and the usual statutory resolutions passed unanimously. The work of the Union was reported by the President to have greatly increased owing to the war, and its services have been sought and greatly appreciated by members on active service who required advice and assistance in matters relating to their military appointments and their civil practices.

THE OPENING OF THE WINTER SESSION AT THE BELFAST MEDICAL SCHOOL.—The winter session opened on Tuesday, Oct. 15th, without any formal address at Queen's University, but at the hospital Dr. J. B. Moore gave an introductory address on the students' career and on problems of reconstruction, the solution of which he saw in the direction of coöperative effort, resulting in a life of reasonable comfort and prosperity.—At the Royal Victoria Hospital on Thursday, Oct. 17th, Colonel J. Sinclair, C.B., late Consulting Surgeon to H.M. Forces, gave an address to men and women students in the King Edward VII. Memorial Hall. He referred to the devotion and courage shown by nurses in the war, specially mentioning the sisters and nurses trained at the Royal Victoria Hospital Training School, who, with their superintendent, Miss Bostock, had received the award of the First Class Royal Red Cross, four other Royal Red Crosses, two Military Medals, and four mentions in despatches for services in India, Mesopotamia, Egypt, Salonika, and on the Western fronts. Colonel Sinclair concluded by referring to the shortage of doctors at the front. He urged that a determined effort should be made to fill the ranks, announcing that should a sufficient number of students, academically eligible, at once present themselves he believed the University would grant them a special examination for the purpose.

THE LATE ROBERT A. BUNTINE, M.B., C.M. MELB.—A popular member of the South African Union Parliament, Dr. R. A. Buntine, was among the victims of the torpedoing of the *Galway Castle* off Ushant last month. Dr. Buntine was returning to South Africa from England with his two daughters, aged 20 and 18 respectively. The elder one perished with her father; the younger was among the saved. Dr. Buntine was born in Melbourne 50 years ago, and migrated to Natal in 1893. He took part in the Boer War with the Natal Medical Corps, and went through the siege of Ladysmith, in connexion with which he was mentioned in despatches for distinguished service in the field. A South African correspondent writes: "The doctor was returned to the Union Parliament three years ago as the Member for Maritzburg South. He belonged to General Botha's South African Party, and the Premier spoke of him a sa 'true friend and great help and support.' A man of great kindness of heart, Dr. Buntine sheltered on his farm an old friend of Teutonic nationality at the time of the anti-German riots of 1915 following on the *Lusitania* tragedy. No one will ever know the number of the poor and needy whom the deceased Good Samaritan attended without fee or wish for reward, and even with cost of medicine. His death is deeply lamented in South Africa."

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Housing Bill.

Mr. HAYES FISHER (President of the Local Government Board) on Thursday, Oct. 17th, presented in the House of Commons a Bill designed "to confer further powers on county councils in relation to the provision of houses for persons in their employment or paid by them, and to the housing of the working classes." It was read a first time.

The Midwives Bill.

The Midwives Bill has received a third reading in the House of Commons. In Committee Clause 12, which repeals Section 9 of the Midwives Act, 1902, enabling county councils to delegate their powers to district councils, was carried by 60 votes to 38.

Naval and Military War Pensions Bill.

The Naval and Military War Pensions Bill, which was read a second time in the House of Commons on Tuesday, Oct. 22nd, deals with administrative matters and local War Pensions Committees. It was criticised in many details. Clause 7 lays down that if a disabled officer or man refuses or without reasonable excuse fails to submit himself for medical examination, or refuses to undergo the treatment prescribed for him in an institution or otherwise, his pension or allowance may be suspended. Sir WATSON CHEYNE took exception to this provision. Compulsory operations, he said, would require very serious consideration indeed. If the disability were not something which would imperil the man's life the matter should be left to his own free will and judgment without compulsion.

HOUSE OF COMMONS.

THURSDAY, OCT. 17TH.

Venereal Disease and Regulation 40 D.

Mr. LEES-SMITH asked the Home Secretary whether he could now state how many women had been arrested under the Defence of the Realm Regulation 40D; and in how many cases convictions had been obtained.—Sir G. CAVE replied: Up to Oct. 8th there had been 201 prosecutions under the regulation. Convictions had been obtained in 102 cases, in 51 of which the defendants pleaded guilty. Three other defendants were bound over or placed on probation, and six cases were under remand when the return was made.

Mr. LEES-SMITH: In view of the answer that in nearly one out of every two cases no conviction was obtained, may I ask whether any arrangement has been made to give compensation to the women who have been subjected to this examination?—Sir G. CAVE: I think that the return shows that the magistrates are very careful, and do not convict except in very clear cases.

Mr. DILLON: Will the right honourable gentleman undertake to give the House an early opportunity of discussing this abominable regulation?

Lord H. CAVENDISH BENTINCK: In view of the futility of this Order will the right honourable gentleman withdraw it altogether?—Sir G. CAVE: As a matter of fact, the regulation is being considered by a committee, which will report in due course.

Mr. H. SAMUEL: In view of the very widespread interest in this matter will my right honourable friend endeavour to expedite the report of the committee?—Sir G. CAVE: The committee has been asked to report as soon as possible.

Mr. DILLON: Will the right honourable gentleman allow the House an opportunity of discussing this matter before the committee reports, which may not be until after Christmas?—Sir G. CAVE: That is not a question for me, but in any case it would be very undesirable to have a discussion while the committee is considering the question.

Mr. PRINGLE: Can the right honourable gentleman give the House an assurance that the committee will report before the Prorogation?—Sir G. CAVE: I cannot, of course, do that. The committee has been asked to report as early as possible.

Mr. DILLON: I shall raise this question at the very earliest opportunity.

Mr. LEES-SMITH asked whether the terms of reference of the committee set up to inquire into the Defence of the Realm Regulation 40D were confined to the modification of the regulation or included also the question of its withdrawal.—Sir G. CAVE answered: The committee was appointed to consider the regulation and what modification (if any) should be made in its terms or in the procedure for enforcing it, and I do not think the committee would be precluded from considering the question of its withdrawal.

Mr. LEES-SMITH: As the committee is considering the question of the withdrawal of this regulation, and in view of the general hostility to it, will the right honourable gentleman have it suspended until the committee has reported?—

Sir G. CAVE: No. The Cabinet has already given a decision on that point.

Mr. ALDEN: If the committee reports against the regulation can the right honourable gentleman in his own person withdraw it?—Sir G. CAVE: I could not. It would have to be rescinded by Order in Council.

Housing in Ireland.

Mr. SCANLAN asked the Chief Secretary for Ireland whether the Government had prepared a scheme for the provision of suitable houses for the workers in the towns and cities of Ireland; whether the Treasury had been requested to support such a scheme; and when the Government would begin to carry out in Ireland a scheme to settle the housing problem.—Mr. SHORTT said in reply: I am not in a position to make any statement on the subject.

Mr. SCANLAN: Has the matter of housing engaged the attention of the right honourable gentleman at all?—Mr. SHORTT: Yes, to a very considerable extent.

Housing Scheme for Lanarkshire.

Mr. DUNCAN MILLAR asked the Secretary for Scotland what progress had been made with the additional housing scheme for Lanarkshire which was some time ago approved by the Ministry of Munitions and the Scottish Local Government Board, and the number of houses which had been allocated to each district.—Mr. MUNRO wrote in reply: Proposals, I understand, have been made by the Ministry of Munitions to the local authorities and are at present receiving their consideration.

MONDAY, OCT. 21ST.

Artificial Limbs for Discharged Soldiers.

Sir MONTAGUE BARLOW asked the Pensions Minister whether his attention had been called to the delay in obtaining repairs to the artificial limbs of discharged sailors and soldiers; whether, in view of the suffering and hardships entailed, he would consider the advisability of having such limbs standardised; and whether he could state how long it was likely to be before he is able to carry out his promise of issuing a spare limb to each man so that he would be able to substitute one while the other was being mended.—Mr. HODGE replied: My attention has been drawn to the delay. A recent instruction which enables local War Pensions Committees to authorise repairs (locally where possible) without previous reference to the Ministry will, it is hoped, obviate delay in minor cases, and, with regard to major repairs and the readmission of pensioners into limb-fitting centres, the increase in the number of beds at fitting centres from 972 in February, 1918, to 2196 in October will enable cases to be more expeditiously dealt with. It has not yet been found possible to standardise limbs, as no specimen brought to the knowledge of the expert Advisory Council has shown such advantages over any other as to warrant it being made the standard pattern. The promise to issue a spare limb to all cases will, I hope, be carried out within a reasonable period, but clearly the primary fitting of limbs must be the first consideration. It is proposed to supply a light provisional peg leg of fibre or other prescribed pattern in all cases for use in emergency. This should obviate inconvenience to men until the spare limb can be provided.

Indian Medical Service.

Colonel YATE asked the Secretary of State for India whether he had received a reply from the Government of India regarding the position of officers in the Indian Medical Service; and what increase of pay had been granted to these officers so as to ensure an efficient and contented Indian Medical Service.—Mr. MONTAGU answered: I regret I am not in a position to announce a decision on this question, regarding which I am in telegraphic correspondence with the Government of India. I am doing all I can to expedite the settlement of what I recognise to be an urgent and important issue, and hope to be in a position to make a statement within a week or two. I will let my honourable and gallant friend know when a decision has been reached.

TUESDAY, OCT. 22ND.

Serious Outbreak of Rabies.

Answering Sir W. BULL, in regard to the spread of rabies amongst dogs in the counties of Devon and Cornwall, Mr. PROTHERO (President of the Board of Agriculture) stated that in all 40 cases of rabies had been confirmed since Sept. 7th—35 in Devon and 5 in Cornwall. Of these no fewer than 29 occurred in the county borough of Plymouth. Seven dogs, which had been in contact with dogs at a place where an outbreak had occurred, had been taken to places outside Devon and Cornwall. These had now all been traced and isolated. It would be seen that grave risk of the spread of this disease to other parts of the country had been thus incurred. The right honourable gentleman proceeded: Human life is at stake in this matter. At least 21 persons are known to have been bitten by these rabid dogs, nine being children, and any person who fails to assist by giving information required by my Department will incur a very grave responsibility should the disease spread to other districts.

An HON. MEMBER: Have any deaths resulted from the bites of these dogs?—Mr. PROTHERO: No, not up to the present.

Fazakerley Sanatorium.

Mr. PENNEFATHER asked the Parliamentary Secretary to the Local Government Board how many discharged men there were in Liverpool who were suffering from tuberculosis caused or aggravated by military service, and unable to secure proper treatment owing to lack of sanatorium accommodation; and what steps would be taken to provide sufficient accommodation.—Mr. WALSH replied: I am informed that the number, which varies from day to day, is approximately 140. As to the provision of further accommodation, my right honourable friend has been taking all practicable steps to expedite the completion of the Fazakerley Sanatorium, and has reason to hope that it will be ready for the reception of patients within the next two or three months.

WEDNESDAY, OCT. 23RD.

Ministry of Health.

Mr. BOOTH asked the Chancellor of the Exchequer whether communications reached him from the Friendly Societies and trade-unions expressing opposition to any proposed Ministry of Health and local government which would place the health insurance department in association with the Poor-law administration, and what answer he had given thereto.—Mr. BONAR LAW replied: I am informed that resolutions have been received from these societies, but I hope that when the Bill has been discussed this opposition will not be maintained.

BOOKS, ETC., RECEIVED.

BLACKIE AND SON, London, Glasgow, and Bombay.
Medicinal Herbs and Poisonous Plants. By David Ellis, D.Sc. 2*s.* 6*d.*

P. BLAKISTON'S SON AND CO., Philadelphia.
Details of Military Medical Administration. By J. H. Ford, M.D. 2nd ed.
Medical Bacteriology. By J. A. Roddy, M.D.
Mammalian Anatomy, with Special Reference to the Cat. By A. Davison, Ph.D. 3rd ed., revised by F. A. Stromsten, D.Sc.

BRITISH MUSEUM (NATURAL HISTORY), B. QUARITCH AND DULAU AND CO., London.
Rats and Mice as Enemies of Mankind. By M. A. C. Hinton. 1*s.*

CONSTABLE AND COMPANY, London.
Fields and Battlefields. By No. 31540. 5*s.*

GOVERNMENT PRINTING OFFICE, Washington.
The Evolution of National Systems of Vocational Re-education for Disabled Soldiers and Sailors. By D. C. McMurtie.

LAURIE, T. WERNER, London.
Roving and Fighting Adventures under Four Flags. By Major E. S. O'Reilly. 11*s.* 6*d.*

LEA AND FEBIGER, Philadelphia and New York.
Military Surgery of the Zone of Advance. By G. de Tarnowsky, M.D. $1.50.

LIPPINCOTT (J. B.) COMPANY, London and Philadelphia.
Equilibrium and Vertigo. By I. H. Jones, M.D., and L. Fisher, M.D. 21*s.*
A Manual of X Ray Technic. By A. C. Christie, Major, U.S.A. 12*s.* 6*d.*
Mastitis of the Cow. By S. Wall. Translated by W. J. Crocker. 12*s.* 6*d.*
Applied Anatomy. By G. G. Davis, M.D. 5th ed. 30*s.*

METHUEN AND CO., London.
Present-day Applications of Psychology, with Special Reference to Industry, Education, and Nervous Breakdown. By C. S. Myers, M.D. 1*s.*

MILFORD, HUMPHREY, London.
Medical Report of the Rice Expedition to Brazil. By W. T. Councilman, M.D., and R. A. Lambert, M.D. 5*s.* 6*d.*

OLIVER AND BOYD, Edinburgh.
Reminiscences of a Student's Life at Edinburgh in the Seventies. By Alisma. 4*s.*

YEAR BOOK PUBLISHERS, Chicago.
Practical Medicine Series. Edited by C. L. Mix, M.D. Vol. III.: Eye, Ear, Nose, and Throat. Edited by C. A. Wood and Others. $1.60.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held in Manchester on Oct. 18th, Mr. Miles Phillips (Sheffield), the President, being in the chair.—Mr. W. Blair Bell (Liverpool) exhibited specimens of: (1) Carcinoma Corporis Uteri secondary to Carcinoma Mammæ; (2) Carcinoma of the Fallopian Tubes; (3) Hæmatometra in Accessory Uterine Cavity.—The President described: (1) Two cases of Concealed Accidental Hæmorrhage of Toxæmic Origin; (2) a case of Decortication of a Kidney for Post-eclamptic Suppression of Urine.—Dr. W. Fletcher Shaw (Manchester) read notes on: (1) Inversion of the Uterus occurring twice in the first eight days of the puerperium; (2) Ectopic Gestation with well-developed Fœtus free in Abdominal Cavity.—Dr. H. Briggs (Liverpool) read a paper on Placenta Prævia.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

MEETINGS OF SECTIONS.

Monday, Oct. 28th.

ODONTOLOGY (Hon. Secretaries—F. N. Doubleday, G. Paton Pollitt, J. Howard Mummery): at 7.30 P.M.
Presidential Address by Mr. G. G. Campion.
Casual Communication by Mr. George Northcroft.

Friday, Nov. 1st.

LARYNGOLOGY (Hon. Secretaries—Frank A. Rose, Irwin Moore): at 4 P.M.
Cases and Specimens will be shown by:—
Mr. Somerville Hastings, Mr. Woakes, Mr. Hunter Tod, Mr. J. Gay French, Dr. Irwin Moore, Dr. Dundas Grant, Dr. Andrew Wylie, and others.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.
MONDAY, Oct. 28th.—8.30 P.M., Papers on Rheumatoid Arthritis:—Mr. T. S. P. Strangeways: The Pathology; Dr. A. P. Beddard: The Treatment.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
FRIDAY, Nov. 1st.—5 P.M., Museum Demonstration:—Prof. A. Keith: Bone Setting—Ancient and Modern.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of Post-Graduate Course were given in issue of Sept. 27th.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.

NATIONAL ASSOCIATION FOR THE PREVENTION OF CONSUMPTION AND OTHER FORMS OF TUBERCULOSIS, in the Large Hall, 20, Hanover-square, W. 1.
TUESDAY, Oct. 29th.—4 P.M., Address:—Prof. S. M. Gunn: Tuberculosis Propaganda Work in France (illustrated by lantern-slides).

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.
Course of Lectures on Public Health Problems under War and After-war Conditions (each Lecture will be followed by a Discussion):—
WEDNESDAY, Oct. 30th.—4 P.M., Lecture IV:—Lieut.-Col. L. W. Harrison, M.B., D.S.O.: The Prevention and Abortive Treatment of Venereal Disease.

Communications, Letters, &c., to the Editor have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Army and Navy Male Nurses' Co-operation, Lond.
.—Mr. J. Burns, Edinburgh; Dr. A. Breinl, Townsville, North Queensland; Mr. G. Bethell, Lond.; Maggiore Prof. P. Boveri; Dr. A. G. Bateman, Lond.; Lt.-Col. J. W. Bird, D.S.O., R.A.M.C.(T.); Mrs. Cloudesley Brereton, Lond.; Rev. W. H. Bradley, Coleraine; Board of Agriculture and Fisheries, Lond.; Capt. J. Brereton-Barry, Camberley.
C.—Dr. J. B. Christopherson, Khartoum; Lt. Col. N. Cheune, I.M.S.; Central Association for the Care of the Mentally Defective, Lond., Asst. Sec. of; Capt. D. Campbell, late R.A.M.C.; Capt. H. W. Crowe, R.A.M.C.; *Chemist and Druggist*, Lond., Editor of; Chadwick Trust, Lond.; Capt J. Campbell, R.A.M.C.(S.R.); Dr. F. G. Crookshank, Lond.
D.—Mr. H. Dickinson, Lond.; Mr. A. Dandridge, Beckenham; Capt. F. Dillon, R.A.M.C.
E.—Mr. D. L. Eadie, Edinburgh.
F.—Mr. C. Fitch, Lond.; Capt. P. Figdor, R.A.M.C; Major N. H. Fairley, A.A.M.C.; Staff-Surg. P. Fildes, R.N.V.R.
G.—Mr. J. W. G. Grant, Cardiff; Mr. H. E. Girdlestone, Peterfield.
H.—Capt. R. Hall, R.A.F.; Mr. J. T. Henderson, Pietermaritzburg; Dr. F. Hall, Makogai; Dr. Howell, Felixstowe.
I.—Capt. A. C. Inman, R.A.M.C.; Institute of Hygiene, Lond., Sec. of; Insurance Committee for the County of London.
K.—Dr. H. C. Kidd, Bromsgrove; Mr. R. Kirkland, Wishaw; Mr. W. H. Kesteven, Kingston Hill.
L.—Col. Sir W. B. Leishman, K.C.M.G., C.B.; Local Government Board, Lond.; Dr. Eleanor Lowry, Lond.; Dr. G. W. A. Lynch, Suva, Fiji; Dr. R. B. Low, Lond.
M.—Dr. H. A. Macewen, Lond.; Mr. G. E. Morgan, Lond.; Dr. W. C. Morton, Leeds; Dr. J. B. Mennell, Lond.; Mr. J. Y. W. MacAlister, Lond.; Dr. A. J. MacCullum, Kendal.
N.—National Baby Week Council; National Hospital for the Paralysed, Lond.; National Egg Collection Committee, Lond.; *National Food Journal*, Lond.
O.—Mr. T. O'Farrell, Dublin; Mr. J. Offord, Lond.
P.—Dr. H. R. Prentice, Lond.; Panel Committee for the County of London; Miss K. Pilkington, Lond.; Lt.-Col. D'Arcy Power, R.A.M.C.(T.); Capt. B. Parsons-Smith, R.A.M.C.; Dr. E. P. Poulton, Lond.; Mr. H. A. Powell, Lond.
R.—Mr. G. A. Riddell, Lond.; Dr. R. R. Rentoul, Liverpool; Mr. H. M. Rainsford, Lond.; Mr. H. Rundle, Southsea; Mr. S. C. Ranner, Lond.; *Revista Odontologica*, Buenos Aires.
S.—Serbian Red Cross, Lond.; Dr. E. I. Spriggs, Banff; Dr. A. Savill, Lond.; Capt. V. E. Sorapure, R.A.M.C.; South Australia, Registrar-General of, Adelaide; St. John's Hospital, Lond.; Miss E. Stuart, Lond.
T.—Mrs. D. Tennent, Lond.
W.—Capt. P. Wood, R.A.M.C.; Dr. A. J. Whiting, Lond.; Mr. A. Winterbottom, Lond.; Dr. F. P. Weber, Lond.; Lt.-Col. J. H. T. Walsh, I.M.S. (retd.); West London Hospital Post-Graduate College, Dean of.
Y.—Mr. M. Yearsley, Lond.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

RACIAL RECONSTRUCTION AND THE PROPOSED MINISTRY OF HEALTH.

SUMMING up the principles which should govern the formation of a Ministry of Health, Dr. C. W. Saleeby, in a lecture on the above subject delivered at the Royal Institute of Public Health, London, on Oct. 16th, said that to learn, to teach, to guard, and to help must be the watchwords. The first heading would embrace a permanent anthropometric department, which would not only deal with physiology and anatomy, but include, as far as possible, a survey of the psychological factors of mind, while something should be done in regard to the selection of proper vocations for the people. There should also be a general up-to-date registry of births and deaths, with information respecting the living, and perpetual medical research. In part at least the Ministry of Health should control the instruction of all those directly concerned with the various aspects of health and healing, while the general public must also be taught if such a Ministry was to be an organisation appropriate to a free people. A watch should be kept on our weaknesses, prejudices, and preferences in regard to food, drink, and other matters, and finally help given by special departments for mothers and babies, and for recreation. We were, he suggested, well on the way to the conquering of Mars and Bacchus, and the next enemy that would have to be dealt with was Mammon. Bradford, which was credited by the lecturer with making so much money that the people did not know what to do with it, was a model city with regard to the provision for mothers and babies, yet the death-rate was 14·6 and the birth-rate 13·2. The logical deduction from these figures was that Bradford was dying out, the reason being that home life had been destroyed. So long as mothers went out to work there were no homes, but the only factor of national safety was the mother in the home and the baby at her breast. Objectives for a Ministry of Health Dr. Saleeby sees in protection from racial poisons, diachylon of lead, alcohol, and, most important of all, the parasite of syphilis.

HOW TO FEED THE FAMILY.

THE Ministry of Food has issued to the public a pamphlet (F.S.B. 27) containing a series of dietaries on which, with extreme economy and the avoidance of waste, health and efficiency may be maintained. Three dietaries are given in detail which work out at a weekly cost per "man" of 14*s.* 10*d.*, 10*s.* 6*d.*, and 7*s.* 5*d.*, or for a family consisting of a man, his wife, and four children from 8–16 years of age at £3 14*s.* 1*d.*, £2 12*s.* 7*d.*, and £1 17*s.* respectively. The pamphlet has been drawn up under the supervision of Professor E. H. Starling, whose name is sufficient guarantee for the accuracy of the physiological value of the foodstuffs in the quantities suggested. The recipes, too, appear to have been well selected and to bear the impress of the practical cook. The pamphlet is, of course, applicable to present conditions, and to present conditions only. With pre-war wages and pre-war prices no married worker was likely to spend £3 10*s.* to £4 a week on food for himself, his wife, and four children. We may recall the figure of 4*s.* 4*d.* given by Mr. B. Seebohm Rowntree in his recent book, "The Human Needs of Labour," as the weekly cost per "man" of a minimum dietary consistent with health on the basis of retail prices ruling in York in July, 1914. Between that date and July, 1918, the date at which the prices in the Ministry of Food's pamphlet are reckoned, the average price of foodstuffs had gone up some 120 per cent., which would bring Mr. Rowntree's figure to 9*s.* 6*d.* Mr. Rowntree admits that his standard errs on the side of economy. Dietary I. of the Ministry of Food is doubtless a little generous, and Dietary III. more than a little skimpy. Dietary II., being the happy mean, at the convenient figure of 10*s.* 6*d.* a week, deserves special attention. Copies of the pamphlet may be obtained gratis on application to the Despatch Section, Ministry of Food, 35, Park-street, London, W. 1.

PUBLIC EULOGY OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—Referring to the note with the above heading in THE LANCET of June 22nd it may be of interest to recall a somewhat similar eulogy in this small colony of Fiji. A good many years ago the writer was asked to see an elderly Fijian chief afflicted with a painful suppurating external pile. This was treated in the usual way to his great eventual content, subsequent rectal examination being made to determfne if internal piles were also present. The old gentleman subsequently described what had occurred, to the resident magistrate, in the following words: "The doctor came and removed my entire intestines, placed them

on a plate (which, as your note says, is apparently necessary, and is so out here also), washed them, and returned them to their place." He then turned to his native henchman for confirmation of the story, and obtained loyal support for it.

I am, Sir, yours faithfully,

Suva, Fiji, Sept. 3rd, 1918. G. W. A. LYNCH.

THE AUGWIN DENTAL EMERGENCY OUTFIT.

THIS practical little dental emergency outfit has been designed by Mr. Augustus Winterbottom, F.R.C.S., L.D.S., for the use of sailors and soldiers on active service, and for general practitioners and those who are unable to obtain the services of a dentist. It consists of a neat metal case, measuring 5¼ × 4¼ × 3 in., of which the contents are as follows: A mouth mirror, probes, excavator, scaler, and stopper for the insertion of temporary fillings and the treatment of carious teeth, together with bottles of dental plasters and counter-irritant solutions for the relief of pain. It also contains disinfectant tablets for the treatment of the different diseases of the gums, guttapercha, fluid temporary filling, and a suitable supply of cotton wool, rolls and pellets, with simple directions for use. As these directions are remarkably clear and explicit, and as, with the exception of the counter-irritant solution, which is suitably labelled, there is nothing likely to prove injurious in the hands of the unskilled, the outfit should, with regard to the Army, enable the officer or N.C.O. to give relief to his suffering comrades. It has happened in a great number of cases that, owing to the shortage of dentists near the front line, soldiers suffering from toothache have had to endure much pain before they were able to return to the base, where lay their only chance of receiving the necessary treatment. In such circumstances this little outfit should prove to be of great value. It should also do good service in the Navy, for the men are often at sea for long periods at a time and in circumstances when the mental strain is sufficiently severe, without the addition of physical torture. It actually happened that, in the early days of the war, an admiral, with all his responsibilities, had to suffer with an exposed nerve on either side of his mouth for three weeks before he could obtain proper dental treatment. The outfit is being made up by the Dental Manufacturing Co., Alston House, Newman-street, London, W. 1.

ACCURATE CLINICAL THERMOMETRY.

REFERENCE was made last week in our annotation columns to the Order issued by the Ministry of Munitions of War demanding that on and after Oct. 21st, 1918, no person shall sell, offer for sale, supply, or deliver any clinical thermometer which has not been tested, approved, and marked in accordance with rules made by the Controller of Glassware Supply on behalf of the Minister of Munitions, in consultation with the Local Government Board and the Department of Scientific and Industrial Research.

We now understand that no steps will be taken to enforce the Order until Nov. 21st. The period during which clinical thermometers will be approved if they show an error of no more than 0·4° F. will be extended so as to include those received at the National Physical Laboratory on or before that date. This extension, however, only applies to stocks held on the date of the Order (Oct. 11th) by dealers other than manufacturers.

A HOME SCHOOL WANTED.

To the Editor of THE LANCET.

SIR,—Can any of your readers recommend a home school, preferably on the East Coast, where a girl of 15, subject to mild epilepsy, would be received for general education?

I am, Sir, yours faithfully,

R.N. Hospital, Haslar, Oct. 23rd, 1918. HILDRED CARLILL.

Practitioner.—It is a fact that in all large establishments some amount of clerical and organising work falls to the medical men. We fear this is part of the system under which, at any rate in older days, officers of the R.A.M.C. as they rose in seniority became more of organisers and less of clinicians.

Vacancies.

For further information refer to the advertisement columns.

Bexley, Kent, London County Mental Hospital.—Asst. M.O's. 7 gs. a wk.
Birmingham City Sanatorium and Anti-Tuberculosis Centre.—Jun. Asst. M.O. £350.
Birkenhead Union.—Sen. and Jun. Res. Asst. M.O's. £350 and £300
Bradford.—Temp. Asst. Sch. M.O. £8 8s. per week.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Dagenham (Temporary) Sanatorium.—Res. M.O. £300.
Dorchester, Dorset County Council Education Committee.—School Dentist. £350.
Greenwich Union Infirmary.—Asst. M.O. £300.
Hastings, East Sussex Hospital.—H.S. £250.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. 30 guineas. Also Asst. Res. M.O. £100.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. £100.
Huddersfield County Borough.—Female Asst. M.O.H. £400.
Kirkburton, Storthes Hall Asylum, Huddersfield.—L.T. £7 7s. per wk.
Leeds City Public Health Department.—Female Med. Asst. £400.
London Temperance Hospital, Hampstead-road, N.W.—Medical Registrar. 40 guineas.
Manchester, Crossley Sanatorium, Delamere Forest, Cheshire.—Asst. M.O. £300.
Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—H.S. £150.
Nelley, Welsh Military Hospital.—M.O. £400.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Asst. Res. M.O. £250. Also H.P.'s. and H.S.'s. £50, and (in one case) £100.
Newcastle-upon-Tyne, University of Durham College of Medicine.—Lect. Psych. Med.
Plaistow Fever Hospital.—Asst. M.O. £300.
Plymouth, South Devon and East Cornwall Hospital.—H.P. £200.
Queen Charlotte's Lying-in Hospital, N.W.—Asst. Res. M.O. £60.
Reading, Royal Berkshire Hospital.—H.P. £250.
Rhondda Urban District Council.—Dent. S. £350.
Royal London Ophthalmic Hospital.—Deputy Bacteriologist. £120.
Salford Royal Hospital.—H.P. £250. H.S. £200. Jun. H.S. £150.
South London Hospital for Women.—Female Clin. Asst. £1 1s. per attendance. Also Anæsth. 10s. 6d. per attendance.
Stepney Tuberculosis Dispensary.—M.O. £500.
Wakefield, Clayton Hospital.—H.S. £250.
Western General Dispensary, Marylebone-road, N.W.—Hon. Oph. S.
West London Hospital, Hammersmith-road, W.—H.S.
Whitechapel Dispensary for the Prevention of Consumption, Whitechapel, E.—M.O. £500.
Wilts County Council.—L.T. for M.O.H. 14 guineas per week.

APPOINTMENTS are vacant for a Medical Referee under the Workmen's Compensation Act for County Court Circuit No. 6 (St. Helens and Widnes) and County Court Circuit No. 7 (Birkenhead and Runcorn). Applicants, who should reside in the respective neighbourhoods, should communicate with the Private Secretary, Home Office, not later than Nov. 6th.

Births, Marriages, and Deaths.

BIRTHS.

FOOT.—On Oct. 15th, at Rydal, Crawley Down, Sussex, the wife of Captain T. J. Foot, R.A.M.C., of a son.
ILOTT.—On Oct. 16th, at Seaton, Devon, the wife of Captain Cyril H. T Ilott, R.A.M.C., of Bromley, Kent, of a daughter.
KENNEDY.—On Oct. 17th, the wife of Major C. M. Kennedy, F.R.C.S., R.A.M.C., of a son.
SAWYER.—On Oct. 14th, at Farquhar-road, Edgbaston, Birmingham, the wife of Lieutenant-Colonel J. E. H. Sawyer, R.A.M.C., of a son.

MARRIAGES.

MATHEWSON—HAMMOND.—On Oct. 16th, at West Ham Parish Church, George Douglas Mathewson, M.B., F.R.C.P.E., Temporary Major, R.A.M.C., to Alice Henrietta, second daughter of Captain and Mrs. Hammond, Forest Gate, Essex.

DEATHS.

FINCH.—On Oct. 8th, at the Officers' Hospital, Basra, Mesopotamia, Captain George Finch, R.A.M.C. (T.F.), late of Ipswich, of pleuro-pneumonia.
NIGHTINGALE.—On Oct. 17th, at Sloane-street, suddenly, of pneumonia, Percy Athelstan Nightingale, M.D. Edin.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

MANAGER'S NOTICES.

THE LANCET is published weekly, price 10*d.*, by post 10½*d.* inland, and 11½*d* colonies and abroad.

SUBSCRIPTION RATES.

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Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

An Address
ON
SPIROCHÆTOSIS ICTEROHÆMORRHAGICA.

Delivered before the Section of Medicine of the Royal Society of Medicine

BY MAJOR-GENERAL SIR BERTRAND DAWSON, M.D.LOND., F.R.C.P.LOND., G.C.V.O., C.B.,
ARMY MEDICAL SERVICE; PHYSICIAN-IN-ORDINARY TO H.M. THE KING; PHYSICIAN TO THE LONDON HOSPITAL.

THE spirochætes form a large group of unicellular organisms, most of which are harmless saprophytes, and are commonly found in the various genera of shell fish. Those proved to be pathogenic are few, though increasing in number, and belong to the smaller forms. It seems to be established that they multiply by longitudinal or transverse division, but conjugation has not been established. The spirochæte of tick fever has been shown by Leishman to give rise to coccoid forms which appear to be able to produce the disease, and resembling, it may be, in their attributes bacterial spores. Whether spirochætes belong to the vegetable or animal kingdom—whether they are bacteria or protozoa—is a question of academic interest for determining which criteria appear to be lacking.

DESCRIPTION OF ORGANISM: CULTIVATION AND AGGLUTINATION.

Spirochæta icterohæmorrhagiæ, discovered by Inada and Ido in 1914. The organism varies in length from 4μ to 25μ with an average of 8μ to 9μ. The ends are sharp and pointed, and in many cases hooked. Martin, Pettit, and Vaudremer have described flagella, terminally placed, and of varying length and ending in circular knobs, the significance of which is unknown. (Fig. 1.) The organism shows irregular undulations, usually composed of two to three large, or four to five smaller, waves. (Fig. 2.) Rarely forms in which the waves are more numerous and regular occur, thus resembling *T. pallidum*. Other variations in shape are met with: round or oblong granules, three or four in number, may appear within some forms.

Cultivation.—*S. icterohæmorrhagiæ* was first cultivated by Ito and Matsuzaki, who employed the method of Noguchi, guinea-pig kidney replacing that of the rabbit usually employed. The cultures were made from the blood or liver-

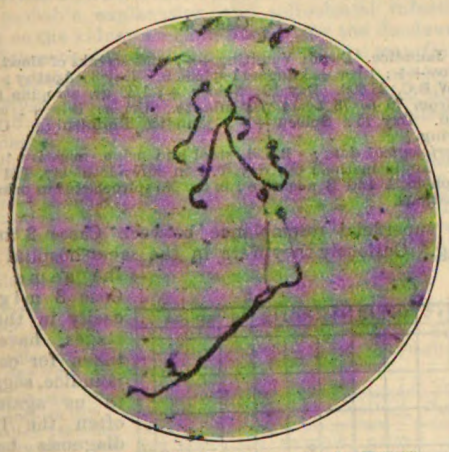


FIG. 1.—*Spirochæta icterohæmorrhagiæ* (Pettit).

pulp of an infected guinea-pig, and incubated at a temperature of 22°–25° C. They noticed that growth commenced as a rule in from three to seven days, and that the first generation lived from three to six weeks, the lives of succeeding generations being rather shorter. These same workers have since shown that this spirochæte can be grown in various media, liquid and solid—blood agar and gelatin, human serum, diluted ox serum, and ascitic fluid.

Martin and Pettit advise the use of diluted rabbit serum (1 in 5 of normal saline) or diluted ox serum (1 in 9 of normal saline). The medium is covered with a layer of sterile paraffin and no tissue is added. The optimum temperature is about 27° C., but growth occurs at temperatures varying between 22° C. and 32° C. Growth is at its height about the tenth day in primary culture, and at the fourth to sixth day in subsequent subcultures, and usually at the end of three weeks the culture is dead. Subcultures should be made at the height of growth by the inoculation of fresh tubes of media with 0·5 c.cm. of the living cultures. No growth, or only a feeble growth, occurs in the presence of contamination.

The organism has considerable vitality and will remain active in tap-water exposed to wintry weather for many days,

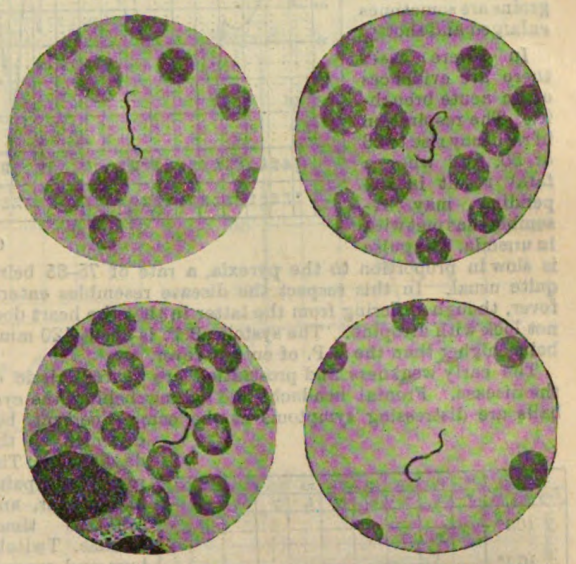


FIG. 2.—*Spirochæta icterohæmorrhagiæ* in blood of guinea-pig experimentally infected (Bedson).

but it has a curious way of suddenly dying out under good conditions and without any apparent reason.

Agglutination.—It was noted by Martin and Pettit, during the course of their work on the preparation of an antiserum for spirochætal jaundice, that this antiserum was capable of agglutinating the spirochætes. The antiserum therefore possessed, in addition to the spirochæticidal immune bodies, a specific agglutinin. In view of this fact they examined the sera of convalescents for the presence of agglutinins, and were able to show that here also the sera possessed the power of clumping the spirochætes. Since it is possible to grow this spirochæte with comparative ease, we are now in possession of an additional diagnostic test of value.

The cultures used must be at the height of growth and must show no clumping of spirochætes. Unless the culture be very rich macroscopic agglutination is not obtained; the test therefore has to be done microscopically with the aid of a dark-ground condenser. Martin and Pettit have shown that this agglutinating power of the sera of convalescents may rise to a titre of 1 in 500 or 600, whilst normal sera and the sera of syphilitics are without effect on the spirochæte. These agglutinins appear in the blood about the third week of the disease, at the same time as the other immune bodies.

CLINICAL MANIFESTATIONS.

The disease has more often a sudden than a gradual onset, and manifests itself by shivering, head and body pains, great prostration, vomiting, and diarrhœa. The temperature rises quickly to 102° F. or higher. During the succeeding three or four days the conjunctivæ become injected, and herpes, which is liable to become hæmorrhagic, appears on the lips in about 40 per cent. of the patients. Bleeding occurs in most of the severe cases, but uncommonly in the mild ones. It may come from the nose, lungs, stomach, bowel, or as a purpuric rash. Early in the illness a slight hæmoptysis is a valuable diagnostic sign. It is to be noted that hæmorrhage often precedes jaundice in order of appearance.

The jaundice usually appears on the fourth or fifth day, but may be as early as the second and as late as the seventh day. It reaches its height about the tenth to twelfth day. In some cases it is intense, and the skin takes the greenish hue met with in complete obstruction of the common bile-duct. Constipation is marked. The stools may become clay-coloured, though in most cases a small quantity of bile gives them a light brown colouration. Tenderness in the upper abdomen is

usual. The tongue is furred and brown. The liver is frequently enlarged to the extent of two or three fingers below the costal margin. The spleen is not palpable. The gland is in the axillæ and groins are sometimes enlarged and shotty.

In severe cases there are evidences of an acute bronchitis. The respiration in rate may rise to 28 or 30, and when a fatal result is impending may resemble that met with in uræmia. The pulse is slow in proportion to the pyrexia, a rate of 75–85 being quite usual. In this respect the disease resembles enteric fever, though differing from the latter in that the heart does not lock with atropine. The systolic B.P. is about 120 mm., being higher than the B.P. of enteric fever.

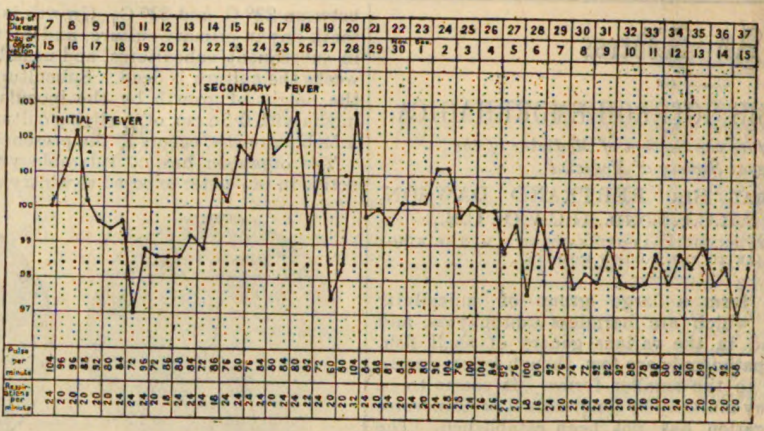
The early weakness and prostration are characteristic of the disease. Frontal headache and aching behind the eyeballs are distressing symptoms at the commencement, but diminish as the days pass. The muscular pains last longer, and are at times intense. Twitchings and convulsions may precede or accompany the coma of the fatal cases.

The urine contains bile in abundance, which may persist for four to five weeks. Albumin is usually present, and may reach a sixth; casts—hyaline, epithelial, and granular—are common. Some French authors lay stress on the evidences of renal insufficiency.

The course of the illness varies with the severity of the disease. In the acute case an irregular type of pyrexia persists for 10 to 14 days, and ends by lysis. In some instances there is a secondary rise of fever about the beginning of the third week, which is difficult to explain, since there is no accompanying exacerbation of symptoms or increase of jaundice. The jaundice will reach its height about the tenth day, and this often coincides with the fall of the temperature. In other cases the temperature will fall earlier, while the jaundice is still deepening. Convalescence is slow, but recovery is complete.

ILLUSTRATIVE CASES.

The following cases illustrate various types of the disease and show how the brunt of the morbid process does not always fall on the same organs.

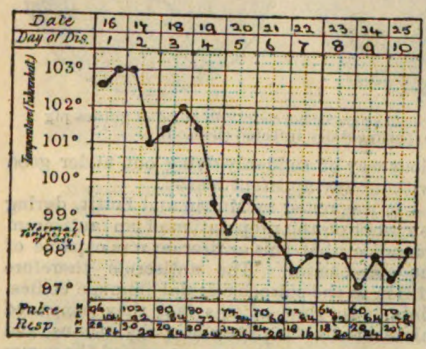


CASE 1.

CASE 1 (see chart).—Aged 38. Onset sudden, with vomiting. Day 3: Dark urine. Day 4: Drowsy; ill; reported sick. Day 7: Brown tongue; jaundice ++; epigastric tenderness. Liver + two fingers; spleen 0. Urine: albumin, bile, casts. Stools contained some bile. Blood: R.B.C. 5,200,000; W.B.C. 13,000. Day 7 to 18: Toxic; jaundice ++. Day 19: Gall-bladder drained (operation). Day 22: Jaundice less; condition improved. Day 32: Convalescent.

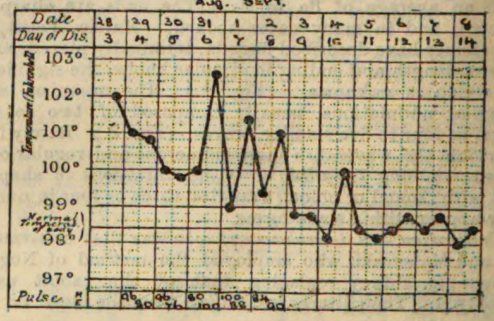
Not all cases of this disease conform to the foregoing picture; many are mild and less defined in their manifestations, and therefore more difficult of detection.

CASE 2. *Spirochætosis (mild)* (see chart).—Sudden onset; pains head and body; vomiting. Day 6: Suffusion of conjunctivæ; slight jaundice; liver 0; spleen 0. Day 9: Jaundice ++; drowsy. Day 10: Condition improving. 1/30 gr. atropine increased heart from 60 to 90 beats per minute. W.B.C. 8500. Day 12: Typical spirochætes found in urine.



CASE 2.

CASE 3. *Enteric jaundice* (inoculated against "T"). (See chart).—Sudden onset; lassitude ++; headache. Day 2: Generalised pains.

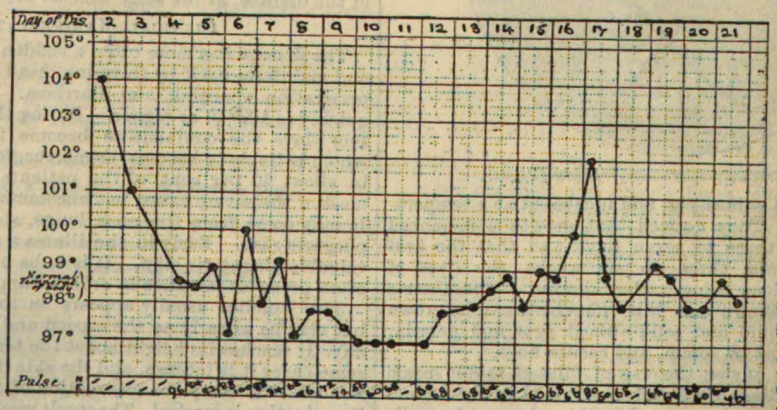


CASE 4.

Day 4: Jaundice. Day 5: Vomiting ++, with streaks of blood. Day 6: Jaundice ++; liver + 3 fingers; spleen 0. Day 8: Apathy; jaundice ++; W.B.C. 23,800. Day 10: Spleen +; 1/30 gr. atropine increased heart from 70 to 76 beats per minute. Urine: Bile +; casts; no albumin. Day 15: Spleen ++; jaundice diminishing. Condition improving.

Bacteriological data: Blood, stool and urine, negative to enteric group. Agglutination: 8th day, T. 1 in 3675; 16th day, T. 1 in 2822. Paratyphoid A and B negative 1 in 5. No spirochætes in urine in two examinations.

The superficial resemblance between Cases 2 and 3 is striking. Curiously they were in the same hospital and at the same time. Case 3 might so easily in the early stages have been taken for catarrhal jaundice, suggesting to us again how often the latter diagnosis has disguised enteric fever. The acute onset in this case is no unusual occurrence, for the acute onsets of enteric have been as frequent as the gradual ones. Apart from the bacteriological evidence the contrasts lie in the spleens, the conjunctival suffusion

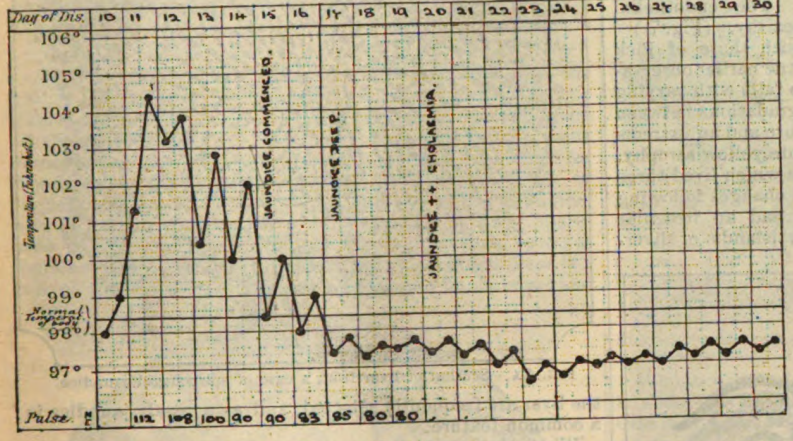


CASE 3.

and the atropine reactions. It might be urged that the W.B.C. in Case 3 should have been decreased, but in our experience leucopenia in enteric is by no means a constant feature.

Spirochætosis without jaundice.—Cases 4 and 5 illustrate this variety.

CASE 4 (see chart).—Onset sudden; feverish; generalised pains; lassitude +, giddiness. Day 3: Cough; herpes labialis. Day 4: Spirochætes in blood; pains continue. Day 10: Patient improving. Day 14: Typical spirochætes in urine.



CASE 6.

CASE 5. (*No jaundice.*)—Sudden onset; headache; body pains; photophobia; vomiting. Day 1: T. 104·2°; patient very ill. Days 2-5: Conjunctival suffusion; herpes labialis; vomiting +; no hæmorrhages. Day 14: Convalescence. Day 20: Relapse of fever and pains.

Inoculated guinea-pig developed jaundice. Spirochætes in patient's urine until the end of the ninth week.

CASE 6. *Nephritis in association with jaundice.* (See chart.)—Onset and early days: Body pains; mild headache; transient œdema. Urine: albumin and blood. Day 10: Looked ill. Urine: albumin, blood and casts. Day 11; Fever; urine as before. Day 15: Jaundice faint. Day 17: Jaundice deep. Urine: blood 0; albumin, trace. Days 17 to 30: Weak; wasted; drowsy; cholæmic. Picture resembled spirochætosis. Slow recovery.

Bacteriological data: Enteric negative. Typical spirochætes in urine on three occasions.

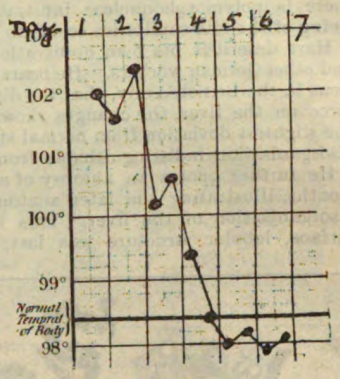
The interesting question arises, Did spirochætal infection happen to follow close on the heels of trench nephritis or did it cause the whole illness? The latter would seem to be the more probable explanation, the spirochætal infection first falling on the kidney and later attacking the duodenum or liver and thus producing the more usual clinical manifestations. The pathological findings in the kidneys are sometimes in keeping with a nephritis having existed during life.

Cases 7, 8, and 9 illustrate severe forms of the disease ending in death.

CASE 7.—Onset: Vomiting; pains in leg; fever. Day 3: Hæmatemesis (½ pint). Day 4: Ill; drowsy. Day 7: Jaundice rapidly ++. Day 10: Jaundice +++; abdominal distension; slight cough; bloody sputum. Liver + 3 fingers; spleen 0. Urine: Bile +; albumin +; no casts. Stools clay. R.B.C. 3,000,000; W.B.C. 20,000. Day 14: Drowsy; weak. Day 20: Temperature normal; jaundice less. Days 22 to 29: Drowsiness ++; picture of diabetic coma; jaundice diminishing; general clonic convulsions on 27th day; death in coma.

CASE 8.—Onset acute: pains; repeated vomiting; very ill; vomiting continued till the 14th day. Jaundice appeared 5th day. Liver + 2 fingers; spleen 0. Urine: Albumin trace; casts ++. Stools almost clay-coloured. Blood: W.B.C. 22,500. Drowsy throughout; died on 14th day from toxæmia.

CASE 9 (see chart).—Onset: Head and body pains, weakness, chilliness. Temperature 102°. Days 2 and 3: Repeated vomiting. Day 3: Herpes labialis; jaundice. Day 4: Temperature normal; jaundice markedly increased; liver and spleen not palpable; patient much worse. Day 5: Hæmatemesis; albumin ++, epithelial and erythrocytic casts, no spirochætes; dry brown tongue; tonic convulsions; general condition grave. Day 6 and onwards: Epistaxis, hæmatemesis, melæna, purpura. Guinea-pig inoculated seventh day; negative. Day 12: Death from toxæmia and anæmia. Urine contained characteristic spirochætes.



CASE 9.

PATHOLOGY.

I will pass at once to the morbid appearances of the two last cases, Nos. 8 and 9.

The mucous membrane of the duodenum was very œdematous and congested, its colour resembling a dark-blue plum. Round the orifice of the bile-duct was an area about the size of a florin, slightly raised above the level of the surrounding mucous membrane, and red and injected. In the centre of this area was the ampulla, swollen and congested. The above features were seen, though in a less degree, in the stomach and first three feet of the jejunum. The rest of the intestines was normal in appearance. At the edge of the lesser omentum and about the bile-ducts were numerous enlarged lymph-glands. The normal appearance of the common bile-duct formed a sharp contrast to the duodenum. The last portions of the pancreatic and common bile-ducts were laid open. These also were of normal appearances, except the termination in the ampulla of Vater, which was swollen, congested, and blue.

In Case 9 a probe passed along the common duct (before the latter was opened) into the duodenum dislodged a formed plug which was impacted in the ampulla. A film made from this plug showed numerous epithelial cell nuclei embedded in a matrix of mucin. The structure of the ampulla with the plicated arrangement of the mucous membrane within its lumen favours such impaction and obstruction, as Fig. 3 shows. That an inflammation of the duodenum exists is further borne out by the results of duodenal intubation. On numerous occasions the withdrawn duodenal contents showed the presence of polymorphonuclear leucocytes and large mononuclear cells, which were obviously the result of local inflammation.

It would seem to be clear, therefore, that in some instances the spirochætal infection localises in the duodenum.

The liver in each of Cases 7, 8, and 9 showed to the naked eye only insignificant or slight changes. It was nearly normal in size; its cut section was of a greenish hue and firm in texture. In each the gall-bladder was normal in size and appearance.

On microscopic examination the liver cells in Cases 7 and 8 were natural in appearance and arrangement, the lobules were clearly defined, and, apart from biliary stasis, the only abnormal feature was collections of cells in the portal areas, such as occur in many diseases. (Figs. 4, A and B.)

Case 9 shows slight though definite changes in the liver. There is some loss of lobular pattern; the hepatic cells here and there show undue variation in size and shape, or their nuclei are large or multiple; a few mitotic figures are to be seen in the cells, and vacuolation of the cytoplasm can be observed. (Fig. 5.) In scrapings from the liver one definite spirochæte was seen.

In contrast to the foregoing there are cases in which the duodenum shows no notable change, and the liver, though not presenting any marked morbid appearance to the naked eye, shows definite changes on microscopic section. In Fig. 6 the liver cells are dissociated, many are markedly enlarged, with well-stained nuclei. Other cells contain two nuclei, and mitoses are numerous. In the centres of the lobules the cells are less well defined, stain imperfectly, and show slight granular changes. These changes suggest the effect of damage which has been insufficient to produce extensive necrosis, but has acted as a stimulus to cell growth. They somewhat resemble what is seen in subacute yellow atrophy

The next example came from an acute case of only a few days' course. It shows a liver that is the seat of advanced changes, both naked-eye and microscopic. It is diminished in size, its capsule is wrinkled, and in section there are loss of lobular pattern and numerous yellow areas of necrosis. Here complete destruction of liver cells may be seen, the framework of interstitial tissue only being left. Elsewhere in the section groups of hepatic cells show evidence of reaction—double nuclei and mitotic figures. Some large mononuclear cells are seen loaded with bile-pigment, and there is polymorphonuclear infiltration. The endothelial lining of the bile-capillaries seems to be healthy. (Fig. 7.)

Hart describes his own observations with those of Pick and other German workers. He bears out the earlier observations in the British Army, that the disease falls with varying force on the liver, the changes showing gradations between the slightest deviation from normal structure and an extreme disorganisation indistinguishable from acute yellow atrophy.

He further quotes an autopsy of a case which lived three months, illustrating the later anatomical changes following disorganisation of the liver. This liver had an irregular surface, lobular structure was lost, only islands of liver-

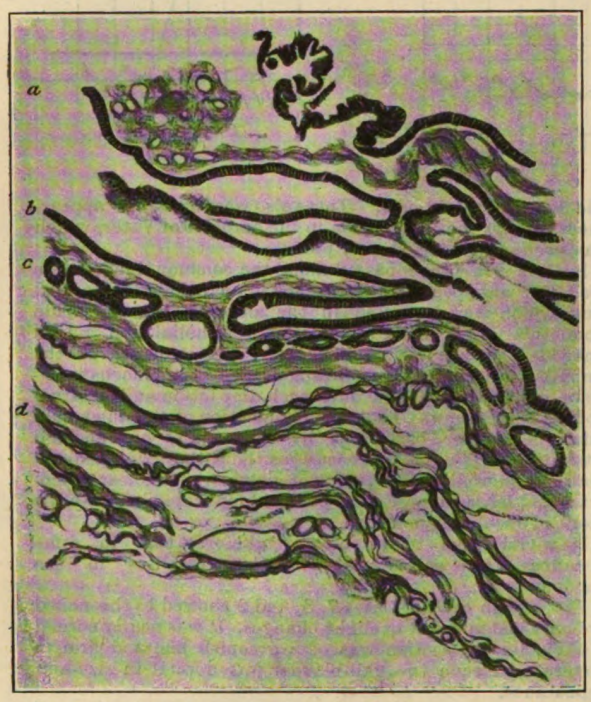


FIG. 3.—Section of ampulla of Vater. *a*, folds within lumen of ampulla; *b*, mucous membrane of ampulla; *c*, crypts; *d*, submucous coat.

tissue remained, and there was an extensive fibro-nuclear infiltration round these islands—in other words, anatomically cirrhosis had supervened on acute yellow atrophy.

Other organs.—The changes in the kidneys likewise vary, though not to the same extent as those in the liver. In one case the appearances are merely those of cloudy swelling; in another there is inter- and intra-tubular infiltration with polymorphonuclear leucocytes (Fig. 8); while in another (Fig. 9) there are, in addition, hæmorrhages in the glomeruli causing disruption of cells; the protoplasm of the tubular cells stains badly, has a granular appearance, and shows vacuolation—in short, the process approaches necrosis.

The spleen and pancreas show no departure from the normal, but peritoneal, sub-pleural and sub-pericardial hæmorrhages are common. Hæmorrhages are found in the substance of the lung, and in some instances reach the size and consistency of those met with in mitral stenosis.

PRESENCE OR ABSENCE OF JAUNDICE.

It is clear, therefore, that whether judged from clinical manifestations or pathological appearances not always the same organs receive the brunt of this infection, a fact with which we are familiar in other diseases, notably another spirochætal infection—viz., syphilis. The duodenum and

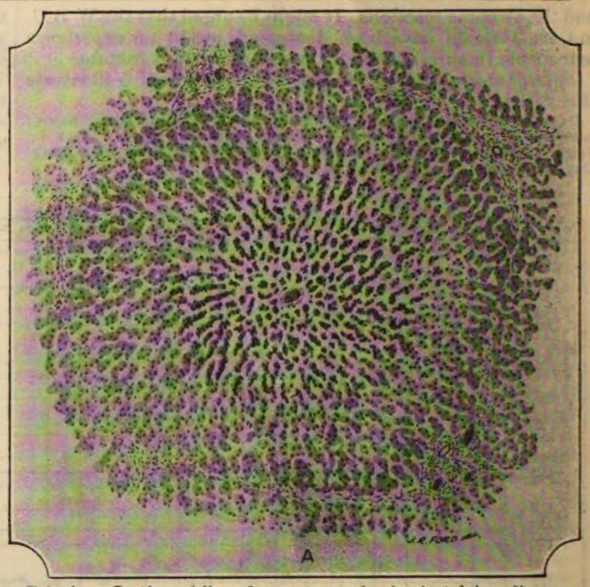


FIG. 4 A.—Section of liver from a case of spirochætal jaundice.

the liver are frequently selected, and as a result jaundice is a common feature.

What then is the immediate cause of the presence or absence of jaundice? Where there are inflammation and swelling of the duodenum and the papilla of Vater and no changes within the liver except bile stasis it is caused by obstruction of the outlet of the common duct. Where there is disorganisation of the lobules, with damage to the cells and intrahepatic ducts, the jaundice is caused by interference with the drainage of the bile within the liver. Where there are no definite changes in the liver and no swelling of the duodenum, jaundice is absent. Repeated examinations of blood have been made to make sure that the jaundice was not due to over-production of bile, but there has never been any evidence of blood destruction, and in two cases in which it was tested the blood fragility was normal in one and decreased in the other.

A comparison between acute yellow atrophy and spirochætosis icterohæmorrhagica is worthy of attention. On the pathological side two of the illustrations I have shown manifest a striking resemblance to acute and subacute yellow atrophy. On the clinical side acute yellow atrophy,

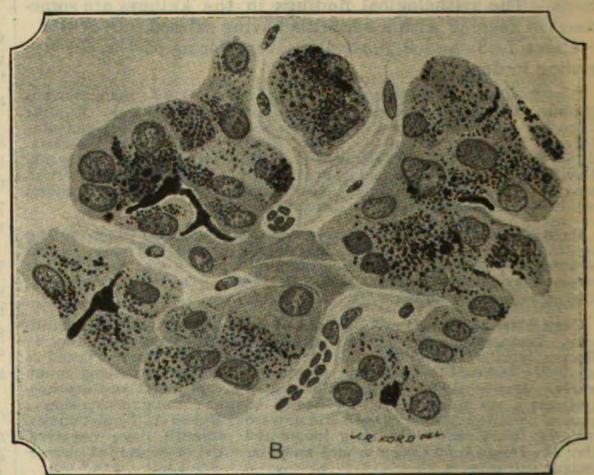


FIG. 4 B.—Part of the same section more highly magnified. The liver cells and their arrangement appear normal. Biliary stasis is evident.

though usually running a rapid course, may extend to 14 or more days' illness. Again, in the wards the clinical picture has often been that of acute yellow atrophy, and yet there have been no characteristic changes in the liver after death, and we get out of the difficulty by calling these cases "icterus gravis." Further, Rolleston records the following case of acute yellow atrophy without jaundice.

Onset sudden, with pain and slight hæmatemesis. On second and third days hæmatemesis, and on following three days melæna. On second day liver dullness was diminished. The temperature was usually between 99° and 100° F. No jaundice. The patient became progressively weaker and drowsy, and died on the eighteenth day. Post mortem the liver showed acute yellow atrophy.

I do not suggest that acute yellow atrophy as we have known it is due to this spirochæte; rather, that what we style in the post-mortem room acute yellow atrophy is the fullest anatomical expression of a destructive process of which there are several grades, and which may be caused by several agencies, *Spirochæta icterohæmorrhagiæ* amongst them.

THE DISEASE IN THE GUINEA-PIG.

Now we will deflect for a moment to the disease in the guinea-pig in so far as it bears on the human problem. The guinea-pig, the mouse, the rat, and the rabbit are all prone to the disease, and of these the guinea-pig is the most susceptible. In the guinea-pig the disease incubates for 6 to 13 days; its manifestations comprise fever (103° F. or higher), conjunctival congestion, hæmorrhages, jaundice, and albuminuria. The jaundice appears when the temperature has reached its maximum, the animal then becomes more acutely ill, and 24 hours after its appearance there is a fall of temperature to subnormal, followed by collapse and

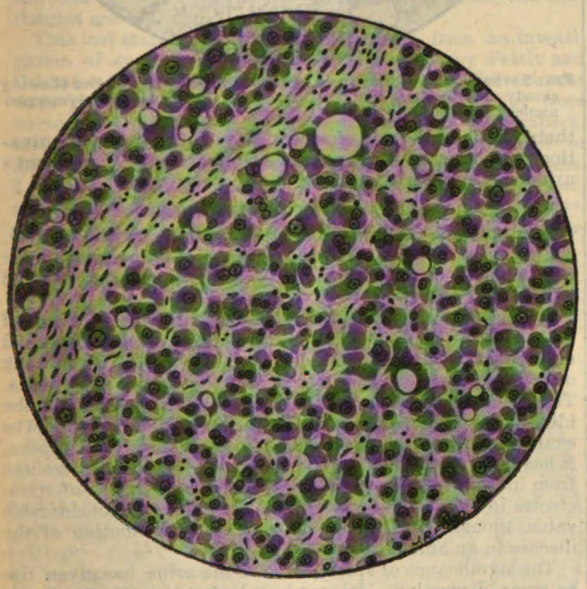


FIG. 5.—Section of liver from Case 9 showing slight changes.

death. Spirochætes appear in the blood with the onset of fever, and appear in the urine soon afterwards. The jaundice is usually deep, though in some cases it is faint, and occasionally absent.

The pathological changes in the guinea-pig are very characteristic. The skin and internal surfaces are coloured yellow, hæmorrhages are widespread in the skin, alveolar tissues, muscles, under serous membranes, and in the post-peritoneal tissues in the region of the kidneys. The lymph glands are enlarged and frequently hæmorrhagic. The small bowel is usually congested and may show numerous hæmorrhages under its serous coat. In some instances the mucous membrane of the duodenum has been more congested and swollen than that of the rest of the bowel. Hæmorrhages occur prior to the jaundice. The liver to the naked eye appears natural. Microscopically the changes vary from cloudy swelling to acute parenchymatous degeneration, small areas of necrosis being found in the section. The kidneys are acutely congested and show minute hæmorrhages subcapsular and throughout the cortex. Microscopically the changes are those of parenchymatous nephritis. The tubular epithelium often shows degenerative changes, and there is a leucocytic infiltration around and in the tubules. The suprarenals are usually hæmorrhagic, as is prone to be the case in any toxæmia in the guinea-pig. On the surfaces of the lungs are hæmorrhages so arranged as to give the lungs the appearance of "the wings of a mottled butterfly." The heart shows nothing, except that it may be the site of small hæmorrhages.

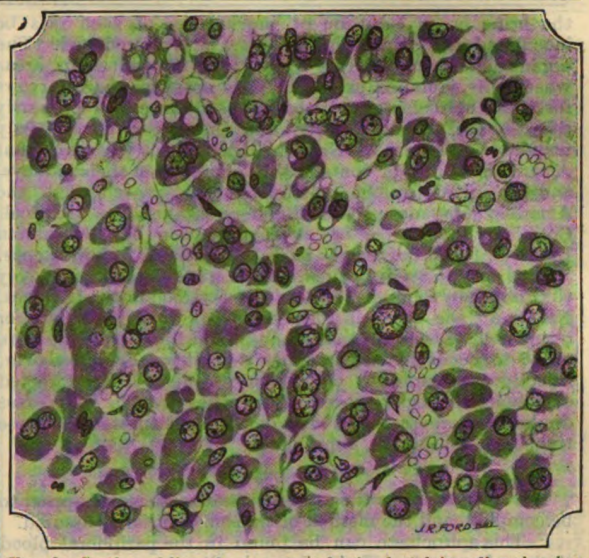


FIG. 6.—Section of liver from a case of spirochætal jaundice showing dissociation of cells and marked degenerative changes.

Whereas the spirochæte is found with difficulty in man, it is abundantly present in the guinea-pig. It is found with ease in the blood of the jaundiced animal and in its liver; a smear from the latter will show a dozen or more spirochætes per oil immersion field. In the kidneys and suprarenals the spirochætes are also plentiful, though patchy in their distribution. They are numerous in the urine from the onset of the jaundice. The spirochætes are excreted in the urine, fæces, and bile, all three of which are infective for the guinea-pig (and would be for man), and especially the bile, notwithstanding the fact that the Japanese workers have failed to demonstrate the spirochæte in the bile.

The disease is best conveyed to the guinea-pig by the intraperitoneal injection of 3 to 5 c.cm. of blood, either from an infected guinea-pig or human, though in the case of the latter the infectivity is limited to the first few days of the illness. As regards the infectivity of the urine there is difference of opinion. The Japanese workers found the

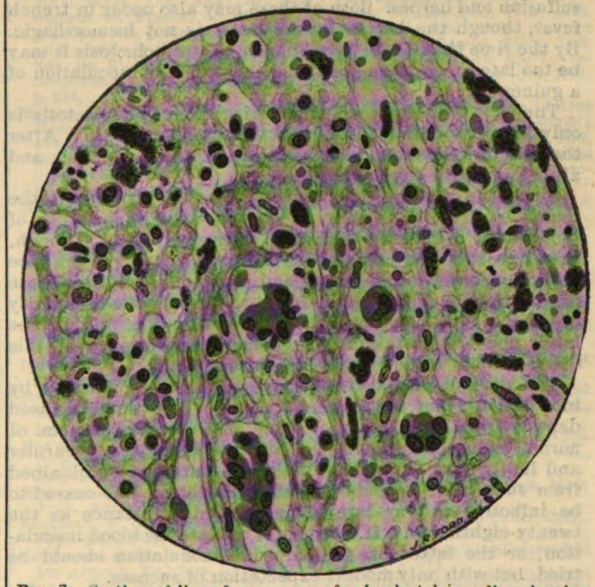


FIG. 7.—Section of liver from a case of spirochætal jaundice showing extreme degrees of change.

patient's urine infectious for guinea-pigs, and so did the French, whereas Stokes and ourselves failed in a limited number of efforts to convey the disease in this manner.

SOURCE OF INFECTION IN MAN.

By what means do human beings become infected? As was first pointed out by the Japanese workers, this spirochæte is found in the kidneys and urine of rats. If either

the urine or an emulsion of the kidneys of such rats be inoculated into guinea-pigs the disease is reproduced. The organism is found in rats away from, as well as in, areas where this jaundice prevails. Rats act, then, as reservoirs for these spirochætes. Probably the disease was primarily rife amongst these rodents, and the latter have slowly acquired tolerance. Noguchi has recently shown that American wild rats contain this organism in their kidneys, and by immunisation experiments has proved that the American, Japanese, and Flanders strains are identical. Coles, in the course of an investigation on 100 rats in England, found *Spirochæta icterohæmorrhagiæ* in 9 instances.

It is easy to see how the infected urine of rats can convey the disease by fouling the water and the food in the trenches. Nearly all the cases in Flanders occur in men who are, or recently have been, in the trenches, and the disease is more prone to occur in wet trenches than dry ones. Moreover, infection appeared to be endemic; thus, if an infected detachment was removed from the trench the cases diminished, whereas if a new detachment entered the same trench cases began to appear in it.

DIAGNOSIS.

The evidence as to the cause of this disease would appear to be complete and the method of transmission fairly assured.

1. This spirochæte can be found in the peripheral blood stream of patients suffering from the disease.
2. Injection of infected human blood into the peritoneal cavity of the guinea-pig will produce a characteristic fatal illness in that animal, in whose tissues the spirochætes are present in large numbers.
3. The spirochæte has been isolated in pure culture, and inoculated from such culture the guinea-pig contracts the disease.
4. The disease has been produced in man by accidental inoculation from an infected guinea-pig.
5. After the first fortnight of the disease the spirochæte may be found in the patient's urine, and in the third week of the disease the patient's serum agglutinates the spirochæte.

The difficulty in diagnosis lies in the fact that in the early stages the symptoms may only be those common to several diseases. Enteric fever, trench fever, influenza, and other fevers may show the same initial symptoms. The occurrence of hæmorrhages would certainly suggest spirochætosis; the same would be true, though in less degree, of conjunctival suffusion and herpes. Both of these may also occur in trench fever, though the herpes in the latter is not hæmorrhagic. By the time that there is suspicion of spirochætosis it may be too late to ensure a positive result from the inoculation of a guinea-pig.

The blood of the patient suffering from spirochætosis is only infective during the early stages of the disease. After the fifth day the chances of a positive result diminish, and after the eighth day are few.

Since the average day of appearance of jaundice is the fourth or fifth, it is easy to see that the opportunity of inoculating a guinea-pig in time may easily slip. Though, therefore, this diagnostic test is conclusive, it has in practice its limitations. In mild cases and non-jaundiced cases these limitations are even greater, for in the former the infectivity of the patient's blood is of more brief duration, and in the latter the manifestations suggesting the presence of this disease would often be too late in appearing.

The disease may also be conveyed to the guinea-pig by inoculation from the patient's urine. The centrifugalised deposit from 40–60 c.cm. of urine suspended in 5 c.cm. of normal saline solution is the injection employed. Garnier and Reilly have shown that positive results may be obtained from such urine inoculations after the blood has ceased to be infective and as late in one recorded instance as the twenty-eighth day. If, then, it is too late for blood inoculation, or the latter has failed, urine inoculation should be tried, but with only modest expectation of success.

Direct examination of the blood is of small value because the spirochætes are only present in the circulation during the first days of the disease, and then only in scanty numbers. The organisms are, however, sometimes found, and smears stained by Fontana, Giemsa, or Leishman are worth making.

In practice if the guinea-pig inoculated with the patient's blood is negative and the inoculation were not done early enough to justify the acceptance of a negative diagnosis there has to be a delay of several days before other examinations can be fruitful. These are examinations of the patient's urine and agglutination tests.

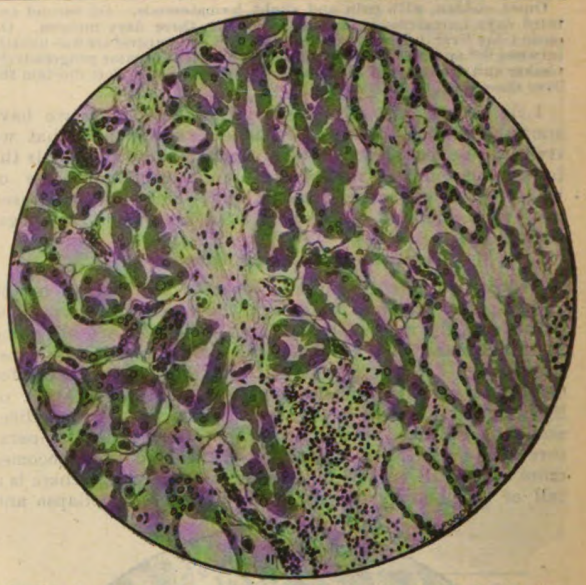


FIG. 8.—Section of kidney from a case of spirochætal jaundice showing cloudy swelling as well as inter- and intra-tubular polymorphonuclear infiltration.

SPIROCHÆTES IN THE URINE.

The spirochætes are eliminated chiefly by the kidney. They appear in the urine about the ninth day, reach their maximum about the fifteenth day, and disappear at the end of the fifth week.

Collect the urine in a sterile vessel, centrifuge 50 c.cm. of it, wash the deposit with sterile water, re-centrifuge and make smears with the final deposit, stain by the Indian ink or collargol method, or better still by the method of Fontana. This method needs practice both in its technique and in the identification of the typical spirochæte. The urine should be examined on two or three occasions. If, as often happens, it has been too late either to perform or to draw inferences from inoculation of a guinea-pig, the demonstration of spirochætes in the urine at a later stage is evidence of considerable value, though less convincing than the reproduction of the disease in an animal.

The significance of spirochætes in the urine has given rise to some discussion. It may be asked, Are not spirochætes found in the urine in other conditions besides this disease? Can the specific spirochæte be morphologically distinguished from other spirochætes?

It is known that spirochætes are found in the urethra and about the meatus. These can be excluded by adopting precautions in the collection of the urine. Stoddard examined 50 patients who had no recent history of a relapsing fever and 50 healthy soldiers. He made smears of the material taken from the meatus and distal urethra. He found spirochætes in 50 per cent. of the former series and in 22 per cent. of the latter series. It is admitted that spirochætes are found in the urethra and round the meatus, though other observers do not find them with the frequency of Stoddard's figures. These spirochætes are thick, have a varying number of regular coils, and do not show morphological resemblance to the spirochæte of this disease.

In examining control urines (collected with the usual precautions) from cases of scarlet fever, measles, lobar pneumonia, enteric fever, &c., Bedson, in my laboratory, only rarely found this thick spirochæte with the regular coils which belongs to the meatus and adjacent urethra.

This observation is confirmed by J. A. Wilson, who, while microscopically examining catheter specimens of urine from 90 cases of albuminuria, only found spirochætes in 6 cases, and these were of the urethral type. It must be admitted, however, that these 90 cases were afebrile.

It is also confirmed by Flessinger, who in view of Stoddard's observations undertook the examination of 93 men: 45 were well and 48 ill. Of the 45 who were well, in only 4 of them were spirochætes obtained in urethral or

meatal smears and in only 1 of the urines. Of the 48 who were ill spirochætes, which were neither meatal nor "icterohæmorrhagica," were found in 3.

On the other hand, Patterson, on examining urines (collected with precautions) of a small series of febrile cases (P.U.O.),* found spirochætes often abundantly during and immediately after the rise of the temperature and scantily during the afebrile intervals. Though one of his illustrations depicts the urethral type of spirochæte, his observation receives some support from Nankivell and Sundell, who found spirochætes, not of the urethral type, in the urines of 12 out of 15 trench fever cases examined.

Weighing up these observations we may conclude: (1) that there exist contaminating urethral spirochætes of the meatal type and the *refringens* type, with characteristic features which may be eliminated as a source of error by washing the glans and meatus and catching the middle portion of urine in a sterile flask; (2) that in healthy and most ill people spirochætes are not excreted by the kidney; (3) that in spirochætosis icterohæmorrhagica the causal spirochætes are always excreted by the kidney; (4) that, as shown by Patterson and Flessinger in some cases of fever of unknown origin (P.U.O.) (but excluding enteric), spirochætes other than those of spirochætosis icterohæmorrhagica are excreted.

This last statement receives confirmation from an investigation of an outbreak of P.U.O. at Lorient by Pettit and Cristan. Their findings were as follows: 1. Spirochætes were present in the urine of these patients. They were numerous and found in greatest numbers when the temperature was high, and they were observed, unlike those of spirochætal jaundice, from the commencement of the illness. 2. This spirochæte, called *S. Lorient*, is longer and thicker, and its curves more irregular and deeper than *S. icterohæmorrhagiæ*, but the differences are not very marked. 3. Guinea-

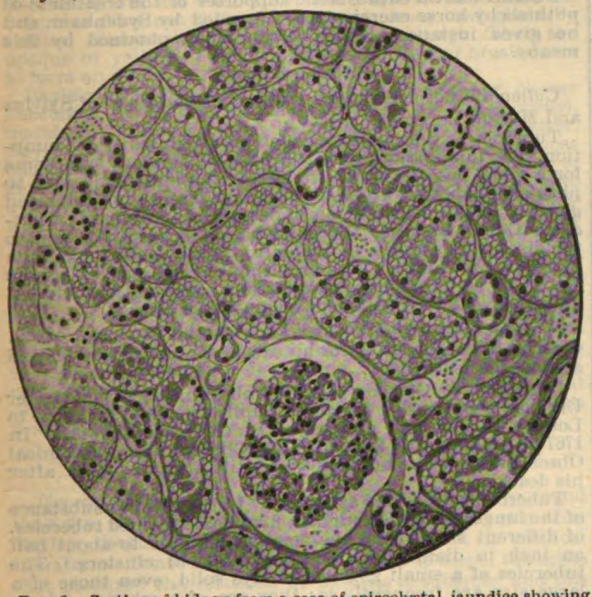


FIG. 9.—Section of kidney from a case of spirochætal jaundice showing marked degenerative changes in the parenchyma.

pigs possess complete immunity from *S. Lorient*. 4. The serum from patients convalescent from *S. Lorient* does not protect the guinea-pig from *S. icterohæmorrhagiæ*.

The epidemic at Lorient was very contagious. Jaundice was comparatively rare (5 per cent.); rheumatic pains were a common feature; sometimes the spirochæte was not found in the urine.

There is, then, another pathogenic spirochæte whose appearances are somewhat close to those of *S. icterohæmorrhagiæ*, and this fact has to be borne in mind. But in the diagnosis of spirochætosis icterohæmorrhagica the presence of the typical spirochæte taken in conjunction with the clinical manifestations is strong evidence on which a positive conclusion is warranted.

Before concluding I should like to take this opportunity of heartily thanking my colleague Captain S. P. Bedson, R.A.M.C., for his valuable help in the work of this address.

* Pyrexia of uncertain origin.

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The Harveian Oration
ON
THE DOCTRINE OF CONSUMPTION IN HARVEY'S TIME AND TO-DAY.

Delivered before the Royal College of Physicians of London on Oct. 18th, 1918,

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(*Concluded from p. 546.*)

OBSERVATIONS OF OTHER AUTHORS.

Thomas Willis (1621–1678) deals very briefly with the subject, but he makes the important observation that the general belief that phthisis is a pining away of the whole body arising from an ulcer in the lung is untrue. In proof of this statement he says that he had opened the dead bodies of men who had died of this disease, in whom the lungs were free from any ulcer, and yet they were set about with tubercles or stones or sandy matter throughout.

"Wherefore phthisis is better defined as a withering away of the whole body arising from an ill formation of the lungs."

Waldenburg thinks that Willis may have intended to describe miliary tubercles by the term "sandy material."

Sydenham (1624–1689) added nothing fresh to our knowledge of consumption, but he recommended daily riding on horseback as the principal assistant in the cure of this disease.

Bonetus, a contemporary of Sylvius and Willis, in his "Sepulchretum," gives records of 150 necropsies of consumption from his own experience and from that of others. He regards phthisis as due to many different causes: ulcer of the lung, abscesses, scirrhous tumours, tubercles, vomicæ. He speaks of tubercles as tubercula glandulosa, following Sylvius. Vomicæ are closed collections of pus which resemble ordinary abscesses, but may be formed from tubercles. He seems to have described miliary tubercles in the following passage:—

"Pulmonum parenchyma ..... duriusculum erat et multis quasi granulis instar steatomatum quae aliquid sebacei continebant, refertum."

Mangetus, who edited the "Sepulchretum" of Bonetus in 1700, added some further cases of phthisis, among which are included instances of generalised miliary tuberculosis. One case is summed up thus: "Grandines pulmonum aliorumque partium cum phthisi."

Morgagni (1682–1771) was so convinced of the contagious nature of consumption that he carefully avoided the dissection of those dead of this complaint. The cases which he describes in his great work, "De Sedibus et Causis Morborum," seem to have been drawn from the records of his teacher, Valsalva, who held similar views about contagion. Valsalva made the important observation that in all the cases he had dissected the ulcers and disease were in the upper part of the lungs. Morgagni considered that phthisis may be the result of the suppuration of tubercles, but he recognised other causes, and he accepted Morton's opinion concerning the connexion between scrofula and consumption.

Pierre Desault.

Pierre Desault, a physician of Bordeaux, who lived in the latter part of the seventeenth and the early part of the eighteenth century, published his views on phthisis in 1733, four years before his death.

In this work, which has great merit, he expresses himself very clearly. The causes of phthisis are divided into conjoint and antecedents. The conjoint cause is that whose presence sets up the disease and whose destruction leads to a cure. This cause he refers to tubercles and concretions found in the substance of the lung and scattered through the different lobes. These concretions resemble hailstones and are of different sizes. From this description it is probable that Desault was acquainted with miliary tubercles. He goes on to say that—

"If we read Morton's book on phthisis we shall find no account of an autopsy without the discovery of tubercles, to which he ascribes all the symptoms of the disease in such a fashion that I need do little more than translate and copy his words."

All previous writers, both ancient and modern, with the exception of Willis, were agreed that the cause of phthisis is an ulcer of the lung. Desault rejects this view, relying on the results of his own experience. Post-mortem examination of certain cases of phthisis which presented characteristic symptoms during life revealed a complete absence of ulceration, though the lungs were stuffed with tubercles. Phthisis is due to tubercles; ulceration of the lung is a secondary process. The symptoms of the disease precede the occurrence of ulceration, and are therefore not due to ulceration but to tubercles.

He compares phthisis with scrofula (*écrouelles*), both of them chronic diseases. Phthisis begins with tubercles or tumours in the lung, scrofula with tumours in the neck. In both cases the tubercles or tumours become inflamed and suppurate. Suppuration of scrofulous tumours leads to the formation of ulcers which are slow to heal, and can only be cured by destroying the tumours and the cause which produces them. The same is true of ulcers in the lungs resulting from the suppuration of tubercles. Both diseases in the stage of suppuration are contagious.

Desault believed that the contagion in this case, as in venereal disease, depends on the presence of worms. If we substitute micro-organisms for worms, there would be little to add even now to this statement, and, in any case, we may fairly credit Desault with a true prophetic instinct. The doctrine of "phthisis ab hæmoptoe" advocated by Morton and nearly all previous authors is rejected by Desault, who says that this chapter in Morton's book should be headed "Hæmoptoe a Phthisi," for hæmorrhage is the result, not the cause, of phthisis.

Young people between the age of 18 and 35 are most liable to be attacked by phthisis, as Hippocrates pointed out, but other ages are by no means exempt, for one meets with the disease in persons at ages below and above these limits, though less frequently. The subjects of phthisis for the most part are: 1. Those with contracted alar chests. 2. Those with a phthisical parentage and hereditary disposition. 3. Those exposed to contagion, in which Desault is a firm believer.

"Those who live with phthisical patients and wait on them may take the disease, though there be no hereditary disposition, for it is contagious. Thus wives who wait upon their phthisical husbands often contract the disease, and husbands who wait on their phthisical wives."

Desault was an enthusiastic supporter of the treatment of phthisis by horse exercise recommended by Sydenham, and he gives instances of the good results obtained by this means.

Cullen and Stark.

Cullen did not make much advance on the views of Sylvius and Morton.

Tubercle is the commonest of many causes of consumption. The lung may contain tubercles without any symptoms for a time, but finally the tubercles suppurate and lead to phthisis. Tubercles are small swellings resembling indurated glands. Phthisis is common in persons of scrofulous parentage. Cullen assumes the existence of a predisposition to the disease in certain individuals. Some cases that cough up calcareous matter, with or without blood, recover, others die. Asthma frequently terminates in consumption. Cullen did not favour the contagious origin of the disease.

William Stark, who died in 1770 at the early age of 29, deserves special mention for his excellent work on the morbid anatomy of phthisis.

Educated at Glasgow and Edinburgh, at which latter University he was a favourite pupil of Cullen, he came to London in 1765 and entered at St. George's Hospital. In 1767 he graduated at Leyden. His Clinical and Anatomical Observations were not published till 1788, 18 years after his death.

Tubercle is described as follows. In the cellular substance of the lungs are found roundish firm bodies named tubercles, of different sizes, from the smallest granule to about half an inch in diameter; the latter often in clusters. The tubercles of a small size are always solid, even those of a large size are frequently so; they are of a whitish colour, and of a consistence approaching nearly to the hardness of cartilage; when cut through the surface appears smooth, shining, and uniform. No vesicles, cells, or vessels are to be seen in them, even when examined with a microscope, after injecting the pulmonary artery and vein.

This description shows that he was familiar with miliary tubercles, though he does not use that term. He then traces the development of vomicæ from tubercles and their communication with the air passages. Near the larger cavities the pulmonary vessels are suddenly contracted and the bronchi are thickened. The upper and posterior parts of the lung are first and most affected. Stark gives what I believe is the first account of an aneurysm of the pulmonary artery, measuring 1 × ½ inch, opening into a vomica in the lung with a slit on one side of it. The patient died of hæmoptysis. No explanation of the cause of the aneurysm is offered.

Matthew Baillie's Description of Tubercles.

Matthew Baillie (1761–1823) at the end of the eighteenth century gave an admirable description of tubercles in the lungs, to which little has been subsequently added.

He believed that tubercles arise in the cellular tissue of the lungs and are not glandular in origin, as no glands exist in the lungs, "and on the inside of branches of the trachea, when there are follicles, tubercles have never been seen."

Tubercles "are at first very small, being not larger than the heads of very small pins, and in this case are frequently accumulated in small clusters. The smaller tubercles of a cluster probably grow together and form one larger tubercle. The most ordinary size of tubercles is about that of a garden pea, but they are subject in this respect to much variety. They adhere closely to the substance of the lungs, have no peculiar covering or capsule, and have little or no vascularity. When cut into they are found to consist of a white smooth substance possessing a firm texture, and they often contain in parts a thick curdy pus.

In cutting into the substance of the lungs a number of abscesses is sometimes found, from tubercles of a considerable size having advanced to a state of suppuration. In the interatices between these tubercles the lungs are frequently of a solid texture, from the cells being in a great measure obliterated. The texture of the lungs on many occasions, however, round the boundaries of an abscess is perfectly natural. ..... When tubercles are converted into abscesses phthisis pulmonalis is produced, one of the most destructive diseases in this island."

In other parts the lung may be converted into a white soft material, like that of a scrofulous gland just beginning to suppurate. This appearance he attributes to scrofulous matter deposited in the lungs.

"It seems to be the same matter with that of the tubercle, but only diffused uniformly over a considerable portion of the lungs, while the tubercle is circumscribed."

Baillie described tubercles in other organs, but he did not offer any explanation concerning their relation to similar disease of the lung.

The Influence of Bayle's Views.

The great work of Bayle in the early part of the last century marks the commencement of a new era in the conception of phthisis.

He divided the disease into several classes—tuberculous, granular, ulcerative, melanotic, calculous and cancerous; of these the tuberculous is the most common. This artificial classification, including tuberculous and non-tuberculous affections, did not long survive. Bayle's description of tubercles does not differ in essentials from that given by Baillie. The smallest tubercles he calls miliary. These are opaque or yellowish and tend to suppurate and break down to form an ulcer.

Bayle's criterion of tubercle was an opaque or cheesy substance. Tubercle may be encysted or non-encysted, nodular or diffused. What Baillie called scrofulous matter, Bayle called tuberculous. Like Baillie, he assumed a close connexion between scrofula and tubercle. In addition to tubercles, certain transparent hard miliary nodules were described in the lungs; these were called miliary granulations and were stated to differ from miliary tubercles in the fact that they never became opaque or cheesy. From their hardness and translucency, Bayle regarded them as of the nature of cartilage.

The simultaneous appearance of tubercles in various organs of the body convinced Bayle that the explanation was to be found in a common cause and he attributed this dissemination to a tendency to the production of tubercles, a tuberculous diathesis or disposition. This diathesis was the common cause of tuberculous phthisis, which is a general disease, and for this condition the term tuberculosis was first employed by Bayle.

LAENNEC'S DOCTRINE OF THE UNITY OF PHTHISIS (1781–1826).

The conception of a tuberculous diathesis had a profound influence on contemporary thought, and for 50 years after Bayle's death its effects could still be traced in medical literature. It needed the touch of genius to dispel the mists that obscured the relations of phthisis to tubercle, and this was supplied by Laennec's masterly treatment of the whole subject. Laennec proclaimed the doctrine of the unity of phthisis. All phthisis is tuberculous.

"Tuberculous matter may be developed in the lungs and other organs under two principal forms: that of isolated bodies and that of infiltrations. Whatever be the form under which the tuberculous matter is developed it presents at first the appearance of a grey and semi-transparent substance, which becomes by degrees yellow, opaque, and very dense. It then softens, gradually acquires a liquidity about equal to that of pus, and being expelled through the bronchi it leaves in its place cavities commonly known as ulcers of the lung, and which I shall designate by the name of tuberculous excavations."

He then describes miliary tubercles and Bayle's granulations and shows that transitional forms connect the two, proving that the latter are only an early stage of the former; in his own words—

"There is no other difference between them than that which exists between the green fruit and the ripe."

All cheesy matter is tuberculous, even that which is sometimes seen in cancerous growths. Inflammation plays no part in the production of tubercles which may develop in any organ of the body and are to be regarded as new formations.

Scrofulous glands are tuberculous. Hæmoptysis is never the cause of phthisis, but is always the result of disease already established. Tubercle, wherever situated, is connected with a certain disposition, but "the real cause, like that of all diseases, is probably out of our reach."

These views met with strong opposition on the part of some of Laennec's own countrymen.

Thus Broussais, accepting the tuberculous nature of phthisis, regarded tubercle as the result of irritation and inflammation of the lung, pleura, or bronchi, reverting to the standpoint of the seventeenth century, when the Hippocratic tradition still largely prevailed.

Andral took up a somewhat different position. While he embraced the idea of a tuberculous diathesis, he denied that tubercle is a new formation. According to his conception caseous or tuberculous material represented inspissated secretion in the small bronchi and lung which gradually becomes more compact and ultimately suppurates. The common causes of phthisis are pneumonia, pleurisy, catarrh, or hæmoptysis occurring in persons with a tuberculous diathesis. He supported Bayle's view that miliary granulations are distinct from miliary tubercles and considered that they represented discrete areas of alveolar inflammation.

Louis by his elaborate pathological and clinical observations gave strong support to Laennec's views.

Rokitansky put forward a theory of a tuberculous crasis, dyscrasia or blood change depending on a hyperinosis. Tubercle is an exudation which may be inflammatory and acquires a special fibrinous or tuberculous character in virtue of a tuberculous crasis. Scrofula and tuberculosis are identical.

In England Laennec's doctrine in the main was generally adopted.

HISTOLOGICAL OBSERVATIONS.

Until nearly the middle of last century pathological views were based almost entirely on naked-eye observations. But about this time the microscope began to be employed with important results and numerous observations were made on the histology of tubercle.

Lebert described certain small cells or tubercle corpuscles which were pathognomonic of tuberculous material.

Reinhardt disputed the specificity of these cells and showed that similar appearances may be presented by pus corpuscles.

William Addison regarded tubercle as consisting of epithelial cells derived from the white corpuscles of the blood.

VIRCHOW'S WORK.

Virchow in his great work "Die Krankhaften Geschwülste" essayed to revolutionise the whole doctrine of tuberculosis.

Miliary tubercle is the only criterion of what is tuberculous. Caseation, though a common change in tubercles, is not a specific process; it may occur in new growths, and is often the result of inspissated pus. This transformation is a necrobiosis and is allied to other forms of degeneration. In pulmonary phthisis inflammation is the chief factor and may terminate in caseation. Tubercle plays a subordinate part. The cells of tubercle resemble the cells of a lymphatic gland. Tubercle is a heteroplastic lymphoma; its seat is the connective tissues of the body.

Scrofula is not a specific disease, but a manifestation of a general vulnerability of tissue and proclivity to disease. Heredity is recognised as a potent factor. What is inherited is a certain disposition or vulnerability, not the disease itself.

Niemayer applied Virchow's views in their most extreme form to the clinical history of phthisis, which he divided into two groups—miliary tuberculosis and chronic caseous pneumonia.

Any form of pneumonia may terminate in phthisis, but in most cases it is a chronic catarrhal pneumonia which leads to caseation and excavation. Hæmoptysis may set up a caseating pneumonia and is a common cause of phthisis. Miliary tuberculosis is seldom a primary affection of the lung, but is generally secondary to ulcerative pneumonia or to a caseous lymphatic gland. Phthisis is not a specific disease and is not hereditary. A congenital vulnerability and a tendency to a luxuriant growth of cells are the distinguishing marks of this disease, and in this sense there is a connexion between phthisis and scrofula.

This profession of faith, supported by the great authority of Virchow, found much favour in Germany. But in France and England the great majority of physicians held firmly to Laennec's doctrine of the unity of phthisis.

DEMONSTRATION OF INFECTIOUS NATURE OF TUBERCULOSIS.

In 1857, when discussions about tubercle were still chiefly concerned with histological details, Buhl came forward with

the important statement that generalised miliary tuberculosis is the expression of an infection of the blood originating in a caseous focus situated in a lymphatic gland, in the lung or in some other part of the body. This was the first attempt to explain tuberculosis on the basis of infection and constitutes a landmark in the inquiry.

Seven years later Villemin made known the results of his memorable researches on the experimental production of tuberculosis in animals.

Rabbits and guinea-pigs inoculated with miliary tubercle, caseous matter or phthisical sputum, invariably developed tuberculous lesions in the serous membranes, lungs, and other organs. In certain animals, such as dogs, cats, and sheep inoculation was unsuccessful. Control inoculations with other material, such as cancer or anthrax, invariably failed to produce tuberculosis.

Villemin concluded from his experiments that tuberculosis is a specific inoculable disease, and he compared it with virulent maladies like small-pox, syphilis, and glanders. These conclusions were disputed at first on the ground that tuberculous lesions could be produced experimentally by the injection of non-tuberculous material. But after much controversy the truth of Villemin's views was universally acknowledged.

Discovery of the Tubercle Bacillus.

In 1867 William Budd, basing his opinion on geographical and epidemiological considerations, enunciated the view that phthisis is a zymotic disease like typhoid fever and that its propagation is determined by infection. But all doubts as to the infective nature of tuberculosis were removed by Koch's famous announcement in 1882 of his discovery of the tubercle bacillus.

The facts concerning Koch's brilliant research and the overwhelming proofs adduced by him in support of his conclusions are too well known to need recapitulation here. But we may pause a moment to pay homage to the genius of Laennec who conceived the doctrine of the unity of phthisis, to Villemin who supplied the first experimental evidence of the truth of this view, and to Koch who isolated the infective micro-organism, cultivated it outside the human body, and demonstrated its pathogenic action on the lower animals.

THE DOCTRINE OF CONSUMPTION AT THE PRESENT TIME.

Koch's discovery having furnished the most complete confirmation of Laennec's doctrine, non-tuberculous caseous pneumonia, which had long figured prominently in German writings, was now given a decent burial. Many elaborate and artificial classifications of phthisis shared the same fate. The old terms consumption and phthisis began to pass out of use, and tuberculosis, a term which we owe to Bayle, was generally adopted.

Heredity and Predisposition.

Some of Koch's most enthusiastic supporters were at first prepared to explain everything in the natural history of the disease by infection with the tubercle bacillus, and to throw all ideas of heredity and disposition to the winds. The temperate and judicial statements of Koch himself are in striking contrast with the attitude of these extremists, as Bulloch has pointed out.

In his monograph, "The Etiology of Tuberculosis," published in 1884, Koch admits that—

> "Although a good many of the phenomena classed together under the head of 'predisposition' may be referred to simple and easily explained conditions, some facts still remain difficult or impossible to interpret, compelling us for the present to accept the view of a varying liability."

He further agrees that tuberculosis is hereditary in the sense that a predisposition is inherited. Careful statistical investigations by Pearson supply strong confirmation of the existence of a hereditary disposition. This question has been very ably discussed by Bulloch and Greenwood, who concluded that—

> "the many workers who have dealt with the problem of inheritance and infection during the last few years have failed to achieve any real solid advance from the classical position."

Human and Bovine Tuberculosis.

In Koch's opinion the main, if not the only, source of pulmonary tuberculosis is the dried sputum of tuberculous patients which reaches the lungs through the air passages. Villemin had expressed similar views. The aerogenic origin of the disease has been disputed, but the rival view which regards pulmonary tuberculosis as enterogenic has received less support than the former.

The relation of human to bovine tuberculosis had engaged the attention of Villemin, who concluded that the two diseases were different. But Klebs and later workers, including at first Koch himself, regarded them as identical. This was the prevailing view, though doubts were expressed by individual writers, until 1900, when Koch made the startling announcement that further experiments had convinced him that human and bovine tuberculosis are distinct diseases, and that pulmonary tuberculosis is invariably due to infection by bacilli of human origin.

In spite of numerous researches on the alleged morphological and cultural differences exhibited by tubercle bacilli of the human and bovine type, no general agreement has been reached. But that there is a difference in the pathogenic effects on animals there seems to be no doubt. Inoculation of bovine bacilli is followed by an acute general tuberculosis, whereas when human bacilli are employed the effects are limited to a local tuberculosis at the site of inoculation or to a comparatively mild and chronic form of infection. In 1903 Behring proclaimed the opinion that infection of infants by the milk of tuberculous cows is the chief source of pulmonary tuberculosis.

Further investigation, however, has confirmed the truth of Koch's view that pulmonary tuberculosis is invariably due to infection with tubercle bacilli of the human type. This question has been fully discussed by Bulloch in his Horace Dobell Lecture, delivered before the College in 1911, to which I am much indebted.

The Seed and the Soil.

Records of autopsies at hospitals show that in a large percentage of all dead bodies 70–90 per cent. arrested tuberculous lesions are found in the lungs or other organs. It is clear, therefore, that the number of persons that recover from the infection greatly exceeds the number of those that succumb. Man is evidently more resistant to tuberculosis than the ordinary laboratory animals, though less so than animals like the cat, dog, sheep, horse, and ass. Koch has pointed out that in the human subject a temporary immunity is often manifested, periods of partial or apparently complete recovery alternating with phases of active infection.

There seem, then, to be intermediate grades of immunity in man contrasting with the complete immunity of certain animals. By analogy we may infer that these different grades of immunity in man and the lower animals depend on defensive arrangements which are similar in kind and vary only in degree. We can hardly doubt that the explanation of these differences is to be found in biochemical variations at present imperfectly understood.

Hereditary disposition may be explained on similar lines. These considerations illustrate the importance of the part played by the soil in which the germ of tuberculosis is planted. This fact had not escaped the acute observation of Villemin, who insisted on the interdependence of two factors in tuberculosis, the virus and the "milieu organique."

A further study of the soil, or "milieu organique," is the most pressing need for the better understanding of the pathology of tuberculous infection. This inquiry is intimately connected with the explanation of immunity—a subject bristling with difficulties. In recent controversies as to the relative importance of phagocytosis and chemical action of the body fluids we seem to witness a renewal of the old contest between the cellular and humoral pathologists. But, in spite of the immense amount of research devoted to the study of immunity, no general conclusion has yet been reached. This need not surprise us in view of the complexity of the problems involved.

The Mortality of Tuberculosis at Various Age Periods.

When the infectious nature of the disease had been finally established by Koch great results were anticipated from the application of this knowledge to the prevention of tuberculosis. But, so far, the results have been disappointing.

The death-rate from phthisis had been steadily falling for a number of years before the discovery of the tubercle bacillus, and no accelerated reduction has taken place in recent years. Furthermore, since the Great War began in 1914 there has been a steady rise in the phthisis death-rate, the causes of which have yet to be worked out. A recent paper by Brownlee on the epidemiology of phthisis pulmonalis, based on statistical tables of the death-rates at different ages

in different districts, raises points of great interest. His conclusion is that there are at least two types of phthisis, one especially affecting young adults and one middle age.

The type affecting middle age seems to have been the chief type in London for more than 200 years. Sydenham's statement that the usual age at which death from phthisis occurs is between 15 and 30 is taken directly from Hippocrates. When Morton, who gives the actual ages of phthisis deaths, is consulted, it is found that a very large proportion of cases are over the age of 30. Further investigation has shown that the young adult type, which is the prevailing one in Ireland and Shetland, spreads independently of environment, being as common in the more healthy parts of a district as in the unhealthy, while the amount of middle-age phthisis is correlated to the unhealthiness of a district.

The explanation suggested is that phthisis is not one disease, but a mixture of at least two allied diseases, an explanation to which the recent discoveries regarding typhoid fever furnish an analogy. In one form of phthisis the chief death-rate occurs between the ages of 20 and 30 years; in a second form the maximum death-rate occurs between the ages of 45 and 50 years. This hypothesis does not, in the present form, explain the occurrence of phthisis at high ages observed in Wales and Cornwall. It is possible that the senile form is due to the same organisms as that which causes the young adult type. It is well known clinically that many persons develop phthisical lesions in their youth, which apparently heal, while later in life a recurrence of the disease or a new infection leads quickly to a fatal issue. No district by itself gave any clue to the meaning of the phenomenon of phthisis at the later age observed in Wales and Cornwall. Light on this type was obtained from the statistics showing the susceptibility to phthisis in different occupations. It was found from these data that a very marked susceptibility to phthisis at later ages was shown by coal-miners, though the total amount of phthisis occurring among them was very small.

A study of the phthisis death-rate in England generally during the last 60 years shows a great reduction at all ages. This is most marked at the age period 20 to 25 years. At the middle and later ages the fall has not been nearly so marked. The result has been to raise the mean age at which death from phthisis occurs. No completely satisfactory explanation of this fact is possible at present.

The figures available suggest that an epidemic of "young adult" phthisis culminated about the middle of last century, since which date that form of the disease has markedly diminished. It is to be hoped that further investigations on these lines will enable Brownlee to clear up some of the questions raised in his valuable paper.

CONCLUSIONS.

If we look back and review the progress of knowledge we see how Laennec's great generalisation was foreshadowed by the work of Richard Morton. For Morton was the first to point out that consumption is in all cases associated with the presence of tubercles in the lungs. Thomas Willis had previously broken away from the Hippocratic tradition that phthisis and ulceration of the lung are convertible terms.

Sylvius, their great contemporary, whose influence must have powerfully affected both Willis and Morton, had not taken up such a definite position himself, though, as already shown, he had made important contributions to the pathology of consumption. His views on the fluctuating activity of the humours or secretions of the body and their relation to consumption find their counterpart at the present time in the temporary immunity which Koch discerns in the course of many cases of tuberculosis. The mutual relations of the different humours or secretions advocated by Sylvius and the modern development of the doctrine of the endocrine glands provide another illustration of the well-known fact that no great discovery is made without some previous preparatory work. Again, though the conception of tuberculosis as an infection first took definite shape in consequence of the experimental work of Villemin, we know that a belief in the contagiousness of consumption can be traced back as far as the time of Galen and Aristotle. Let us not forget the debt we owe to the Ancients. "Vixere fortes ante Agamemnona multi."

How true was Elijah's outburst—"I am not better than my fathers."

ON A PYÆMIA DUE TO ORGANISMS OF THE *BACILLUS COLI* GROUP

OCCURRING IN TURKISH SOLDIERS.

BY J. I. ENRIGHT, M.B., B.CH. N.U.I.,
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AND
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CASES of a peculiar pyæmia, with special involvement of the kidneys, apparently caused by *Bacillus coli* or one of its congeners, have been observed during the last year in Cairo. It was some time before the puzzling pyrexia with its attendant symptoms was recognised as a specific one. Nine cases in all were diagnosed in life, six others were recognised pathologically post mortem, but it is not improbable that the disease is much more frequent amongst debilitated orientals than these figures would indicate. In all but three of the cases which came to autopsy a dysenteric ulceration of the large intestine, and especially of the rectum, was present in all degrees of superficial necrosis and deep ulceration. Out of the six cases under treatment and still alive, three gave no history of a chronic diarrhœa or dysentery; the remainder had had many such attacks. It may be surmised that the organisms originally gained entrance to the blood stream through a breach of the mucosal surface in the lower part of the large intestine.

Symptoms, Clinical Signs, and Treatment, by Captain J. I. ENRIGHT.

Symptoms.—The onset of such a pyæmic attack is usually ushered in by severe frontal headache, anorexia, vomiting, and an acute pain localised to one or both kidney regions. This pain radiates along the inguinal canal and terminates in the penis, or may be localised to the scrotum. Blood is often passed in the urine in the initial stages. There is generally some difficulty in micturition, though there may be at the same time no frequency or alteration in amount of urine. There may be no symptoms of vesical trouble whatsoever. Usually the patient looks extremely ill and is mentally dull; he sweats profusely. The temperature is invariably high (103°–104° F.), the pulse weak and rapid (110 or higher). At the outset there is invariably a severe rigor which lasts about 10 minutes. The temperature remains elevated for five days and then takes on an undulating and a remittent character.

On physical examination the lungs, heart, and liver were found normal; an occasional mitral systolic bruit of hæmic origin has been noted. The spleen is palpable. The abdomen is usually flaccid; some patients complain of constant pain in the epigastrium. No definite information can be obtained from microscopical examination of the diarrhœic stool, which may contain some disintegrated pus cells, suggestive of a chronic intestinal ulceration.

After an initial pyrexia of some 5 to 7 days the temperature gradually falls and the pulse resumes its normal rate. All the urgent symptoms disappear; after a few days of convalescence the patient is able to resume his duties. After a further 7 to 14 days the temperature suddenly shoots up and is followed by a rigor and vomiting; the former succession of symptoms is repeated seriatim. These relapses, averaging 5 days, alternating with apyrexial periods of 8 to 14 days, recur with a remarkable regularity. The patient grows weaker and progressively more emaciated. Finally he dies of toxæmia, it may be with ascites and a profuse diarrhœa with fæcal incontinence. At this stage the liver and spleen are definitely enlarged.

In cases which progress favourably under treatment the pyrexial cycles continue but diminish in intensity, and the apyrexial periods become gradually more prolonged, as long as five weeks. Such patients rapidly put on flesh, and after a convalescence of three months, during which there is no elevation of temperature, were discharged from hospital.

Clinical signs.—Only rarely was the *urine* found chemically normal. Usually it has a specific gravity of 1010–1020, contains no albumin or sugar, but a deposit of pus cells and clumps of motile bacilli. Very rarely a cloud of albumin has been found at the commencement of the attack due to the effusion of blood, and a few red cells were then found in the urinary deposit.

In all the cases except one in which a *cystoscopic examination* was made, owing to the kind assistance of Lieutenant-Colonel Wade, R.A.M.C., the viscus presented a perfectly normal appearance. As a rule, the ureteric orifice gave no clue to the pathological condition of the kidneys. Specimens of urine obtained by ureteric catheterisation and cultured on MacConkey's medium gave growths of the causative organism. A unilateral affection of the kidney can occur.

Blood examination.—An anæmia of the secondary type was present in all cases—reduction of red cells on an average to 2,500,000. A corresponding leucopenia with a proportional rise in the total lymphocytes was the only constant and characteristic feature. The serum of three patients from whose blood the bacillus was isolated during life did not contain any agglutinins to the organism itself, even when tested in its undiluted state with living cultures. This serum was also tested against typhoid, paratyphoid A and B, Shiga, and Flexner-Y bacillus, with an invariably negative result. In two cases the organism was obtained in pure culture from the blood during life, but only during the rigors. On six separate occasions blood cultures made during the quiescent period remained sterile.

X ray examination of the lumbar regions in one case revealed no information.

Diagnosis.—Amongst diseases most closely resembling it may be mentioned malaria, undulant and relapsing fevers. In its early stages dysentery, generalised tuberculosis, phlebotomus fever, or one of the enteric group may be suspected.

The results of blood culture can be supplemented by microscopical examination and cultivation of the urine. In one patient ultimately discharged feeling quite fit an organism having exactly similar sugar reactions was recovered both from the blood and from specimens of urine from both the bladder and ureters.

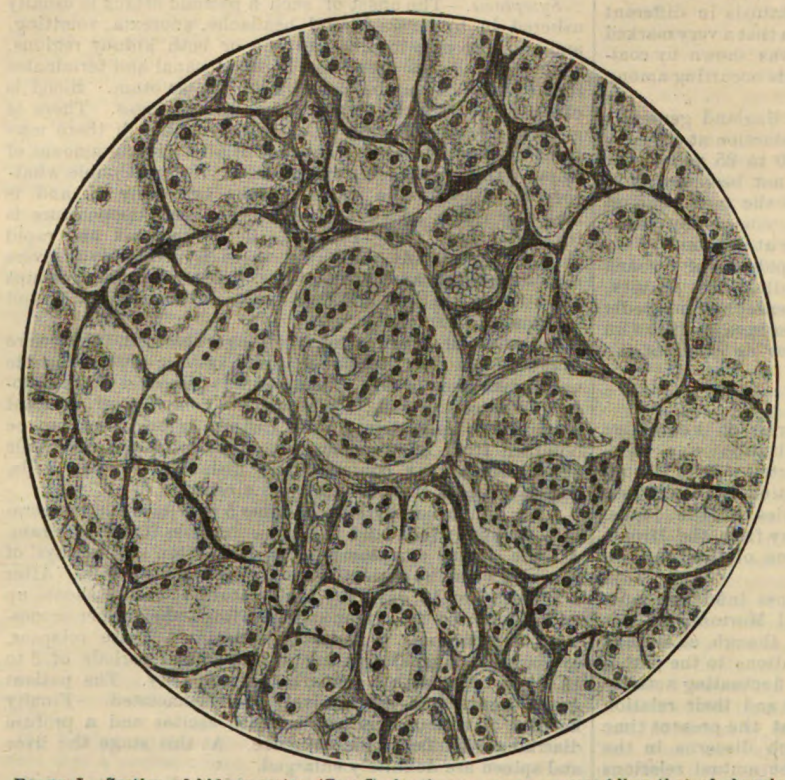

PLATE I.—Section of kidney cortex (Case 3) showing appearance resembling that of chronic interstitial nephritis. Objective, Zeiss 1/6; ocular Baker 2 × 7 = × 300 diameters. Stained by hæmatoxylin and eosin.

Treatment.—In the first few cases of *B. coli* pyæmia observed the treatment was based on symptomatic lines, together with the administration of autogenous vaccines of the bacillus as isolated from the blood (over a long period, in doses of from 5 to 120 millions), but no improvement was noted. It was decided to try intravenous eusol. The first injection was given to a patient who had been eight months in hospital on symptomatic treatment. He was then very weak and emaciated. The patient was about seven months under treatment and received nine intravenous injections of varying doses of eusol. During that period there were only three bouts of pyrexia (the last one very mild). He had increased considerably in weight, looked strong and healthy, and felt absolutely fit. Subsequently five other cases, treated on similar lines, have furnished almost equally brilliant results. (Eusol has also been successfully tried in a case of *B. coli* peritonitis following a gangrenous appendix, locally in the peritoneal cavity.)

Pathology and Bacteriology, by Captain P. H. BAHR.

Morbid anatomy.—This infection occurred coincidently and concomitantly with other diseases, such as tuberculosis, bacillary dysentery, and pellagra. In such it may reasonably be regarded as a terminal infection. Of the complicating diseases the most constant was chronic bacillary dysentery.

Two cases may be taken as examples of the effect produced by the toxins of the colon bacillus, uncomplicated by any other infection, upon the abdominal and thoracic organs. In both the parenchymatous degeneration of the heart, liver, spleen, and kidneys apparently produced by the toxins of the bacillus was very evident indeed.

Heart.—The whole organ was enlarged and the muscle pale and flabby.

Liver.—The liver was in both cases greatly enlarged (76 oz.; 100 oz.). Glandular tissue greatly degenerated. In one case there were numerous abscesses of varying size; glandular tissue was of ochreous colour; indications of commencing periportal cirrhosis. In case with biliary cirrhosis the abdomen was distended and contained 8 pints of purulent ascitic fluid, in which the bacillus was present in large numbers.

Spleen.—The spleen was very much enlarged (32 oz.; 22 oz.), with tense capsule and rounded margins. The substance was dark, soft, and diffluent. No melanin pigment found. All the characteristics of a "septic spleen." *B. coli* organisms in smears and cultures made from it in three cases.

Kidneys.—The kidneys were enlarged in both cases (in one, R. 12 oz., L. 13 oz.). Capsule stretched and adherent to many subcortical abscesses. Whole organ of pale ochre colour; cortex swollen and bulged on section; medullary striæ evident as bright yellow lines. The cortical zone itself was studded with abscesses.

The kidneys in different cases showed all intermediate stages between large swollen and small contracted granular kidney. In the latter both kidneys weighed about 4 oz. each; substance tough and fibrous; cortical zone contracted and scarred with depressed, pigmented, wedge-shaped cicatrices, in which were embedded small abscesses with thick caseous pus. (Plate I.) Evidently it would seem that the kidney may become completely fibrosed and contracted, and may then even resemble the small granular kidney of chronic interstitial nephritis, both macro- and micro-scopically. That both kidneys need not necessarily be implicated is shown by a study of one case. Here the right kidney was perfectly normal in structure both macro- and micro scopically, while its fellow contained several cortical and subcortical abscesses.

Lymphatic glands.—In the two cases which died in the acute stage the abdominal lymphatic glands were much enlarged, soft, and of a greenish colour. Retroperitoneal group and those at portal fissure implicated; in one instance pure culture of colon bacillus was obtained.

Intestines.—The intestinal ulceration present in majority of cases was mostly confined to lower part of intestinal tract. It was of a deep undermined, sinuous type, extending to muscular coat; the ulcers corresponded to transverse folds of mucous membrane. No amœbæ were found; Flexner-Y bacilli were isolated from similar ulcers in Turkish prisoners.

Microscopic pathology.—This was mainly confined to the three organs most affected—kidneys, liver, and spleen. Sections were stained by various methods; for tissue changes hæmatoxylin and eosin or hæmatoxylin and Van Gieson were employed; but by far the best pictures of the organisms in the tissues and the effects they produced upon them were obtained in sections stained by carbol-thionin blue, as well as by Ganducheau's stain (Borel's blue and eosin).

Kidneys.—Plate II. is drawn from a series of sections from different cases. In A the bacilli can be identified in the stellate arteries and in the glomeruli, whence they pass into the intertubular capillaries. There it would appear that their passage becomes blocked and, multiplying, they form large masses. They may also be found in large clumps

in the larger veins of the medulla (B). In this latter situation the organisms make their way (C) through the columnar epithelium of the ducts of Bellini into the lumen; from them they pass into the urine, together with a number of pus cells and a quantity of cellular débris. It is striking to observe the small amount of cellular infiltration in the vicinity of the organisms, and the small amount of destruction of the neighbouring convoluted tubules. The process of pus formation and cicatrisation appears to be a very gradual one. The lumen of the loops of Henle is filled with a coagulated serous exudate staining green with carbol-thionin; there is dilatation of the intertubular capillaries and a shrinkage of the glomeruli within their capsules. Eventually (Plate I.) a considerable destruction of the glomeruli, together with a dislocation and consequent desquamation of the tubular epithelium of the convoluted tubules, takes place.

In the medulla (Plate II., B) the destruction of the collecting tubules has proceeded to a considerable degree.

The cellular infiltration occurring around the collecting tubules in the medulla is composed mainly of mononuclear cells, together with smaller number of plasma cells. (C, Plate II.) In the kidneys most severely affected, few traces of the original glandular structure can be made out, and very few organisms can be seen in sections. On the other hand, the blood-vessels are packed with polymorphonuclear pus cells migrating to the cortex, and the abscesses consist of a dense collection of pus cells around greatly shrunken and destroyed glomeruli.

When cicatrisation has taken place to any large extent the changes in the glomeruli and tubules immediately bordering on the site of the abscesses resemble in their histology those seen in chronic interstitial nephritis, and may be regarded as an indication of the effects of chronic absorption of *B. coli* toxins upon normal kidney tissue. (Plate I.)

Liver.—In all sections examined there were abundant signs of a periportal infiltration resembling that seen in early alcoholic cirrhosis. There is a considerable increase in the periportal fibrous tissue, together with an outpouring of round cells. The liver cells themselves have undergone fatty degeneration.

In one case the section passes through a small hepatic abscess. The main type of cell in the exudate is, apparently, the small mononuclear, very few polymorphs being visible. The abscesses in the liver appear to have no definite limitation, and there has been no attempt at fibrous tissue formation; in addition the hepatic cells in the immediate vicinity are considerably damaged.

Spleen.—Collections of organisms can be made out lying free in the venous sinuses of the spleen pulp, or sometimes in the centre of a Malpighian corpuscle and surrounded by collections of small mononuclear cells. The hypertrophy of fibrous tissue is marked both in the capsule and in the trabeculæ. This fibrosis of the spleen appeared to be common to all the cases of the series.

Bacteriology.—The morphology of the bacilli in these cases was studied in smears and sections made from the organs and in cultures stained by Romanowsky or thionin methods.

In the tissues they appeared as fusiform bacilli, with marked bipolarity, together with the appearance of diplo-bacillary forms; these were also seen in young agar cultures, indicating, apparently, a rapid proliferation on the part of the organism. In smears of the spleen stained by Giemsa this bipolarity was so pronounced as to give the impression that one was dealing with an infection of *B. pestis*. All cultures were Gram-negative.

All the strains isolated were either non-motile or perhaps feebly so.

Sugar reactions, &c.—In the reactions on the sugars a very considerable difference was noted, and found constant for the same strain of bacillus. From the clinical resemblance of these cases, from which apparently distinct organisms were obtained, we cannot bring ourselves to regard the variations of these sugars, not even of such an important sugar as lactose, as marking such a great diversity in the nature of the organisms involved, for it is very evident from post-mortem studies, as well as from microscopical sections, that their pathogenic action on the tissues was in all cases almost identically the same.

According to their reactions with five sugars in peptone water the organisms isolated can be divided arbitrarily into nine groups (A to I), of which three—A, E, and F—do not ferment lactose, and I cannot find any record of these having been previously classified. In the table are shown the characters of these organisms after 24 hours' incubation in 1 per cent. sugars and 1 per cent. peptone water.

The commonest type recorded is D, which corresponds with the *Bacillus neapolitanus* of Emmerich, and occurred 8 times out of 21 organisms isolated. It was isolated in pure culture from the blood, right kidney, spleen, urine, and rectum of Case 8. Cultures from the left kidney, liver, mucous cyst from rectal wall of same case gave slightly different reactions (G, I). There is reason for presupposing that they are merely variants of the same bacillus.

Type H would seem to correspond to *B. oxytocus perniciosus* (MacConkey); it was isolated twice from spleen and liver of same post-mortem.

Type I, isolated twice, corresponds in its reactions to those given for *B. acidi lactici* (Hüppe).

The remaining types B, C, and G, without reference to more extensive literature, cannot be placed in any classification.

Pathogenicity.—A limited number of experiments were made with broth cultures and agar emulsions of these organisms on rabbits. From ½ to 1 c.cm. of 24-hours old broth culture was injected intravenously, but only produced a transient indisposition. Opalescent emulsions of agar slopes after 24 hours' incubation were then tried in doses of 1 c.cm. Two types of the organism (B and C) proved pathogenic. Type A would appear to have but slight pathogenic properties for rabbits.

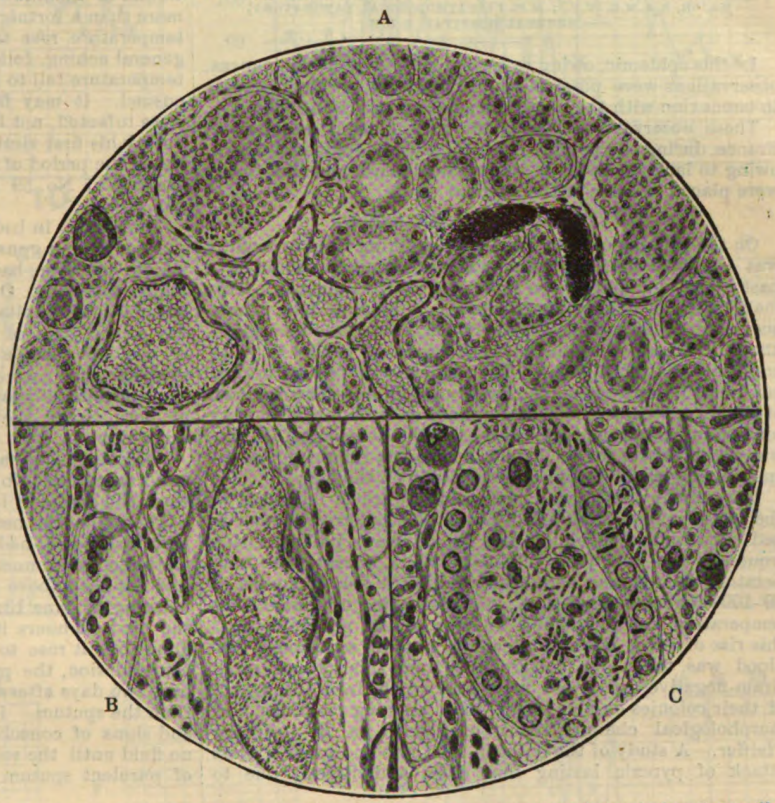

PLATE II.—A. Section of renal cortex showing emboli of organisms in stellate arteries, glomeruli, and intertubular capillaries. Note the apparently normal appearance of the adjacent convoluted tubules. Objective, Zeiss 1/6; ocular, Baker 2 × 7 = × 200 diameters. (Case 3.)
B. Section of renal medulla showing a large collection of organisms in a medullary vein, with destruction of the tubular epithelium and dilatation of adjacent capillaries. Zeiss 1/6; ocular, Baker 8. × 300 diameters. (Case 7.)
C. Section through a duct of Bellini showing the passage of bacilli through the tubular epithelium and numbers in the lumen with polymorph cells and débris. Zeiss 1/12; ocular, Baker 8. × 1000 diameters. (Case 6.) Stained by carbol-thionin.

Type.	Glucose.	Lactose.	Saccharose.	Mannite.	Dulcite.	Indol.	Neutral red.	Milk.
A	A.G.	–	A.G.	A.G.	–	+	–	Acid.*
B	A.G.	A.G.	A.G.	–	–	–	+	Acid and clot.
C	A.G.	A.G.	(A.)	A.G.	–	+	+	Acid.
D	A.G.	A.G.	–	A.G.	–	+	+	Acid and clot. Acid.
E	A.G.	–	–	A.G.	–	+	–	Acid.
F	A.G.	–	A.G.	–	–	–	–	,,
G	A.G.	A.G.	–	A.G.	A.G.	+	+	Acid and clot.
H	A.G.	A.G.	A.G.	A.G.	A.G.	+	+	Acid and clot. Acid.
I	A.G.	A.G.	A.G.	A.G.	–	+	+	Acid.

* In one instance returning to alkaline in 48 hours.
(A.) = Slightly acid. A.G. = Acid and gas. + = Fluorescence in neutral red and positive indol.

We wish to thank Lieutenant-Colonel Vickerman, R.A.M.C., for permission to record these cases, and also for much help and encouragement. Our thanks are also due to Lieutenant-Colonel Wade, R.A.M.C., consulting surgeon to the Forces in Egypt, for kind and continued assistance.

OBSERVATIONS ON A SMALL LOCALISED EPIDEMIC OF INFLUENZA,

WITH SPECIAL REFERENCE TO THE INCUBATION PERIOD.

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IN this epidemic, owing to a combination of circumstances, observations were possible which furnish a few definite data in connexion with the incubation and spread of influenza.

These observations were made at a general hospital in France during the height of the influenza epidemic, where, owing to lack of beds in the medical wards, medical cases were placed in some of the surgical wards.

The Cases in Beds 62, 63, and 61.

On the evening of June 6th a man suffering from bronchitis was admitted into a surgical ward in which for some days past no patient had shown signs of a medical malady. This man had gone sick with a febrile attack on June 1st; cough, accompanied by copious expectoration, soon made its appearance. On admission he had a temperature of 99° F., with crepitations at both bases. The temperature fell to normal on June 10th and the signs rapidly cleared up. The duration of the fever, the presence of crepitations, and rapid recovery tend to indicate that this was a case of influenza. This man was notably dirty in his habits, constantly failing to use the sputum mug and spitting promiscuously on the floor.

The arrangement of the beds in the ward is indicated in the accompanying diagram. The patient referred to was in bed 62. In the adjoining bed, No. 63, was a patient with a wound of the knee-joint infected with *S. aureus;* the temperature in this case had been running a steady course of 99–100° for some days past; on the evening of June 9th his temperature rose to 103·6°. In view of the possibility that this rise of fever might indicate a general septicæmia the blood was taken for culture, and from this culture small Gram-negative rods were recovered which, from the aspect of their colonies on blood-agar, their staining reactions, and morphological characteristics, conformed to *B. influenzæ* Pfeiffer. A study of the chart in this case indicates a short attack of pyrexia lasting four days, and directly due to *B. influenzæ* engrafted upon a condition of chronic septic absorption.

The patient in the bed No. 61 was suffering from a gunshot wound of the arm, accompanied by irregular fever ranging from 98–102°. In this case, again, there was a sudden rise of temperature to 104° on the afternoon of June 9th, accompanied by conjunctivitis, cough, and some expectoration; the temperature remained 104° or slightly lower until the 11th, finally falling somewhat abruptly to subnormal on June 14th. Pfeiffer's bacillus was not recovered from the sputum in this case. The duration of the pyrexia, taken in conjunction with the presence of catarrhal symptoms in the one case, and bacteriological proof of invasion by Pfeiffer's bacilli in the other, warrant the assumption that both were cases of influenza. That the infecting agent was the patient who came in bed No. 62 before midnight on June 6th admits of little doubt. The period of incubation can therefore be fixed as from midnight on June 6th to 4 P.M. on June 9th, a period of 64 hours.

The Other Cases.

The patient in bed 60 had a compound fracture of the humerus, the temperature had been normal for the past 14 days. On the morning of June 11th he had an attack of shivering and the temperature rose to 100°; he had general pains; the temperature fell to normal on the evening of the 12th.

Next to the last patient in bed 59 was a man with a wound of the knee; the temperature had been normal for more than a fortnight. On the afternoon of June 11th the temperature rose to 104°, accompanied by shivering and general aching, followed by cough and expectoration. The temperature fell to normal on the 13th, and a rapid recovery ensued. It may fairly be assumed that these two cases were infected, not by the original importer of the disease, but by his first victim, the patient in bed 61. On this hypothesis the period of incubation would be exactly 48 hours in the case of No. 59 and some six hours less in the case of No. 60.

The patient in bed 64 adjacent to one of the first cases suffered from a gunshot wound of the chest (non-penetrating) which, however, had not given rise to any degree of fever higher than 99°. On June 11th the temperature rose to 103° with cough; crepitations were audible at the left base. Next day a small area of consolidation was observed at the angle of the left scapula. The temperature fell, followed by a secondary rise, accompanied by signs of a small patch of consolidation at the right base. Rapid resolution took place at both bases, the temperature falling to normal on the sixth day.

Assuming this case to have been infected from his left-hand neighbour, No. 63, who was a bacteriologically proved case, the period of incubation would be exactly 48 hours.

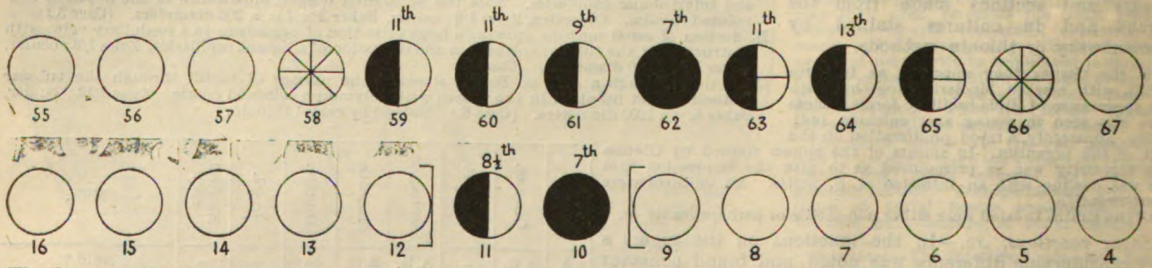
The patient in bed 65, the right-hand neighbour of last-mentioned case, had been in hospital suffering from inflammation of the connective tissue of the feet. His temperature had not been above 99° during his stay in hospital. On the morning of June 13th his temperature rose to 100°, and for the next 48 hours it ranged between 99° and 100°, until on June 15th it rose to 103°. The left base showed signs of consolidation, the pneumonic process spreading to the right base two days afterwards. Pfeiffer's bacillus was recovered from the sputum. In this case resolution was delayed, fever and signs of consolidation persisting. Exploration yielded no fluid until the sudden expectoration of a large quantity of purulent sputum and the appearance of the signs of a cavity at the left base indicated the presence of a pulmonary abscess. X rays confirmed this diagnosis. The sputum contained pneumococci, but in the later stages *B. Pfeiffer* could not be recovered.

This patient made a good recovery. Assuming this case to have been infected from his right-hand neighbour, the period of incubation proves to be almost exactly 48 hours.

In this group of seven cases there were four distinct periods of infection, this infection beginning at the centre bed 62 and spreading from bed to bed on either side. In every case, moreover, the infection spread directly from bed to bed; in no case was the orderly sequence of a systematic march departed from. The limitation of the series is in all probability attributable to the fact that two beds, Nos. 66 and 58, stood empty during the whole epidemic.

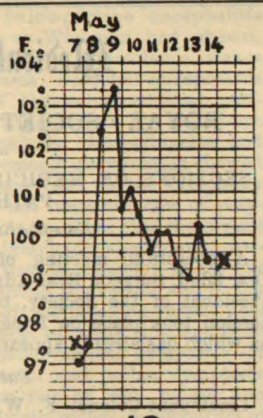
Two cases occurred on the opposite side of the ward, which are shown in the diagram as Nos. 11 and 10.

Diagram of Beds in a Surgical Ward of a Military Hospital.



The diagram illustrates the narrow radius within which infection from influenza takes place. The infection began from Bed 62 into which a man suffering from bronchitis was admitted on June 6th. Adjoining and opposite bed-fellows were stricken with influenza on the dates shown. Key to Diagram appears on opposite page.

Temperature Charts of an Epidemic of Influenza localised in a Surgical Ward. The bold number at the foot of each chart refers to the position of the bed as given in the diagram. The crosses on the charts denote the beginning and end of the influenzal febrile movement.



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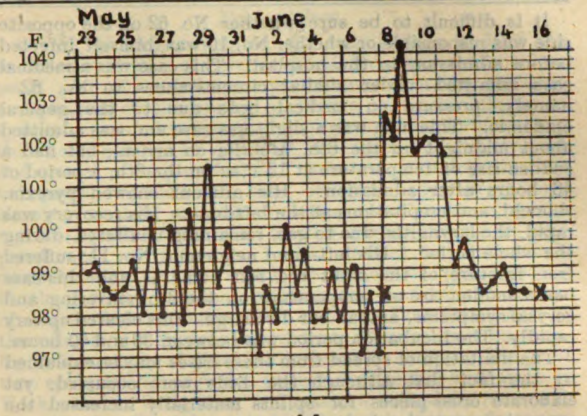

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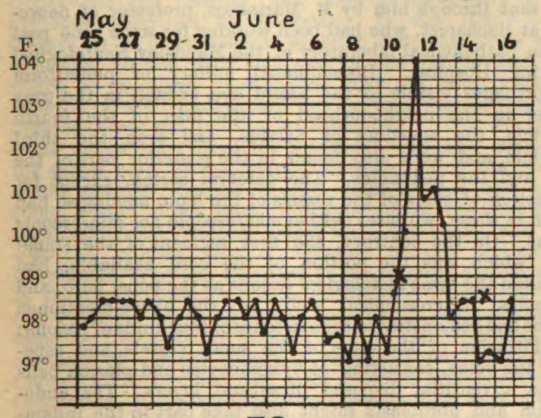

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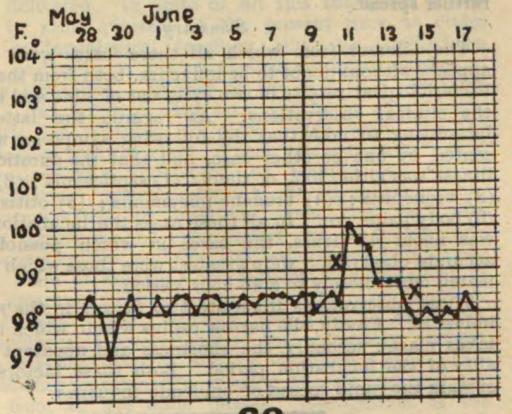
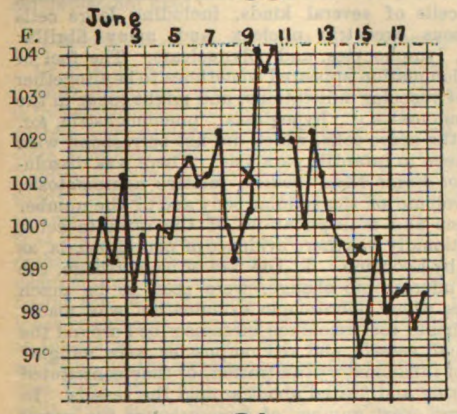
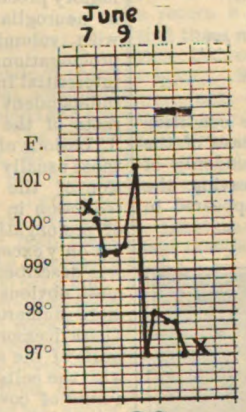


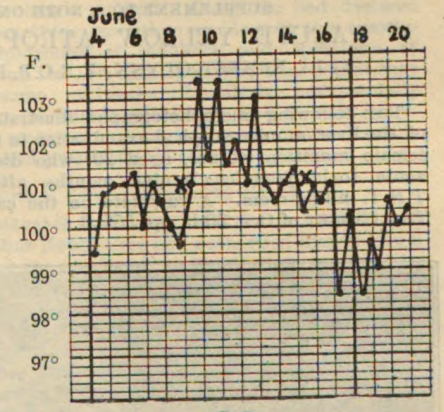
60



61



62



63

Key to Diagram.

= { Ordinary surgical case.

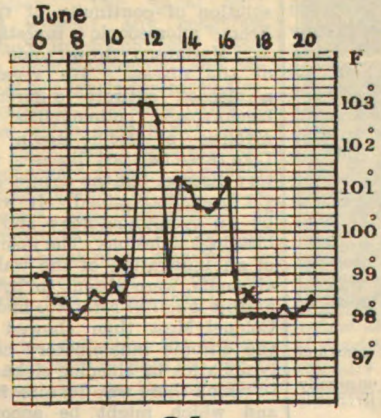
= { Medical case with "influenza."

= { Surgical case infected.

= { Surgical case infected. *B. influenzæ* found.

= Vacant beds.

= { Splinting, pulleys, &c.



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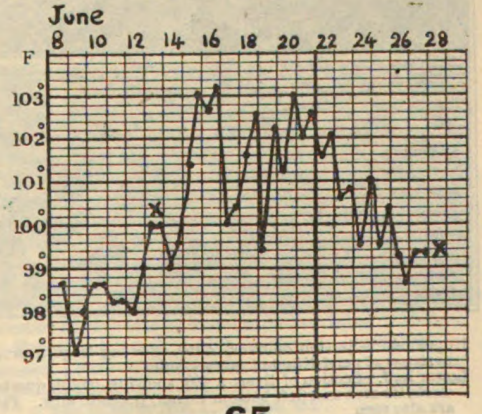


65

It is difficult to be sure whether No. 62 on the opposite side was responsible or whether No. 10 was himself infected before admission to the hospital. This case was a medical case admitted under similar circumstances to No. 62—namely, pressure on medical beds due to the general epidemic. This man was a slight gas case and was admitted about midnight on the 6th, afebrile on arrival, but had a sudden rise of temperature at 12 P.M. on the 8th, a period of 48 hours after admission. His ailment showed pyrexia, rhonchi, and crepitations at the left base. His recovery was rapid, the laryngitis, due to gas, remaining unaltered during the whole period. His left-hand neighbour, No. 11, suffered from fracture of the right and left humerus, and this case had a sudden rise of temperature on the 8th, shivering and coryzal symptoms, and an ear discharge. This cleared up very rapidly. The incubation period was between 35 and 40 hours.

The limitation of spread from these cases may be explained by the fact that although the beds were occupied, yet elaborate cross-pieces for splints materially increased the space between the beds, thus interposing the barrier to further spread.

Summary.

The ailment from which all these cases were suffering appears without doubt to be influenza, both from the positive bacteriological results in two cases out of nine and also from the clinical observations. As regards the latter, it is interesting to note that the following symptoms were presented by one or other case, and that the duration of the illness was either long or short: (1) septicæmia; (2) coryza; (3) bronchitis; (4) broncho-pneumonia; (5) otitis media; (6) body pains, &c. In all these cases the incubation period was about 48 hours, the cases in which possibilities of accurate observation were greatest were those which approximated most closely to a 48-hour period.

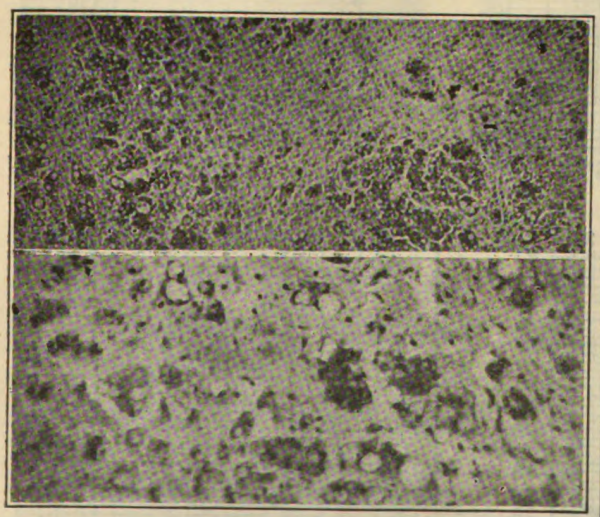
These observations illustrate two factors in the spread of influenza. Firstly, the narrow radius within which infection takes place; secondly, the shortness and apparent punctuality of the incubation period. Both these factors help to explain the rapid spread of epidemic influenza.

SUPPLEMENT TO A NOTE ON

"ACUTE YELLOW ATROPHY" (?).

BY ERNEST GLYNN, F.R.C.P. LOND.

THE following microphotographs illustrate the condition of the liver on microscopical examination in the case of the female munition worker, aged 20, who died suddenly of acute toxic jaundice (?) nine months after leaving the T.N.T. filling-room. A full note on the case appeared in THE LANCET of Oct. 26th, pp. 555–6.



Upper half.—Section of liver, × 150, showing large necrotic areas and portions of persisting but fatty lobules.
Lower half.—Section of liver, × 400, showing (right quarter) unusually cirrhotic area and (left bottom corner) necrotic area. Fatty liver cells are also seen

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF MEDICINE, EPIDEMIOLOGY, AND PATHOLOGY.

Encephalitis Lethargica.

A COMBINED meeting of these sections was held on Oct. 22nd, Surgeon Rear-Admiral Sir HUMPHRY ROLLESTON, President of the Society, being in the chair, when a discussion took place on Encephalitis Lethargica, a brief note on which has already appeared in our columns.

Pathology.

Lieutenant-Colonel F. W. MOTT, R.A.M.C. (T.), gave a résumé of the results of the examination of two brains which was sent through him by M. Marinesco, professor of neurology at Bucharest, who had been working for some time past in the pathological laboratory of the Maudsley Neurological Clearing Hospital. Disseminated miliary or punctiform hæmorrhages visible to the naked eye existed in the grey matter in the neighbourhood of the floor of the fourth ventricle, the aqueduct of Sylvius, and even the third ventricle, and were also found in the posterior part of the pons and the peduncles. The cerebral cortex, except for congestion of some of the vessels of the lepto-meninges, had shown in these two cases neither macroscopic nor microscopic lesions. On the contrary, the first segment of the spinal cord, which was the portion of the cord available, had presented the same histological lesions as the pons, bulb, and peduncles. Microscopical study of the above-mentioned regions had demonstrated the existence of four kinds of lesions: 1. Infiltration of the walls of the small vessels, and especially the veins, consisting of lymphocytes and plasma cells in the adventitia, disposed in several layers. The endothelium and fibroblasts might also take part in the inflammatory process. 2. Foci of interstitial inflammation consisting of neuroglia cells of several kinds, including large cells with voluminous excentric nucleus and many fibrillar prolongations, lymphocytes, and polynuclears. The foci of interstitial inflammation appeared sometimes to be altogether independent of vascular infiltrations, and might occur in the roots of the nerves—e.g., hypoglossal, pneumogastric, &c. 3. Lesions of the nerve cells, which did not correspond with those usually seen in infantile paralysis. There was dissolution of the *soi-disant* Nissl bodies, relative achromatosis, reduction in volume of the cellular body and of the number of prolongations and multiplications of the satellite cells, but only exceptionally was there evidence of neuronphagia, as was described by Economo. 4. The foci of hæmorrhage, the most obvious microscopic change, were seen to be much more numerous when microscopic examination was made. These hæmorrhagic foci remained circumscribed around the walls of the small vessels, and red corpuscles were mingled with the cells of inflammatory infiltration, or they constituted a kind of covering and floated about around the vessels. In spite of the very great number of hæmorrhages the vessel wall did not appear to be necrosed, but sometimes a solution of continuity of the vessel wall could be seen. From microscopic investigation of these two cases, M. Marinesco drew some conclusions upon the nature of the disease. He regards lethargic encephalitis as a disease entirely different from botulism, from the hæmorrhagic poliomyelitis of Wernicke, from the poliomyelitis of Heine-Medin, and from sleeping sickness. Like these two last diseases, it was an infectious inflammatory disease, but the nature of the infectious germs had not yet been determined. It was distinguished from botulism by its symptomatology and by the four above-mentioned histological lesions. The vascular lesions, due to the presence of an infiltration of the walls of the vessels by migratory elements, were absent in botulism, and the readily recognisable *Bacillus botulinus* had not been found in these cases. Colonel Mott then showed photomicrographs illustrating the chronic inflammatory conditions of the perivascular lymphatics in sleeping sickness and cerebro-spinal syphilis, in which there was definite infection by a specific organism, and which might be accompanied by somnolence. In

epidemic encephalitis and the bulbo-pontine encephalitis of Heine-Medin disease, which, as Wickman had shown, was a form of anterior poliomyelitis, somnolence was a frequent symptom, passing on to coma. Epidemic encephalitis was an acute inflammation of the sub-adventitial perivascular lymphatics, and was characterised by naked-eye hæmorrhages in the pons, the medulla, the peduncles, and around the third ventricle. Microscopic examination showed not only lymphocytes and plasma cells in the lymphatic sheaths of the arteries and veins, but large numbers of polynuclears, and the inflammation was so acute that there were hæmorrhages, not only into the lymphatic sheath and peri-adventitial space, but into the tissues around. There was proliferation of neuroglia cells around the vessels and in the nervous tissue in the proximity of the inflamed vessel. He could find no essential difference between this epidemic encephalitis with its characteristic clinical symptoms of fever, headache, oculo-motor, facial and bulbar symptoms of difficulty in swallowing, paralysis of soft palate and respiratory symptoms, and the ponto-bulbar encephalitis of Oppenheim and Cassirer, and observed frequently in the epidemic described by Wickman. In the Heine-Medin disease, as in cerebro-spinal syphilis, different forms arose according to the maximum seat of the lesion, and this might be explained by supposing that the primary seat of invasion of the lymphatics of the nervous system varied in different cases and in different epidemics. Thus, the spinal cases might start from the intestines and find access to the spinal cord by the lymphatics surrounding the lumbo-sacral arteries; lesions in the bulbo-pontine and upper spinal region might start from infection of the lymphatics surrounding the vertebral artery when the throat and nose was the primary seat of invasion of the peri-arterial lymphatics, or by the infection of the internal carotid when in the encephalitic or meningeal forms. It was said that this epidemic of ponto-bulbar encephalitis could not be the same as Heine-Medin disease, for the cerebro-spinal fluid obtained by lumbar puncture contained no lymphocytes. Captain C. R. Box had had cases in which lymphocytes had been found. It appeared that when the meninges were affected lymphocytes and albumin were certain to appear in the cerebro-spinal fluid.

Observations on Blood Counts and Cerebro-spinal Fluid.

Dr. P. N. PANTON said that the examinations made of cases in the clinical laboratory of the London Hospital consisted in investigations of the leucocytic content of the blood and the protein and cellular contents of the spinal fluid. The results were compiled and published by his colleague, Mr. S. K. Vaidya, in THE LANCET of Sept. 7th, 1918, and he proposed to give very briefly a summary of these findings. Twenty of the most typical cases were examined, and it was probable that the diagnosis was incorrect in two only. In both these cases the error in diagnosis was indicated by the laboratory examination. One case had a leucocytosis of 21,200 per c.mm., by far the highest count of the series, and proved to have lobar pneumonia. In the other tubercle bacilli were found in the spinal fluid during life and miliary tuberculosis post mortem. In the remaining cases the average leucocyte count was 7600 per c.mm., and the relative proportions of the cells were about normal. An occasional somewhat higher leucocyte count was explained by the presence of a septic rash or some other complication. The spinal fluid was in all cases clear and without any coagulum on standing, such as was found in tuberculous cases. The protein was never more than slightly increased, and the cellular content was either normal or slightly increased also, the type of cell being always lymphoid. In some cases he thought that the protein excess, which, though not great, was constant, was greater than should have been expected from the small number of lymphocytes found. Although these changes were very slight they appeared to them to be constant. The value of leucocytic, and in particular of spinal fluid, examinations as a means of *excluding* diagnoses of epidemic encephalitis was abundantly manifest in numerous cases of other diseases occurring during this epidemic, but not included, with two exceptions, in the series.

Dr. F. G. CROOKSHANK said that in describing the cerebro-spinal fluid examination it was necessary to state the day of the disease on which the fluid was taken, as the cell count, &c., differed from day to day.

Epidemiology.

Dr. W. H. HAMER pointed out that just as in 1915 the so-called epidemic of cerebro-spinal fever was really only a small part of an influenza prevalence, so in the epidemic encephalitis of the spring of 1918 a particular cluster of symptoms was once more being singled out for scrutiny, and that here, again, the epidemic, so-called, was merely part and parcel of a prevalence of influenza. During the last ten years evidence had been collected, however, clearly showing a close association between outbreaks of poliomyelitis, polioencephalitis, cerebro-spinal meningitis, and prevalences of influenza. He referred to Brorström's demonstration of the influenzal nature of poliomyelitis, to the London evidence relating to the common origin of cases of influenza and of cerebro-spinal fever, and to the similar conclusions arrived at by an Army bacteriologist from study of the 1915 outbreak in camps. The proof that epidemic lethargy was no new disease was writ large in Hecker and in Creighton,[1] and was now being followed out in detail by Dr. Crookshank in his Chadwick lectures in course of being delivered. In spite of all this there was a disposition, in some quarters at the present time, to claim that the epidemiological teaching must be brushed on one side, and reliance placed exclusively upon niceties of laboratory technique. In view of the fact that "Spanish influenza" had followed hard upon the heels of epidemic encephalitis, he ventured to plead, once again, for the epidemiological point of view. These "new diseases" could not be completely understood by making cell counts and cultivating various strains of organisms; nor fully comprehended by insisting upon the fact that particular structures had been picked out in the cerebro-spinal nervous system, and that the lesions were here at one level and there at another; nor satisfactorily explained by focusing attention upon some particular sign or symptom, whether it were sweat, lethargy, paralysis, an exanthem, or some evidence of involvement of the pulmonary, nervous, or gastro-intestinal systems, and by considering each phase of the epidemic prevalence in relation thereto and studying it apart from all the other phases. Recognition of the epidemiological point of view really implied, he submitted, a return to Sydenham's method. Creighton had declared that there was something more than accident in the association between epidemics of influenza and epidemics of "ague." Study of the last named showed clearly that they were not, of course, outbreaks of malaria, but precisely those very gastro-intestinal, pulmonary, and nervous manifestations which we were now beginning to realise actually constituted part and parcel of influenza prevalences.

Report of Local Government Board.

Lieutenant-Colonel S. P. JAMES (Local Government Board) said that Sir Arthur Newsholme had authorised him to give a brief summary of the results of an inquiry into encephalitis lethargica recently carried out by the medical staff of the Local Government Board in collaboration with the Medical Research Committee. Owing to printing difficulties the issue of the report of this inquiry had been greatly delayed. The summary he gave was abbreviated from Sir Arthur Newsholme's general review which prefaced the report. In its initial stages last April the inquiry was concerned chiefly with an investigation of the hypothesis that the illness was a manifestation of botulism. In connexion with that view Dr. J. McIntosh, on behalf of the Medical Research Committee, carried out a complete bacteriological investigation, and Dr. G. C. Hancock and Dr. Pearse, of the Food Branch of the Board's Medical Department, personally investigated, from the point of view of a possible food origin, 58 cases reported up to May 7th. The result of these preliminary inquiries was that neither on the bacteriological nor on the epidemiological side could any direct or indirect evidence be obtained of an association of the illness with the *Bacillus botulinus* or with infection from food. In addition to proving that the illness was not due to food, the results of the preliminary inquiry pointed to a possibility that it might be one of the many forms of the disease, or group of diseases, to which nosologists at present attach the indiscriminative label "Heine-Medins'che Krankheit," of which infantile paralysis—officially termed acute poliomyelitis—was the commonest

[1] THE LANCET, 1906, i., 569, 655, 733.

type of illness. It was found, however, that from infantile paralysis the present illness differed very strikingly, not only in the localisation of the paralysis and some other equally obvious signs, but in its age incidence, seasonal prevalence, course, duration, and fatality.

In these circumstances it was decided to carry out a more complete clinical and epidemiological study of the illness than had been attempted in regard to the first 58 cases. The Public Health Department of the London County Council agreed to investigate all cases in the London area. Up to the end of June the number of cases in the London area inquired into was 107 and the number in the provinces was 121. Apart from these special inquiries Dr. A. S. MacNalty was deputed to undertake a detailed personal study of the clinical symptoms of the illness, conferring with Sir William Osler, Regius professor of medicine, University of Oxford, and with Major George Draper, of the United States Army Medical Corps, who examined and reported on cases in Birmingham, Leicester, Oxford, and other localities. On the bacteriological side, in addition to the research in connexion with a possible food origin, the problem of the nature of the illness was attacked from the point of view that the virus might be closely allied to, or perhaps identified with, that of acute poliomyelitis; and in this line of research animal experiments were begun as soon as the necessary monkeys could be obtained. In addition Sir Walter Fletcher, F.R.S., secretary to the Medical Research Committee, secured the services of Professor G. Marinesco, of Bucharest, for the examination of specimens from fatal cases of the disease.

Results of Investigations.

The accounts given by all these observers might be summarised very briefly as follows: 1. For identification and description it was decided to follow von Economo in terming the illness encephalitis lethargica, a name which had the right of priority and indicated a characteristic clinical feature. 2. Dr. MacNalty, from his clinical study, concluded (*a*) that in its essential primary features the illness had a characteristic and constant symptom series of its own; (*b*) that between this symptom series and that of the rare forms of poliomyelitis with which alone it could be confused the clinical differences were more marked than the resemblances. 3. The results of the epidemiological inquiries were to the effect that encephalitis lethargica was not a form of acute poliomyelitis, and that its presence and epidemic prevalence depended on conditions other than those necessary for the presence and epidemic prevalence of that disease. 4. Both Professor Marinesco and Dr. McIntosh, as a result of their separate researches, arrived independently at the conclusion that encephalitis lethargica, as it appeared in the present outbreak, was identical with the illness described by von Economo in Austria and Professor Netter in France, and that it was a disease sui generis anatomically and clinically distinct from analogous affections.

It still remained to ascertain what the nature of the disease was rather than what it was not. Various hypotheses had been suggested by different workers engaged in the inquiry, but the view which appeared best to agree with present knowledge was that encephalitis lethargica was one of a group of diseases in which, as in cerebro-spinal fever and acute poliomyelitis, the pathogenic agent was much more generally present in the human organism than the clinical evidence implied. As regards cerebro-spinal fever this was no longer an hypothesis, but a well-established observation. In that condition the specific reaction named cerebro-spinal fever arose in one or other of two ways: first, as the result of a breakdown in the immunity to the effects of the virus which the individual who harboured it had up to that time enjoyed; secondly, as the result of a non-immune person becoming infected with a strain of the virus which had attained the degree of pathogenic action described as specific. During severe epidemics evidence could sometimes be obtained that cases of cerebro-spinal fever arose in both these ways, but during inter-epidemic and mild epidemic periods it was seldom or never possible to obtain evidence that the illness was infectious: at such times cases of the disease were always scattered sporadically, and, except the patient himself, they cannot be traced to any known source of infection.

This was the view that best explained the irregular, widespread, sporadic distribution of encephalitis lethargica. Until further research yielded precise information we might assume that many people harboured the organism of the illness—perhaps as a harmless saprophyte, perhaps as a "conditional parasite," perhaps in the stage when it must be termed a "specific pathogenic" parasite—and that in certain of these persons there occurred for some unknown reason either an enhanced virulence of the parasite or a lowered resistance of the tissue cells, or both, the result being that the stimulus of the parasite overcame the resistance of the tissue cells and the host suffered from the effects of the virus which previously he had harboured with impunity. This explanation implied that the key to the problem rested not in the purely bacteriological view of the causation of disease, but in the wider view that disease resulted from the interaction of several factors of which changes in the properties of the tissue cells on the one hand, and in the provoking stimulus or pathogenic agent on the other, were the chief. The view emphasised the rôle of the individual in the origin and progress of the disease, and the practical indication would seem to be to enlist all the resources of personal and public hygiene in an endeavour to influence favourably the potential energies of body and tissue cell resistance, especially in individuals who might seem to be predisposed to a disease of this nature if they happened to become a host of its parasite. At the same time, it was clearly of importance to pursue research, both to ascertain what pathogenic agent was concerned and into the factors of individual predisposition and correlated resistance, the variations of which were subject to so many influences. The first necessity for these studies was early and complete information of all cases of the disease in different parts of the country, and for this reason the Local Government Board had decided, as a temporary measure, to make encephalitis lethargica compulsorily notifiable for a period of one year.

Colonel James then reviewed briefly the relevant epidemiological data collected up to the end of June, and thought that the evidence adduced, in both quantity and kind, supported the conclusions (1) that the illness under consideration was not a form of acute poliomyelitis; (2) that its presence and its prevalence in epidemic form depended on conditions other than those necessary for the presence and epidemic prevalence of that disease. He displayed charts comparing the seasonal incidence of poliomyelitis and encephalitis lethargica and maps comparing the distribution of the two diseases.

Description of the Disease.

Dr. A. S. MACNALTY described the condition of encephalitis lethargica occurring in the recent outbreak as an acute illness in which nervous localising signs might or might not be present. There were three types: 1. A type displaying general disturbances of the functions of the central nervous system but without localising signs. 2. Types with nervous localising signs: (*a*) clinical affection of the third pair of cranial nerves; (*b*) affections of the brain stem and bulb, with local lesions of other cranial nerves; (*c*) affections of the long tracts—e.g., pyramidal, pre-pyramidal, and upcoming afferent tracts; (*d*) ataxic types (involvement of cerebellar mechanism); (*e*) affections of the cerebral cortex; (*f*) types indicating some evidence of spinal cord involvement; (*g*) polyneuritic type. 3. Mild or abortive types, with or without localising signs in the central nervous system. The *incubation period* was probably variable. The *prodromal period* commonly ranged from the first to the seventh day, but might be as protracted as three weeks, during which occurred lethargy, headache, giddiness, and diplopia, as well as lassitude, fatigue, vomiting, and diarrhœa. *The acute manifestation* included slight early rise of temperature (to 101° or 102° F.), marked asthenia, catalepsy, stupor (alternating with nocturnal delirium), emotional changes, changes in speech (which became either nasal, monotonous and slurred, or chattering, rapid and unintelligible), fibrillary movements, and choreic movements of face, trunk, and limbs. Muscular pains, hyperæsthesia, retention or incontinence of urine, incontinence of fæces, sweating, skin eruptions, and dysphagia might also occur. Marked constipation was the rule. The rapid, complete, or partial clearing of the paralysis was the most remarkable feature of the types with nervous manifestations. Mild or abortive types were rare. Recovery was gradual and tedious, chiefly on account of the great prostration and muscular weakness. Death appeared to be due to paralysis of the respiratory centre in the medulla, and was preceded by intensification and frequency of delirious attacks, deepening of the stupor, and coma. After-effects noted were:

(1) alteration in the mental condition; (2) persistence of cranial nerve palsies; (3) the subsequent appearance of paralysis, apparently of spinal origin; and (4) athetosis. He concluded that, though the disease resembled poliomyelitis, it differed from it in important respects and displayed characteristic symptoms. It was possible that the accepted classification of poliomyelitis had been made on too wide a basis, and certain cerebral, ponto-bulbar, and ataxic types might have been examples of the clinical forms observed in this outbreak. Cases of poliomyelitis and encephalitis had been known to occur side by side. He thought the relationship between them might be comparable to that existing between typhoid fever and paratyphoid.

Clinical: A Series of 16 Cases.

Lieutenant-Colonel A. J. HALL spoke of his experience of 16 undoubted cases which came under his immediate observation. The epidemic in Sheffield differed from the whole, in that there was not one fatal case throughout. His cases included persons of each decade up to 70 years. Only two were under 10 years. The sexes were about equally represented. The epidemic began early in March, and was practically over by the end of April. The *mode of onset* varied considerably. In five the onset was sudden, in the remainder it might be described as gradual.

Symptoms and signs.—The three cardinal signs in a typical case were *lethargy*, *general asthenia*, and *cranial nerve palsies*. One or even two of the cardinal signs might be slight or absent, but as a rule the clinical picture was chiefly due to the asthenia and lethargy. In one of the cases the lethargy was slight and the cranial palsies limited to a slight ophthalmoplegia, but the general asthenia was so extreme that the patient gave a typical picture of immobility, being unable to turn over in bed and hardly able to move arms or legs. Another case within 24 hours developed almost complete facial diplegia, whereas there was no lethargy or asthenia throughout. He emphasised the importance of considering the three cardinal signs as a whole; any one of them might predominate or might be slight or absent. In most cases the cranial nerve palsies formed but a small part of the whole symptom-complex.

Prodromal period.—In most cases there was a distinct interval between the onset of illness and appearance of characteristic symptoms, and this varied widely. It was usually a few days—about one, to four or five—but in some of the cases had been not less than 10 days. The onset of the cardinal signs might be sudden, but was usually ingravescent, and this was particularly true of the cranial palsies. They took some time to develop fully, and might vary in extent from day to day. The general asthenia tended to make the facial palsies less obvious than usual. *Ophthalmoplegias.*—Strabismus of variable extent, inequality of pupils, and nystagmus were commonly present. The last named was sometimes of an irregular and incoördinate kind. *Fever* was noted in many cases, sometimes severe and prolonged, but might be slight, even in a severe attack. *Lethargy* was perhaps the most striking feature of most of the cases. It was not true sleep. Often the patient was surprisingly awake to what was going on. Many who were stuporose all day became delirious at night, returning to stupor next day. Sometimes the delirium was of a foolish kind and suggested hysteria. *Tremors.*—In one case tremors with asthenia were the chief symptoms. *Speech.*—During the lethargic period this was often affected. In one case there was a distinct hurried or festinating speech, such as is sometimes observed in paralysis agitans.

Results.—All the 16 cases were still alive, most had been seen within the past few days, and reports from their medical attendants had been received of others. Group A consisted of 7 cases in which recovery was complete and absolute. Group B contained 6 cases in which recovery was practically complete, some slight trace of illness being left behind. In Group C there were 3 cases, and these after six months were still far from recovery. In each case the present incapacity was due to involvement of the trunk and limb muscles generally, the cranial palsies having disappeared completely or almost so.

The points for discussion might be summed up as follows: Was this or was it not an epidemic of poliomyelitis? If it was not, then it might be either an entirely new disease or one that until recent times had not been observed in epidemic form. Lethargy and asthenia, so severe and prolonged in most of the cases of encephalitis, had not been recorded as occurring in typical cases of poliomyelitis, sporadic or epidemic. He could not think that anyone would consider the term "sleeping sickness" descriptive of poliomyelitis in general, yet it would not be an inappropriate name for this epidemic. Except for the palsies there remained little in these cases of encephalitis which was common to them and to poliomyelitis. Even the palsies presented striking differences in the two diseases. In poliomyelitis the onset tended to be rapid and maximal; the regions affected were usually those innervated from the spinal cord; the distribution was often unilateral, and they frequently left permanent residual effects of greater or less extent in the areas first attacked. In the recent epidemic the paralyses were typically of gradual ingravescent onset; they almost always affected regions innervated by cranial nerves and were often bilateral. So far as present evidence was available they usually left no permanent residual effects in the area first affected. We knew that many nerve poisons—e.g., diphtheria, *B. botulinus*, lead, alcohol, &c.—showed a peculiar predilection for certain particular parts of the nervous system; in these cases of epidemic encephalitis there seemed to be such a definite selective action at work. It had been pointed out that poliomyelitis in its epidemic form was characterised by the multiformity of the sites affected. The cases of the recent epidemic were notable for the uniformity of the sites affected. With regard to the possibility of this being an old disease which had only recently been recorded in epidemic form he had no proof to bring forward. A similar epidemic appeared about the same time in 1917. In course of time records of sporadic cases of a similar type might be found as abnormal or exceptional varieties of influenza or poliomyelitis, &c. Such a line of inquiry seemed worth consideration, but in any case the final decision rested with the pathologist. Photographs were displayed on the epidiascope to show the mask-like countenance, the lethargy, and the posture of patients in bed.

Statistical Observations on 127 Cases.

Dr. CROOKSHANK gave statistics of 127 cases observed by him early in this year, and considered by him examples of Heine-Medin disease, 120 occurring at the London Hospital, 4 at the North-West London Hospital, and 3 private cases. Of these, 77 were males and 50 females. Under 5 years there were 28 cases (17 males and 11 females); from 5 to 10 years 29 cases (16 males and 13 females); and over 10 years 70 cases (44 males and 26 females). There were 26 deaths (or 20·39 per cent.), and 11 post mortems were performed.

Cerebro-spinal fluid.—In 51 cases lumbar puncture was carried out, and in 44 cases the cerebro-spinal fluid was examined. In 43 cases cytological reports were made. In 25 cases lymphocytes and in 4 cases leucocytes were found in excess. In 6 cases lymphocytes and in 2 cases leucocytes were in marked excess. Protein was present in excess in 26 cases. Organisms were found in 16 cases, no organisms in 12, Gram-negative organisms in 2, and Gram-positive in 2 cases.

History and mode of onset.—A history of injury to the head occurred in 9 cases, of tooth extraction in 2. There was a two-stage history in 46 cases, sudden onset of nervous symptoms without previous illness in 36, gradual onset of nervous symptoms in 17, whilst the onset was undetermined in 28.

General symptoms.—Sweating was marked in 13 cases, diarrhœa in 7, and constipation in 29 cases. Glycosuria occurred (without previous history of it) in 1 case, acetonuria in 4 cases. At the onset vomiting occurred in 38, pain in hypochondrium in 13 cases. *Rashes* occurred in 27 cases, erythematous in 12, miliarial in 2, petechial in 5, and herpes in 8 cases, and of these 6 were labial and 2 gluteal. Desquamation was observed in 2 cases, joint swelling in 2 cases, œdema of the legs in 1 case, enlargement of glands of head and neck in 1 case, and bedsores occurred in 1 case. Dental irregularities were not positively recorded in more than 10.

Signs and symptoms referable to nervous system: Mental.—Emotionalism or "hysteria" was marked in 5 cases. Mutism (apart from silence during drowsiness) was noted in 7 cases. Delirium was marked in 19, maniacal delirium noted in 2, "acute delirious mania" following "stupor" in 1, delusions or hallucinations (apart from delirium or mania) in 3 cases. Nocturnal sleeplessness with diurnal drowsiness was marked in 3 cases, "drowsiness" in 30, stupor or prolonged lethargy in 26, "unconsciousness" or

coma in 25, and sequential dementia in 5 cases. *Physical.*—Epileptiform fits or convulsions were present in 15 cases; tremors, twitching, or choreiform movements were marked in 22 cases, trismus was marked in 2, head retraction was marked in 23, and limb spasticity was marked in 29 cases. Paresis or paralysis of limbs (apart from general asthenia) occurring transitorily or otherwise without hypertonia was noted in 47 cases, atrophy of limb muscle groups (apart from generalised muscular atrophy) in 10, facial paralysis (other than transitory) in 8, amaurosis (partial or marked) with slight changes in papilla in 5, ptosis was marked and persistent in 23, strabismus occurred in 19, nystagmus in 14. Deafness and tinnitus were marked in 5, dysphagia occurred in 5, hypoglossal palsy was marked and persistent in 5, pain and tenderness in limbs were marked in 11, and formications, tinglings, and numbness were marked in 6. In 6 cases ascending paralysis occurred, and in one case (not included in the above statistics) trophic changes and gangrene of the finger-tips appeared, probably due to an acute ascending central myelitis.

A very careful inquiry had convinced him that the various Heine-Medin categories—paralytic, spasmodic, and psychical—had been known in Europe for many centuries. Their prevalences or recurrences (pandemic, epidemic, endemic, communal, or commensal) had invariably been associated, concurrently or coincidently, with wider but similar prevalences or occurrences of catarrhal, sudoral, or nervous fevers, now generally regarded as influenzal. The cases spoken of as "infantile paralysis" represented only one end of a spectrum.[2] The other end was represented by various forms of "encephalitis," including the "acute delirious mania" of Dr. Luther V. Bell.

Discussion.

Sir ARTHUR NEWSHOLME pointed out that diseases which might occur in conjunction with each other and under similar epidemiological conditions were not necessarily the same.

Lieutenant-Colonel GOODALL agreed with Dr. Hamer that this disease was the same as that described by Sydenham, who also called it "the new disease." The duty of pathologists, clinicians, and epidemiologists was to separate diseases. Diseases which were similar were not necessarily identical.

Dr. CROOKSHANK drew attention to the fact that "poliomyelitis" attacked a part of the organism which in children was in an early stage of development — namely, the anterior horn cells. This might be the reason why growing children developed flaccid atrophy in a manner which did not appear in grown-up people. The child grew and developed, whilst the anterior horn cells remained stationary.

Dr. F. BUZZARD said that encephalitis in children was more common than was generally recognised. He had seen two cases of encephalitis lethargica which at first sight appeared typical of paralysis agitans. If the mid-brain were attacked cases of the paralysis agitans class were produced.

Captain BOX said that he had seen a case of encephalitis lethargica in 1913, with typical clinical findings and post-mortem lesions as described by Colonel Mott. Out of 14 cases in which he had had cerebro-spinal fluid examined 6 showed excess of lymphocytes, 6 showed blood, and 2 were negative. In no case was the fluid under pressure. Two cases had rashes, pustular in one case and in the other like measles, but with a different distribution. There was one case of optic neuritis. In three cases there were false attitudes of the head, showing a deviation from one or other shoulder produced by some interference with the peduncular system.

Dr. J. A. MURRAY, Captain DA FANO, and Dr. H. INGLEBY also spoke.

SECTION OF SURGERY.

Spolia Opima.

A MEETING of this section was held on Oct. 23rd, when Sir JOHN BLAND-SUTTON delivered his Presidential address, in which he gave demonstrations of museum specimens. Speaking of abdominal surgery, he said that in many cases operation left the patient in a worse state than before. This also applied to gastric surgery, about which nothing had been learned since 1881, when surgeons took up the surgery of the stomach. Less than a hundred years ago simple gastric ulcer was confounded with carcinoma. Bilocular stomachs used to be of interest in the post-mortem room, or were a curiosity of the museum. When Darwin came on the scene they became of interest to anatomists and were regarded as a result of atavism. They were now known to be very common and the result of disease. He had operated on three cases in which the stomachs were joined by a very small isthmus. The isthmus was removed and the stomachs were joined, but the patients were unrelieved and gastrojejunostomy had to be performed. The contracting influence had apparently persisted after the operation. He gave a review of surgery since the time of Hunter, and described the amount of suffering supported by patients before the introduction of anæsthetics, and remarked upon the extraordinary skill and quickness of operations of the surgeons in those days.

[2] THE LANCET, 1918, i., 699.

SOCIÉTÉ DE BIOLOGIE, PARIS.

THE meeting of this society on Oct. 19th was the first of a series of inter-Allied gatherings devoted to the Biology of War. The subject chosen was Shock, and the following is a summary of some of the papers read:—

W. B. CANNON: The Origin of Traumatic Shock.

Le choc traumatique est caractérisé par pression artérielle basse persistante, pouls accéléré, paleur, sueurs, respiration superficielle rapide. Pression artérielle basse persistante n'est due ni à faiblesse cardiaque, ni à manque de tonus vaso-constricteur. Hyperglobulie dans les capillaires accentuée par le froid. Réduction de la réserve alcaline parfois assez forte pour déterminer l'acidose; elle est due à l'abaissement exagéré de la pression sanguine qui amène l'anoxhémie. Si là pression sanguine est demeurée basse longtemps, impossibilité de la relever: les cellules nerveuses étant très sensibles au manque prolongé d'oxygène. Le choc n'est pas du à perte du tonus vaso-constricteur, ni à une embolie d'origine graisseuse, ni à l'acapnie; il est donc du à l'effet du traumatisme tissulaire, c'est à dire origine toxique. En effet les phénomènes apparaissent quelques heures après la blessure, même quand les conductions nerveuses sont supprimées, n'ont pas lieu si l'on a soin de supprimer l'irrigation sanguine de la partie blessée, et ils se produisent si l'on rétablit le courant sanguin. Traitement: Rechauffer le sujet; relever pression artérielle; séparer du corps la région traumatisée par garrot ou résection.

QUENU: Shock as an Intoxication.

Le choc est une intoxication dont l'origine est dans la partie blessée; les phénomènes n'apparaissant que 5 à 6 heures après la blessure ne sont donc pas des phénomènes d'inhibition. Il y a résorption de produits toxiques. Quel est le poison? Dislocation de la molécule albuminoide? Poison chimique dans le sang? Observation: Soldat blessé au pied porte un garrot pendant 9 heures; à ce moment excellent état général. On enlève le garrot—trois heures après état de choc.

CANNON cited five similar cases.

PIERRE DELBET: Lessons from Experimental Shock.

Observation: Muscles broyés aseptiquement, injectés dans le péritoine: phénomène de choc. Primitivement, manifestation sur le système nerveux. Secondairement, accumulation des éléments figurés dans les capillaires, donc ralentissement de l'oxydation, modification de la cellule hépatique. Il faut opérer d'urgence le choqué, la thérapeutique pathogénique étant de supprimer le foyer toxique.

P. DUVAL and GRIGAUT: Nitrogen Retention in Wounded Men.

Il y a chez les blessés augmentation de l'azote résidant du sang. Cette rétention azotée est fonction du degré de désintégration azotée des tissus sous l'influence du traumatisme, ainsi que du degré d'altération de la cellule hépatique. C'est cette rétention qui atteignant certaines limites provoque les accidents toxiques du choc.

LOÜET: Injections of Camphor for Shock.

Particulièrement heureux chez les polyblessés, les blessés du segment inférieur, les thoraciques, ces résultats ont été encore plus satisfaisants chez les blessés traités précocement, c'est à dire dans les Postes de Secours. En paraissant voir dans le choc initial un phénomène inhibitoire l'auteur expose les conclusions d'ordre physiologique et chirurgical que ses recherches lui ont permis de préciser. Grâce aux injections intraveineuses d'huile camphrée le chirurgien pourra désormais intervenir plus tôt chez cette catégorie de grands blessés afin d'éviter des graves complications secondaires toxiques ou septiques. Le Médecin Major Loüet demande que l'injection intraveineuse d'huile camphrée soit systématiquement pratiquée dans tous les Postes de Secours divisionnaires ainsi que le garrot (indications Cannon), la transfusion sanguine (méthode Jean Brau).

CL. VINCENT: Causes Predisposing to Shock.

L'homme qui se bat perd son tonus. Observation: Après 12 jours de bataille, sur 22 hommes, 14 ont une pression artérielle maximum inférieure à 12. Après deux jours de repos, sur 9 hommes, 6 ont une pression maxima inférieure à 12. Un soldat atteint de néphrite à une pression maxima inférieure à 8. L'homme qui se bat est un hypotendu.

GOVAERTS and ZUNZ: Conditions of Circulatory Collapse.

1. Collapsus post-hémorragique: diminution d'hémoglobine, de globules rouge, de la viscosité. Pression artérielle basse, pression veineuse considérable. 2. Collapsus infectieux: chute de la pression, augmentation de globules rouge, d'hémoglobine, de la viscosité, pression veineuse faible. 3. Collapsus ciseul; traumatique; pas de modification du nombre de globules rouge, du taux de l'hémoglobine, ni de la viscosité, pas de chute considérable de la pression artérielle.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 2, 1918.

The Influenza Epidemic.

DURING the week the epidemic of influenza, if it has abated in some localities has broken out in others, and on all hands the seriousness of the visitation is being felt. The restraint practised by the daily press in regard to public matters has not survived the temptation to paint this visitation in the tints of the 12 plagues of Egypt, in comparison with which any account of our actual knowledge must appear colourless. In Paris a rumour of cholera arose out of a series of cases with broncho-pneumonia which proved rapidly fatal with general cyanosis, but the Paris rumour is little more lurid than the stories prevalent in London. A natural desire to blame somebody has resulted in an attack upon the Local Government Board for having failed to arrest the development of the epidemic. Furthermore, it is suggested that had a Ministry of Health been in existence there would have been no epidemic at the present time, or, at least, it would never have been allowed to develop. We are in entire accord with those who desire the formation of a Ministry of Health, but we deprecate regarding it as a panacea for all epidemic evils. In the *Times* of Oct. 23rd it is stated that "influenza was very prevalent last summer, and had the experience of the eighties been called to mind it would have been evident that a summer epidemic was likely to be followed by a winter one of greater severity." With this statement we cannot agree. It is contradicted by the Registrar-General's records, which show that summer epidemics are unusual, and that the occurrence of an epidemic of influenza followed by an even more severe epidemic of the same disease within three months is almost unknown. In the 26th, 27th, 28th, 29th, and 30th weeks of this year the deaths from influenza registered in London were respectively 67, 218, 287, 192, and 86; in the 39th, 40th, 41st, and 42nd weeks the corresponding figures were 17, 17, 80, and 371. The experience of all previous epidemics in London is that excessive mortality from influenza in any single epidemic does not continue beyond a period of about six weeks. If this holds good in the present instance we may hope that the excessive mortality caused by the present epidemic will soon begin to decline. There were, however, 1256 deaths in London attributed to influenza in the week ending Saturday last, Oct. 26th.

The experience of London is in large measure that of the rest of the country. It has to be borne in mind that the conditions of living are just now abnormal. The people are suffering from an unusual strain, both mental and physical. Many persons unaccustomed to hard work are engaged in laborious tasks in munition factories and the like; women have replaced men in sundry arduous occupations; few families are without one or more of their members fighting in the deadly struggle on the battlefields of Europe or the Near East, and some, indeed, have already lost their nearest and dearest. Food conditions, too, are difficult, and some persons may be suffering from the effects of overwork and under-nourishment, although, as a matter of fact, the nation in these respects is coming wonderfully well through the ordeal. But circumstances in a proportion of instances have led to lowered vitality and weakened resistance to disease. The reduction of the railway services, as also of trams and omnibuses, has led to overcrowding of all public conveyances when people are going to, or returning from, their work, thus affording very favourable opportunities for diffusing an infection like that of influenza, which is given off by the lungs and naso-pharyngeal secretions in the form of droplets expelled in the act of coughing or sneezing. Persons in the early stage of an attack and healthy carriers are able to infect their fellow travellers unknown to themselves or their victims. Hopeful evidence is accumulating that this infection only takes place at quite short range. A miniature epidemic in a surgical ward graphically recorded by Major MICHAEL G. FOSTER and Major H. A. COOKSON in another column suggests that trifling barriers may limit the spread of influenza. Professor VINCENT puts his attendants at the Val-de-Grâce in Paris in masks, covering eyes as well as nose and mouth, since in his view, although the range is short, lacrymal infection is a frequent occurrence. Theatres, music-halls, and especially picture palaces, often overcrowded and ill-ventilated, give great facilities for the spread of infection at closest range. These are the obvious contributing factors to the spread of the epidemic, and while they must be as well known to the public as to the medical profession, we cannot see on the part of the public any general attempt to limit intercourse where this is possible. To congregate and brood is too much the public attitude. In France, we learn from our Paris correspondent, the conditions are in the main the same as with us. The epidemic flared up with the onset of cold weather and the normal death-rate in Paris has been doubled. In Lyons all the schools and most of the theatres and cinemas are closed, while in Paris itself a wise caution has resulted in the postponement of a great sportive manifestation in which 10,000 young people were to take part. The Paris prefecture has obtained the compulsory notification of cases of influenza, which is not on the list as drawn up by the Academy; disinfection of rooms after fatal cases is also being carried out by the police authority. The department of military hygiene has organised a special service for influenza cases, which are being isolated in the military hospitals. Research is not being neglected and Dr. NICOLLE, director of the Pasteur Institute at Tunis, has announced to the Academy of Sciences his discovery of the pathogenic agent in the form of a filtrable virus, from which he hopes to prepare a serum.

Knowing all that we do, it is well to admit frankly that we are as yet in ignorance of the most important thing of all—namely, the actual conditions which cause the influenza virus from time

to time to take on increased virulence. It is possible that the exceptional conditions resulting from the war may have exercised some influence in this direction. The infection has this year been carried from one continent to another by shipping; most of the armies in the field have recently experienced the effects of epidemic influenza in more or less degree. In Europe, Spain seems to have been the country first attacked, hence the present term "Spanish influenza" for what was on a former occasion called "Russian influenza"; and subsequently Portugal, France, Holland, Germany, Austria, Hungary, Russia, Italy, Switzerland, Sweden, Norway, and Denmark were invaded. Influenza has been severely epidemic in South and West Africa; it has committed serious ravages in India, especially in Bombay; it has spread to Australia, South America, the West Indies, Canada, and the United States. The problem of how to limit the spread when it has gained a hold upon the country is a very difficult one, and the difficulty has been much increased by the shortage of medical men, which has placed the National Service Ministry in the awkward position of choosing between the needs of the fighting front, which are very urgent in view of the continued lamentable loss of doctors from wounds, and those of the home front, where many have been put out of action by influenza. Sir AUCKLAND GEDDES'S assurance is, therefore, doubly welcome that he has released for whole-time civilian practice in needy districts a very large number of medical men who were in official employment. For the rest we may trust the Local Government Board and the local health authorities to do their best in the circumstances, but the work of prevention is largely dependent upon the people themselves. If those who feel ill would stay at home; if those who are well would avoid travelling in railway carriages with the windows closed or in unventilated trams and 'buses; and, above all, if the public would forego picture palaces or other crowded places of amusement so long as the epidemic continues, much would be done to limit the spread in populous centres.

Medical Practice in the Light of the Whitley Report.

THE Conference of Local Medical and Panel Committees held last week at the Connaught Rooms in London signalised the end of what may be called a party truce. Six months ago the Conference decided by an overwhelming majority not to embarrass the Government at a time of great national stress by pressing their just claim for an increased capitation allowance under the National Insurance Act. On Thursday of last week a vote on the same proposition was lost by a majority of less than two to one, many of the keen medical politicians present regarding the time as fitting for a great push. Gentler counsels, however, prevailed on the representation of the Insurance Acts Committee that no immediate action could be obtained without the proclamation of a general strike, for which an 80 per cent. vote of panel practitioners would be required. This would put a premature end to the conversations now taking place with the Commissioners in regard to compensation for increased cost of insurance practice arising from war conditions and other concessions short of alteration of the capitation fee itself. These conversations appear to be a realisation in matters medical of the trade council, which is the main theme of the Whitley Report; and although the Conference by its vote of confidence in the Insurance Acts Committee ratified this important principle of pourparlers at the source between employers and employed, feeling ran very high, just as in labour circles, against local approaches between panel (medical) and insurance (lay) committees, two London delegates alone supporting such local overtures. In certain towns, however, experience has already shown the beneficial effect of action of this kind, which is in harmony with the few successful adventures in industrial coöperation. Even the hot-heads agreed that an 80 per cent. strike among the rank and file of panel practitioners was unattainable in their own areas, with the possible exception of Lancashire.

Feeling at the Conference was unanimously against obtaining from the Insurance Commissioners differential distribution of pooled funds as between urban and rural practice, or different conditions of urban practice. Although the pressure of work without correspondingly increased pay has been keenly felt in some munitions areas, no one desired to introduce a possible source of dissension in the form of competition for a larger proportion of the central pool. The general principles for a more rapid and equitable distribution of the central pool formed the subject of an interim report which gained the assent of the Conference, and we print on p. 601 an outline of these principles, which will be considered in detail by Panel Committees throughout the country before their final acceptance. But it was admitted without question that existing conditions press with peculiar hardness upon rural practitioners. The mileage allowance at present granted does little more than cover the increased cost of petrol, if that; and in certain flagrant cases quoted the rural practitioner pays money for the privilege of making distant visits. A request for an increased allowance on account of mileage and for an addition on account of "timeage" was pressed upon the consideration of the Commissioners.

It is not unfair to conclude from the voting at the Conference that the financial conditions of Insurance practice are not very distasteful to a large majority of doctors on the panels. A further application of the principles of the Whitley report to panel practice might make these conditions positively agreeable, and this lesson is pointedly drawn in Professor H. R. KENWOOD'S presidential address to the Society of Medical Officers of Health, a portion of which we print on page 599. Professor KENWOOD foresees that the general practitioner will come to realise the need for working on preventive lines in connexion with disease of all kinds, and will in so doing take over much of the clinical work at present in the hands of the public health service. A health officer himself, he entirely disclaims the threatened encroachment by the official Public Health Service upon the domain of the general practitioner. To him this is a possible but an undesirable eventuality. The arbitrary and narrow distinction between preventive and curative medicine is breaking down, and the closer local organisation of administrative and clinical effort affords a pleasing alternative to a full-blown rate- and State-aided medical service. This can only come about by greater scope of work on the part of general practitioners upon councils of local sanitary authorities, activating these authorities by their presence to a fuller and sounder health policy. This is the true Whitley principle.

Annotations.

"Ne quid nimis."

DISPENSARY SUPERVISION OF TUBERCULOSIS IN THE HOME.

THE administrative control of tuberculosis is a problem deserving more than all the attention which is being given to it. Dispensary supervision is one of the simpler methods at present in use, and we would direct attention to Dr. George Jessel's article in the last issue of THE LANCET, in which he suggests that by suitable instruction, close supervision, and the occasional help of care committees some reasonable degree of sanatorium practice can be obtained from the systematic dispensary supervision of tuberculous patients in their own homes. His conclusion is that such home treatment is both "possible and safe" in dealing with 70 per cent. of the cases occurring in an industrial area of Lancashire. This proportion of the families concerned is able to provide a separate bedroom for the tuberculous member. It will readily be agreed that from home treatment under close supervision a considerable measure of success is obtainable with suitable patients in suitable homes in suitable districts. But it is always difficult to secure the proper regimen (including rest and exercise) and the necessary direction and supervision of details. The medical officer is dependent upon the intelligence and goodwill of the patient in carrying out instructions which cannot be enforced, and entirely suitable patients and conditions for home treatment may be regarded as exceptional among the poorer classes. We think that if the supervisory and stimulating visits of the medical officer and nurse or health visitor are not more frequent than those indicated by Dr. Jessel, the care of details will have a tendency to relax as the disease progresses, at a time when the need for such care is steadily increasing. A few months of previous training in a sanatorium and, when necessary and practicable, the provision of a shelter will certainly contribute materially to the number of instances in which home treatment becomes "possible and safe." It is to be hoped that Dr. Jessel will be able to develop his thesis further, and more particularly in the direction of a careful study and record of the course of the disease among his home-treated patients.

THE CONTROL OF UNDESIRABLE IMMIGRANTS IN THE UNITED STATES OF AMERICA.

THE methods of preventing the introduction of epidemic disease at the Port of London were dealt with recently by the medical officer in a lecture at the Royal Institute of Public Health which we summarise on p. 612. Similar measures are in force in the United States of America. In 1912 quarantine authorities situated at the more important U.S. Atlantic ports examined 34,000 specimens of fæces from ship passengers and crews coming from cholera-infected ports. At the New York quarantine the cholera vibrio was isolated from 28 persons sick with the disease and from 27 healthy persons. Seven cases of cholera were detected at other ports by the same methods and the disease was kept out of the country. During the cholera epidemic in Germany of 1892–93 the American authorities instituted an inspection on foreign soil of everything to be imported to the United States. Officers of the United States Public Health Service stationed at foreign ports supervised the water- and food-supply of departing vessels, as well as inspecting crew and passengers. Those coming from infected localities were detained under observation for five days before being permitted to embark. In the Philippines, since American occupation, the inter-island spread of cholera, which in the past took toll of so many lives, is checked by a careful sanitary supervision of vessels at ports of departure and arrival. Extraordinary measures were taken a few years earlier to prevent the importation of bubonic plague. Under the direction of the U.S. Surgeon-General Pacific ports, notably San Francisco, were "cleaned up"; the community was freed of rats by a "drive" that necessitated the employment of scores of inspectors and which overlooked hardly a square foot of the city; the coöperation of the populace was secured by explaining the danger to them through meetings at schools, workshops, and offices and the daily press; quarantine precautions were increased. The plague was kept out. The public hygienic activities in the United States are not concentrated in the hands of one sanitary bureau. Some of the public health branches are a part of the U.S. Department of Agriculture, others are in the Department of Commerce, and the most important, the Public Health Service, is affiliated to the Treasury Department. One of its functions is the administration of the national maritime quarantine and the medical inspection of immigrants. It also makes special investigations of infectious diseases in States when necessary, although each several State has its own department of health. A large proportion of all persons engaged in public health work, both official and voluntary, are members of the American Public Health Association, which, while not an official organisation, contributes through its journal and regular meetings towards the general policy of dealing with contagious diseases.

SCARLET FEVER IN JOHANNESBURG.

THE recent report of the acting medical officer of health of Johannesburg discusses the undue prevalence of scarlet fever in that city since October, 1917. The number of cases notified and the number admitted to the Fever Hospital during the last two years are as follows:—

Period.	Total number of cases.	Number admitted to hospital.	Cost.
Year 1916-17	213	27	£516 per annum.
,, 1917-18	2083	440	£8408 ,,
Month of July, 1918	255	47	£759 for the month.

The epidemic decreased somewhat between February and April of this year with a rise again in June. In July the cases fell to 255, and during the first 20 days of August only 126 cases were notified, showing a distinct tendency to decline of the epidemic. The problem of isolation became a perplexing one. The Johannesburg Nursing Home was opened at the beginning of July as an overflow for convalescent cases of scarlet fever, but soon after it was opened a cross-infection of scarlet fever and measles occurred both at the Fever Hospital and at the Nursing Home. So that fresh cases of scarlet fever could be admitted to neither. In consequence it again became impossible to isolate a considerable

number of cases of scarlet fever in which home isolation was entirely unsatisfactory. The Hospital Board thereupon decided to provide additional fever accommodation at the Otto Beit Convalescent Home. In addition to this general measures have been set in action, including the posting of circulars (in two languages) in public conveyances, the disinfection of tram cars, and the issue of special instructions to school authorities and to sanitary inspectors.

TRAINING FOR INFANT WELFARE WORK IN INDIA.

EVERYONE will welcome with satisfaction the establishment of a school for the training of women health visitors and maternity supervisors by a voluntary association at Delhi, where the pupils will live under the supervision of the municipal health visitors. The conditions of entry are stringent. The candidate must be over 21 years of age, must have passed the sixth standard of general education or its equivalent, and must possess a certificate in midwifery approved by the council of the school. Preference will be given to candidates with a previous training in general nursing. Applicants, besides a good acquaintance with English, must know at least one Indian vernacular, and produce satisfactory evidence of physical and moral health. The course extends over six months, beginning on Nov. 1st, with the first month on probation. Pupils successful at the terminal qualifying examination will receive diplomas as trained health and maternity supervisors. The course will be made up of—

(*a*) Lectures on physiology, hygiene, and domestic sanitation, general and tropical sanitation, general medicine, tropical medicine, diseases of children, infant welfare, pre-maternity work.

(*b*) Practical demonstrations on general sanitation, domestic sanitation, and childbirth, first-aid and home nursing, with special reference to children's ailments.

(*c*) Lantern lectures and talks to mothers.

Pupils unable to pay their own expenses will receive a monthly stipend of Rs.40, enabling them to be trained, on the stipulation that they then serve the association for a period of three years. A monthly salary of Rs.100 and furnished quarters are guaranteed to them during this period. The salaries paid to maternity supervisors are on a rising scale, reaching at least Rs.250 a month. The initiative set by Delhi is one which might with advantage be followed by the innumerable other populous centres of India.

THE SEROLOGICAL LOCALISATION OF ORGANIC BRAIN TUMOURS.

Dr. J. M. Retinger records in the *Archives of Internal Medicine* for August some interesting results gained in localising gross brain lesions by using a slightly modified form of the dialysis method of Abderhalden for testing the blood serum. Of the cases in which this method was used, 25 had been sufficiently studied clinically, or verified by operation or necropsy, to be considered. The clinical diagnosis or symptoms were not known to the writer, who performed the serological tests in most of the cases. On the basis of the findings in this limited series of cases, the serological diagnosis was supported in four instances by post-mortem results, in two by operation, and in 15 tests were found to be in complete agreement with definite clinical evidence. Two cases differed from the clinical diagnosis, but the latter had not been controlled by necropsy or operation, and in one case the necropsy proved the test to be erroneous. These results seem promising. The principles of this serological method of testing are familiar. It is found that pathological processes, or even physiological processes as in pregnancy, occurring in organs may release into the blood stream ferments found to possess a specific digestive faculty for such organs; this faculty can be tested by the power of such serum to digest "substrates" of the particular organ suspected, obtained and estimated under delicate laboratory conditions. In these tests the substrates used were obtained from human brains from necropsies of normal people. All the large vessels were removed, and in the cortex only the grey matter was used. The pieces were cut into small particles the size of a pea and thoroughly treated to remove all blood, fat, and lipoids. Each substrate was labelled according to the site from whence it was obtained. Against these various substrates the serum of the patient was tested, the presence of its digestive power, as determined by the ninhydrin colour test upon any particular substrate, indicating the probable involvement of the same area in the patient as that from which such substrate was obtained. A brief résumé of the cases examined is given. Case 10 is an interesting instance. Thirty-four different substrates were used. The motor area in the cortex showed pronounced positive reactions. The pituitary also gave strong reactions. The lesion lies in the anterior lobe of the pituitary. Diagnosis: acromegaly with occasional epileptiform attacks. Case 18 is also instructive. Forty substrates used. Lesion not in cortex. Most pronounced reaction with the cerebellar grey matter, dentate nucleus, anterior pituitary, and corpus callosum. The final diagnosis was a lesion of the cerebellum, confirmed on operation. Many of the other examples given are equally convincing, suggesting that, in some hands at any rate, the method may come to possess a more than academic value.

PERFORATING ULCER OF THE HARD PALATE IN VINCENT'S DISEASE.

THE form of ulcerative tonsillitis associated with a spirochæte and a fusiform bacillus, known as "Vincent's angina,"[1] has recently attracted attention because of outbreaks at the front described as "trench mouth," "trench throat," and "trench gums" associated with the same organisms. It is also known that ulcerative lesions associated with these organisms may occur in other places—the bronchi, gastro-intestinal tract, and genitals. In the *Journal of the American Medical Association* Dr. L. F. Barker and Dr. R. Miller have reported a case of ulcer of the hard palate due to the same cause.

A man, aged 47 years, noticed one day on the roof of the mouth a small white spot, which developed in a few days into an ulcer that gradually became larger and more painful. Despite a negative history, syphilis was suggested by several practitioners. On examination there were marked oral sepsis and gingivitis, especially round the posterior molars, a fœtid odour of the breath, and a punched-out ulcer of the size of a dime on the hard palate, covered with thick, creamy, easily removed exudate, and surrounded by a deep red, somewhat indurated areola. The base of the ulcer bled easily. The clinical picture certainly suggested syphilis, a view concurred in by a throat specialist, but the Wassermann reaction was negative. Smears from the exudate showed enormous numbers of the *B. fusiformis* and many coarse, readily stained spirochætes, with from five to eight undulations. Vincent's angina was diagnosed and the lesion healed in a few days under dichloramine-T and local application of arsphenamine solution.

[1] THE LANCET, 1905, i., 1260.

The term "Vincent's angina" generally means a form of ulcerative tonsillitis due to the associated organisms mentioned and is the commonest form of this infection, but the term "angina" is obviously inapplicable to ulcers due to the same cause in other parts. Dr. Barker and Dr. Miller therefore suggest that the term "Vincent's disease" be applied to the whole group. Vincent's angina is liable to be confounded with syphilis and diphtheria. Hence the importance of bacteriological examination.

PUBLIC HEALTH REFORM IN EGYPT.

A YEAR ago the High Commissioner of Egypt sanctioned the appointment of a Commission to study the reforms necessary for efficient public health administration. This Commission was formally approved by the Council of Ministers in June last and consisted of Lieutenant-Colonel Andrew Balfour, R.A.M.C., formerly Principal of the Gordon Research Laboratory at Khartoum, president; Lieutenant-Colonel G. E. F. Stammers, Mr. E. S. Crispin, Director of the Sudan Medical Department, and Dr. C. Todd, Director of Laboratories, Public Health Department. Its mandate was to examine the organisation and duties of an Egyptian Department of Public Health and its relations to other services; to submit proposals broadening the sphere of action of the existing Department, and to suggest the number and nature of the posts which will be necessary for the proper working of the Department without, however, nominating or making recommendations regarding them. After frequent meetings and a series of inspections into representative public health institutions, the Commission has drawn up a Report proposing reforms of a far-reaching character. The Report has not been published yet in this country but has now appeared in the *Egyptian Gazette*. Its more salient features will be commented upon here in an early issue, and we take this opportunity of recording our sense of the prescience shown by Sir Reginald Wingate, the High Commissoner, in appointing the Commission. For now is the right moment for setting in motion the outspoken recommendations of the Balfour Report.

THE diploma of honorary Fellowship of the Royal Society of Medicine will be presented to Sir Alfred Keogh at a special meeting of the Fellows on Wednesday, Nov. 13th, at 4.30 P.M.

THE Bradshaw Lecture of the Royal College of Surgeons of England will be delivered at the College on Thursday, Nov. 14th, at 5 P.M. Lieutenant-Colonel D'Arcy Power, the lecturer, has chosen as his subject Cancer of the Tongue.

FROM the Department of the Controller of Coal Mines we learn that a claim for additional fuel allowance on the ground of illness in childbirth will be allowed, the maximum quantity of fuel granted on such a claim being 5 tons.

AT the Royal College of Physicians of London Dr. F. H. Teale will deliver the Horace Dobell lecture dealing with Bacterial Toxins on Tuesday next, Nov. 5th. On the following Thursday, Nov. 7th, Colonel W. Aldren Turner, A.M.S., will give the Bradshaw lecture on the Neuroses and Psychoses of War. The Fitz-Patrick lectures follow on Nov. 12th and 14th, Dr. Arnold Chaplin having chosen for his subject Medicine in England during the Reign of George III. The hour in each case is 5 P.M.

MEDICAL RECONSTRUCTION:

THE SOCIETY OF MEDICAL OFFICERS OF HEALTH AND THE PUBLIC HEALTH SERVICE.

The Ministry of Health Bill and the Relation of the General Practitioner to the Public Health Service

AT the end of his Presidential Address upon the reconstruction of the Society of Medical Officers of Health, Professor H. R. KENWOOD made the following references to the Ministry of Health Bill and the relation of the general practitioner to the Public Health Service.

The Ministry of Health.

So many exaggerations of what a Ministry of Health can readily achieve have emanated from well-meaning enthusiasts with no first-hand acquaintance with health problems in their social setting that the Ministry must prove disappointing to many; but it will satisfy no one unless care is taken to start it upon the right lines. The difficult problem which lies before the Ministry of Health is well expressed in a letter by "Salus" in the *Times* of Sept. 26th, 1918. Therein it is pointed out that "successive Governments have never realised the mischief involved in our inveterate habit of piecemeal legislation, hand-to-mouth attempts to tackle by successive bites particular parts of what is essentially one problem and ought to be regarded and handled as one problem. ..... The problem of making proper provision for attaining and maintaining the maximum health of the people is broken up disastrously into many disconnected parts. All these different parts ought to be closely interconnected, planned, and worked in the closest relation to one another as coördinated parts of one system one whole."

The staffs of certain central Departments engaged in health work are to be transferred to the Ministry. This is, of course, necessary and desirable, but if they are merely to continue their operations under one roof (as it were) instead of several it is difficult to see where the value of this concentration will come in to compensate for all the disturbance it entails unless the Bill affords *a guarantee that the field of public health shall be viewed and dealt with as a whole* and not in separate "watertight" compartments, as hitherto. The fact is indisputable that central Government Departments have in the past done very little indeed to initiate public health reforms or to prepare public opinion for them. These Departments were never better medically advised than to-day, but it is too much to hope that Government action in public health matters will cease to follow, at an unnecessary distance, public opinion and local action. Indeed, the Departmental attitude of mind seems to be too groovy, too hesitating, and too compromising to originate advice and to initiate action. Take the Ministry of Health itself. The idea of this originated outside the Government or of any of its Departments; it owes its conception mainly to dissatisfaction of Government methods; the very impulse that is leading to its establishment is, again, external; and, furthermore, the impulse that will guide the Ministry to fresh conceptions and a bold initiative will also have to be external. It is because I realise that if this Bill is to be a real step on the road to an effective health policy that will not be unduly narrowed by the Departmental outlook, that I would urge the necessity of laying a sound foundation to the Ministry by doing what is possible to guard against this. It seems to me that the danger is great.

Need of Surveying the Problem of National Health as a Whole.

As an instance of compromise—and herein lies the main danger to which I would direct attention—the Bill, as publicly announced, provides for several consultative councils, each of which will doubtless play its own independent hand, and no linking-up advisory council is mentioned which shall be representative of the whole field of public health, and strengthened by a fair representation of non-official expert opinion, in order to bring a broader, fresher, and bolder outlook to bear upon the problems to be faced. Assuming that one of the proposed councils is to be a purely medical council, the real solution of public health problems involves manifold considerations; it is never entirely medical, although medical guidance must be predominant. I suppose that another council will deal with National Health Insurance. Well, the scheme of National

Health Insurance is capable of being made a very useful measure of public health, to which I question whether it has hitherto contributed to any material extent; but will this be as likely to take form at the hands of a special council, advising the Minister departmentally, as if it were represented on a general advisory council, leavened by those who are capable of stimulating the development, improvement, and adaptation of the scheme to the general and comprehensive public health needs?

At a meeting of members of the medical profession held at Steinway Hall on Oct. 1st Dr. Addison, Minister of Reconstruction, expressed the opinion that, as a first step, it was necessary to bring together the assortment of different Departmental responsibilities in health matters, and to secure that the thinking out and development of a systematic health policy, commensurate with urgent national needs, should be made the duty and responsibility of *a definite body of men*.[1] He stated that we should and must be the victims of sporadic, disjointed, and often conflicting effort until this was done. Is it likely, I would ask, that a Central Authority to coördinate all the public health work of several Central Departments, to take a comprehensive survey of public health needs, and to make far-reaching provisions for these, can be as competently advised in its general policy by several independent councils? Cannot the Ministry at its very inception do something to detach itself from the departmental outlook and tradition? Whatever councils may be provided to deal with different branches of work cognate to the public health, surely one body with the task of comprehensively surveying the problem of national health as a whole, and with the duty of advising a strong Minister of the necessary fresh efforts and reforms, is *indispensable to the Ministry in the shaping of its broad policy*. Everything will depend upon how the Ministry is advised, and I am sure that the well-wishers of the proposed Ministry will be left cold and disappointed if the Government fails fully to respond to the general demand for a newer and broader outlook and a better coördination in public health matters.

Relation of the General Practitioner to the Public Health Service.

We are ever rising to higher ideals of what "Public Health" should mean. We now recognise it to embrace all efforts towards the uplifting of the people to higher levels of health, happiness, and efficiency. This can only be attained by better and fuller measures of education, organisation, and administration.

I suppose that it is due to the somewhat narrow lines on which we train for our qualifying diplomas and degrees (whether of Public Health or Medicine) that most of us health officers start our public work with insufficient appreciation of the very important part which the general practitioners of medicine, surgery, and midwifery play in public health; how mutually dependent we are for results; and how much the public health needs a clearer linking-up and a better appreciation of our related services. We may rest assured that the near future is going to secure this by better provisions for the curative branch of public health and, perhaps, a wider administrative control of it.

Our official public health work is regarded by many as encroaching more and more upon the domain of the general practitioner. Even Sir Clifford Allbutt has recently gone so far as to suggest that general practice may become but a gleaning after the reapers. I do not conceive that the trend of the future developments is towards this undesirable eventuality. It seems to me to be more in the direction of improving the value and status of the general practitioner by calling for a development of the preventive side of his duties, and by securing (with the assistance of rate- and State-aided support) enhanced facilities for better and more prompt diagnosis and treatment; and, therefore, rather than the scope of the work of the general practitioner becoming more restricted, it seems to be destined for a real and important expansion.

Surely the most valuable part of public health work lies to the hand of the general practitioner; and it is to his interest to broaden his views to a fuller realisation of this, and to see that he is well prepared to play his part in the service of the public health. May I develop this point a little further? There is a general disposition to make an arbitrary and narrow distinction between preventive and curative medicine; but the sphere of prevention is common to both and embraces everything that contributes to health. The major part of all disease is not, in our present social circumstances, preventable. Even the M.O.H. has illnesses which could have been prevented, and he often prematurely dies from one of them. In this large field of, at present, unpreventable or unprevented disease the general practitioner operates. It is mainly by his efforts that it can be reduced to minimum dimensions and an enormous wastage from disablement and premature death be avoided; for the mortality from the diseases that a local health authority with the most comprehensive provisions takes under its administrative purview barely relates to one-third of the premature deaths from all causes in England and Wales. And we must not underestimate the great part which the general practitioner plays in the reduction of disease that *is* recognised as preventable, for the prompt diagnosis and treatment of *all* diseases are essentially preventive measures, and we are dependent on him for that early diagnosis and notification of communicable disease which starts our repressive machinery and determines its value.

Suggestions in regard to the Improvement of National Health.

The general practitioner, more fully trained and better equipped with local facilities for diagnosis and treatment, and stimulated by a fuller public recognition of the need for and value of his services in the prevention, the early detection, and the prompt cure of disease, becomes the very cornerstone of the public health edifice. In the reduction of preventable disease he works with a very fine-meshed sieve, in comparison with which ours is coarse indeed. A Ministry of Health that can view the entire health problem as a whole will inevitably bring the general practitioner into a more intimately organised relationship with the general health policy. But before the best results can be obtained the general practitioner must be better equipped by according to preventive medicine a more prominent place in his training; for this is essential to the sympathetic and purposeful organisation of the curative and preventive branches of medical work that is destined to become established. He will then better realise the necessity of working more on preventive lines in connexion with all disease; he will also undertake much of the clinical work which, largely by his default, is now in the hands of public health medical officials; his status and public value will thereby be enhanced, and he will more generally serve upon the councils of the local sanitary authorities and assist his official colleagues in activating these bodies to a full and sound health policy. The general practitioner has also to be trained in reference to the social setting of his work, for to be effective he must know intimately the social life of his patients at home and at work. No sufficient instruction is given in these matters at any medical school, and yet the prime aim and duty of medicine should be to secure and conserve the healthy body *in all circumstances*. To quote Sir George Newman: "His ignorance of his relationship to the community and his detachment from the social evolution proceeding around him has been a substantial contribution to his great hurt and undoing as a practitioner, and has not seldom shut him out from a large and liberal education in medicine." In default of this awakening I believe that the ultimate remedy will have to be a rate- and State-aided medical service for those who stand in need of it—for the present unsatisfactory medical care of the poor (generally speaking) is too profligate in its wastefulness to be tolerated much longer.

Surely the great public health needs at the present day are: (*a*) for a more determined effort to reduce the prevailing ignorance and carelessness among the poorer section of the community in matters connected with their health; and (*b*) for improved provisions for the medical care of the poor. The public must rise more to the demands of their health needs; short of this, there is no real remedy. Shall we ever live to see, even in this age of strikes, the industrial workers organising a strike against unsatisfactory health circumstances? Among the poorer section of the community the preventable loss of health, the utterly inadequate provision for promptly restoring the sick, and the premature mortality that results are a national reproach. The reproach is felt. Politicians allude to it and are ever voicing the policy of "Salus populi, suprema lex," but they afford little evidence of the necessary vision and determination to adopt the fuller measures necessary to give effect to this policy. Unless we

[1] THE LANCET, Oct. 5th, p. 465.

tinker with the problem the pecuniary cost entailed will be more than compensated by the increase in our national efficiency and productiveness.

The difficult and often demoralising sanitary circumstances of the poor must be made easier and more stimulating to hygienic observances, and hence a reasonable standard of decent housing should be everywhere demanded by the Government. But the best treatment of disease must be provided by fully competent general practitioners and specialists and by greatly increased institutional provisions, free of cost whenever a person's pecuniary means cannot secure these.

Gentlemen, our broader and ever-broadening concepts of public health are expanding the domain of our work and interests. There is going to be a closer organisation of administrative and clinical effort in State medicine, and those of us who are administrative officials are not going to show any lack of sympathetic appreciation and support to any suggestions for promoting the greater part which the practitioner of medicine is destined to perform in the fuller work of public health.

INSURANCE PRACTICE.

THE DISTRIBUTION OF THE CENTRAL POOL.

THE Insurance Acts Committee in connexion with the British Medical Association presented to the recent Conference of Local Medical and Panel Committees an interim report on the method of calculating the remuneration of doctors under the National Insurance (Health) Acts. The scheme, upon which we comment in a leading article this week, is set out in the following outline :—

1. The central pool for the year would be actuarially fixed before the beginning of the year on the basis of the sale of insurance stamps, allowance being made for the natural increase of population, and all other relevant data being taken into consideration.
2. The greater part of this pool (say perhaps 95 per cent.) would be assigned to the various insurance areas in such proportions as might be fixed by an appropriate Committee assisted by experts, on the basis of the number of names of insured persons on the register of the area in the previous year, or on an average for previous years, the fractional assignment so arrived at being either for one year or for a short period of years.
3. The reserved part of the central pool (say 5 per cent.) would be used to increase the amount assigned to any particular areas which, in the course of the year, showed to the satisfaction of the Committee that there had been therein an altogether abnormal net increase in the number of insured persons. Any residue of this reserved sum could be distributed at the end of the year in the proportions agreed upon for the main amount, or, if preferred, could be carried forward.
4. The present temporary resident calculations would be done away with, as affecting distribution of the central pool, the numbers of such residents treated in areas in which they had an appreciable effect being taken into consideration in fixing the fraction of the central pool to be assigned to the areas.
5. In the absence of any indication to the contrary, the present practice of distribution to areas on a uniform basis would be followed; but, if the profession indicated a strong preference therefor, it might be possible to arrange an assignment to areas on a differential basis, differences in the incidence of sickness and in the conditions of practice in rural, colliery, industrial, urban, and residential urban areas being taken into account, but it is doubtful whether there are at present available data which would enable this to be done.
6. The area pool (with the exception of the small residue) being thus fixed at the beginning of the year, the distribution to individual practitioners would be made definitely quarter by quarter.
7. The basis of such distribution to practitioners within the area would be left, within wide limits, to local option, but would be in accordance with principles, methods, or conditions to be discussed in a further report on this part of the subject.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.—In consequence of the prevalence of influenza the celebration of Founders' Day at the National Hospital for the Paralysed and Epileptic, Queen-square, W.C., arranged for Nov. 4th, has been postponed

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

THE following letter (enclosing a draft for £20) has been received by the hon. treasurer to the Fund :—

2, Beach-street, Clovelly, Sydney, Australia,
Sept. 6th, 1918.

Hon. Treas., Belgian Doctors' Relief Fund.

DEAR SIR,—I am enclosing a cheque for £20 (or rather draft) as a small subscription to the above Fund.

I have returned after three years of war, and know something of what these brave Belgian people must be living through.

Yours sincerely,
ROY WINN, M.B., Ch.M.

SUBSCRIPTIONS TO THE SECOND APPEAL.

The following subscriptions have been received up to Monday last, Oct. 28th :—

	£	s.	d.
Dr. Alfred Cox (monthly)	1	1	0
Sir A. Pearce Gould (monthly)	5	0	0
Dr. Cameron Kidd (for Mrs. Stuart Todd) ...	1	0	0
Dr. F. M. Neild	5	0	0
North of England Branch B.M.A. (per Dr. J. Don, Hon. Sec.)—			
Dr. H. A. Brand... ...	5	5	0
Dr. S. V. Tinsley... ...	1	1	0
Dr. J. W. Smith... ...	5	5	0
Dr. A. Smith, jun. ...	5	5	0
Dr. C. J. Henderson...	1	1	0
Dr. Harris-Liston ...	1	1	0
Dr. Connon	0	10	0
Dr. L. Walker	1	1	0
Dr. G. A. Atkinson ...	5	5	0
Dr. H. H. Aitchison...	5	5	0
Dr. M. A. Wardle ...	1	1	0
Dr. E. F. Pratt	5	5	0
Dr. R. A. Morris... ...	1	1	0
Dr. H. R. Kendal ...	1	1	0
Dr. J. G. D. Cort ...	1	0	0
Archdeacon Henderson	1	1	0
Dr. R. Forsyth	3	3	0
Dr. W. Mussellwhite...	2	0	0
Prof. David Drummond	10	10	0
Dr. H. Kershaw	2	2	0
Dr. W. W. Stainthorpe	2	2	0
Dr. W. Petter	1	1	0
Dr. C. G. Maclagan ...	3	3	0
Dr. J. Hedley	3	3	0
Dr. H. A. Fielden ...	5	0	0
Dr. N. F. Rowstron ...	1	1	0
American Red Cross Commission for Belgium (monthly) ...	200	0	0
Dr. J. C. M. Given ...	1	1	0
Hon. Med. Staff of Bolton Infirmary (per Dr. Mothersole)	25	0	0
Dr. Charlotte E. Warner	1	0	0
Dr. Roy Winn (Australia)	20	0	0
Dr. T. M. Tibbetts... ...	1	1	0
Dr. C. H. Brangwin (China)	5	0	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

URBAN VITAL STATISTICS.

(Week ended Oct. 26th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had increased from 11·4 to 20·7 in the four preceding weeks, further rose to 30·9 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 34·5, or 14·4 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 7·0 in Grimsby, 9·0 in Dewsbury, and 9·9 in Sunderland, to 63·1 in Hull, 67·4 in Bootle, 71·4 in Leicester, 72·1 in Birkenhead, and 74·6 in Oxford. The principal epidemic diseases caused 219 deaths, which corresponded to an annual rate of 0·7 per 1000, and included 81 from diphtheria, 66 from infantile diarrhœa, 25 from measles, 22 from whooping-cough, 19 from scarlet fever, and 6 from enteric fever. The deaths from influenza numbered 4488, against 1895 in the previous week, and included 1256 in London, 233 in Sheffield, 230 in Liverpool, 197 in Leicester, 175 in Portsmouth, 148 in Hull, and 127 in Cardiff. The 1251 cases of scarlet fever and 1200 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 10 above and 5 below the respective numbers remaining at the end of the previous week. The causes of 79 deaths in the 96 towns were uncertified, of which 12 were registered in Liverpool, 11 in Birmingham, and 9 in Portsmouth.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at 2,500,000 persons, the annual rate of mortality, which had increased from 10·6 to 28·3 in the six preceding weeks, further rose to 29·4 per 1000. Of the 1358 deaths from all causes, 57 were classified to influenza, which was also stated as a contributory cause in 457 deaths classified to other diseases; in the previous week these numbers were 63 and 426 respectively. The 732 deaths in Glasgow corresponded to an annual rate of 34·3 per 1000, and included 13 from whooping-cough, 5 from infantile diarrhœa, 2 from enteric fever, and 1 from diphtheria. The 125 deaths in Edinburgh were equal to a rate of 19·6 per 1000, and included a fatal case each of scarlet fever and diphtheria.

Irish Towns.—The 362 deaths in Dublin corresponded to an annual rate of 47·3, or 8·7 per 1000 above that recorded in the previous week, and included 162 from influenza, 3 from infantile diarrhœa, 2 from enteric fever, and 1 each from whooping-cough and diphtheria. The 104 deaths in Belfast were equal to a rate of 13·8 per 1000, and included 4 from infantile diarrhœa and 1 from whooping-cough.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A clinical meeting will be held to-day, Friday, Nov. 1st, in the society's rooms, West London Hospital. The chair will be taken at 8.30 P.M.

Correspondence.

"Audi alteram partem."

THE STORY OF A "NEW" DISEASE.

To the Editor of THE LANCET.

SIR,—In your interesting editorial article on epidemic catarrh in THE LANCET of Oct. 26th you refer to Dr. F. G. Crookshank's recent Chadwick lectures on "The Story of a New Disease," implying that he really regarded the disease as a new one. I was present at the first lecture and presided at the second, and I can say that his contention—ably supported by arguments and historical references to epidemics of an influenzal type extending as far back as the thirteenth century—was that outbreaks of mental and physical manifestations such as are now grouped under the comparatively new name of "Heine-Medin disease," and of which infantile paralysis is only one of the most striking, had been constantly found attendant upon or had closely followed in obvious connexion with such epidemics. Perhaps Dr. Crookshank would have better entitled his lectures as the story of a "new" disease.

In addition to your valuable prophylactic suggestions with regard to the present epidemic, may I say that if persons entering densely crowded underground lifts and cars were to keep their mouths closed—by preference upon an antiseptic lozenge—and breathe only through the naturally protective nasal passages, and if, further, some simple method of frequently sterilising all public telephones were adopted, the incidence and spread of influenza would be much abated.

I am, Sir, yours faithfully,

London, Oct. 28th, 1918. R. DOUGLAS POWELL.

A NEW TYPE OF INFLUENZA.

To the Editor of THE LANCET.

SIR,—Dr. Wm. Collier's very interesting letter in your issue of Oct. 26th on the clinical aspects of the influenza now raging in so many parts of the world is an important contribution to the literature of the prevailing pandemic. In the main, my clinical experience of the cases observed in the Meath Hospital and County Dublin Infirmary and in my private practice within the past three weeks agrees closely with Dr. Collier's observations. I must state, however, that tachycardia has been more frequently observed in the early stages of an attack associated with extremely high temperatures than bradycardia. The latter condition is of frequent occurrence in the convalescent stage. To-day I counted 42 heart beats per minute in a convalescent patient. Epistaxis has been of frequent occurrence in the severe cases. And I have come to measure the gravity of a given attack by the intensity of the albuminuria which is present. Of this untoward condition Dr. Collier makes no mention. It is apparently of toxæmic origin. Its presence is quickly attended by extraordinary manifestations of delirium and of the ataxic state generally.

It has fallen to my lot to witness a cholera epidemic in 1866, small-pox epidemics in 1872 and 1878–80, and last, not least, the epidemic (or rather pandemic) of influenza in 1889–90, of which Dr. Collier speaks. But, in my opinion, none of those visitations equalled the present outbreak in extent, virulence, or treacherous course. In fatal cases widespread mischief has been found in connexion with the breathing organs. An advancing disseminated or island pneumonia is more frequent than a fibrinous lobar pneumonia. Extensive bronchial catarrh in one direction and pleuritis in the other direction are associated with varying degrees of pneumonitis or of pulmonary sanguineous œdema. But the development of the ataxic state—insomnia, raving, tremor, and dry black tongue, with sordes on the teeth and lips—sufficiently indicates the profoundness of the system-poisoning of this really terrible disease in many instances. The bacteriological findings include Pfeiffer's *Bacillus influenzæ*, the *Diplococcus pneumoniæ* of Fränkel, and a streptococcus, the two latter as secondary infections.

I am, Sir, yours faithfully,

Dublin, Oct. 28th, 1918. JOHN W. MOORE, M.D., F.R.C.P. Irel.

INFLUENZA AND PREVENTIVE INOCULATION

To the Editor of THE LANCET.

SIR,—I venture to criticise the note on administration of vaccine for influenza, published by the War Office, in THE LANCET of Oct. 26th. I find myself wholly at variance with the suggestions of the Committee as regards the dosage of the influenzal moiety of the vaccine proposed, and the following remarks are entirely confined to that portion of the vaccine, as I regard the pneumococcal and streptococcal doses as admirable. The list of gentlemen on the Committee is one of gifted and able bacteriologists of such eminence that to differ from them is a serious matter. But the question of influenza vaccine dosage, in the absence of requisite experimental work thereon, is not a question of pure science so much as a question of practice. This being so, one immediately recognises the scarcity of practitioners on the Committee. It seems to follow, therefore, that the Committee had to depend to a very great extent on the experience of at least a minority of its members in this matter, and to this extent its opinion loses weight. However that may be, I venture to say that the doses proposed, 30 and 60 millions, are inadequate to a degree seriously imperilling the value of the vaccine.

I have been in the habit since July, 1916, of investigating my cases of catarrh with the aid of blood and trypsin-blood plates planted from sputum, nasal swabs, or post-nasal swabs. Particularly have I used the latter in non-catarrhal periods between recurrent attacks of catarrh, and very frequently have I in these conditions demonstrated influenzal infections, and repeatedly have I recovered influenza bacilli from the trypsin plate when the parallel blood plate failed me utterly in this respect. Thus my experience of these infections is extensive. Moreover, all my cases are treated with vaccines prepared on my medium.[1]

As the result, therefore, of more than two years' experience of the medium I am firmly convinced that appropriate and successful therapeutic doses are, except in the case of perhaps the first two or three doses, very frequently larger than the Committee's proposed prophylactic doses. The great difference of opinion between us as to dosage may be accounted for by a possible change of toxicity in vaccine grown on my medium. As the required quantity of vaccine can only be prepared by using my medium, and as this method is in fact being used, the possibility of this change of toxicity becomes important, and it also makes my two years' experience of vaccine prepared by this method more valuable. Another point that bears on this question of dosage is the fact that for some years the mixed cold vaccine issued by St. Mary's and distributed by Parke, Davis, and Co. contains per c.cm. 300 millions of influenza bacilli, grown on my medium. Few, if any, complaints as to general reactions are heard, and yet the doses advised are 0·5 c.cm. and 1 c.cm.

It is, of course, obvious that with the methods of culture available before my method was introduced the quantity of influenza bacilli in a given vaccine was a question of much moment, and it is almost inconceivable that under the old conditions vaccine, even in the attenuated form suggested, could have been provided in a reasonable time for large bodies of troops. This aspect of the matter is entirely changed by my method. Indeed, the issue of the mixed vaccine will certainly not be delayed because of an insufficiency of influenza vaccine. This I can say as I am personally supplying quantities of the vaccine to the military authorities through the Inoculation Department, St. Mary's Hospital.—I am, Sir, yours faithfully,

JOHN MATTHEWS,
Bacteriologist, St. Mary's Hospital.

Wimpole-street, W., Oct. 28th, 1918.

To the Editor of THE LANCET.

SIR,—The extremely interesting account of the proceedings of the Committee appointed by the War Office on the question of the utility of vaccines in the prevention of influenza provisionally suggests that influenza is caused by an unknown microbe, and that the microbes so far discovered in the disease are complicatory and not causal. This is quite a tenable theory and may be true, and the point must still remain *sub judice*. Having watched all the epidemics of

[1] THE LANCET, July 27th, 1918.

influenza since that of 1889–90, I think the following observations are of importance.

For the last 10 years I have examined personally, and not being a skilled bacteriologist, under the supervision of Dr. Matthews, a large proportion of the sputa of patients suffering clinically from influenza. 1. In the majority of cases the bacillus of Pfeiffer has been discovered. 2. In all of the epidemics some other germ has been found present with it. 3. The associated germ has varied in different epidemics. 4. In some *Bacillus influenzæ* has not been found, and the attacks seem to have been due to streptococcus or pneumococcus, and occasionally to other microbes, such as *Bacillus septus*, &c. 5. In long-continued or frequently recurrent cases I have seen rapid cures and prevention of recurrence as the result of a course of vaccine treatment, the vaccine being made from the germ or germs discovered in the sputum.

I therefore venture to suggest that influenza is the name given to a well-recognised fever syndrome, and that it can be the result of any of these germs when they become epidemic. Why a germ is at one time epidemic, at another sporadic, we do not know, but we recognise this feature in other diseases, and also that some epidemics are severe in type, others mild. Influenza never disappears, cases crop up all through the year, and every year sees an epidemic. "Feverish cold" is probably a mild influenza; for the same germs are found in the two diseases.

It therefore seems probable that preventive inoculation will be beneficial, although too much must not be expected, as one attack of influenza does not (like small-pox, for instance) protect for long against a second. It seems to give a temporary immunity and future attacks tend to become milder.

I am, Sir, yours faithfully,

H. A. DES VŒUX, M.D. Brux.

Buckingham-gate, S.W., Oct. 26th, 1918.

To the Editor of THE LANCET.

SIR,—In the summary of the decisions come to at a War Office Conference reported in your issue of Oct. 26th there is one important recommendation which cannot be too strongly emphasised—viz., that the mixed vaccine issued by the R.A.M. College should not be employed as a means of treatment in acute cases. May I suggest, however, that the same objection does not apply to the use of sensitised vaccines? These can be given and in much larger doses without the same risks, and trial might well be made of these in view of the comparative failure of the usual remedies employed in the treatment of the secondary infections which appear to be the chief factor responsible for a fatal issue. Such sensitised vaccines could be prepared at every laboratory centre throughout the country from strains isolated from cases occurring within the range of each centre. While expectoration appears to be absent in many of these cases, there is always a sufficient number available from whom cultures may be obtained, and as fresh cases occur new strains can be accumulated fairly quickly.

The specimens of sputum which I have had the opportunity to examine here, where the epidemic is still of recent origin, appear to contain pneumococci, streptococci, or both, as the predominating organisms. The sputum from one fatal case, for instance, yielded practically a pure growth of a *Streptococcus longus*. In the absence of expectoration, and where time is a factor of vital importance, a mixed sensitised vaccine containing streptococci and pneumococci might be prepared from strains isolated from such cases as are available. This would constitute the nucleus of a stock vaccine to which, when obtained, suitable additions should be made. If such vaccines are to be employed it is scarcely necessary to add that they should be given early, and not when the patient is *in extremis*.—I am, Sir, yours faithfully,

ROBERT DONALDSON, M.D., F.R.C.S. Edin.

Reading, Oct. 28th, 1918.

Dr. R. W. ALLEN informs us in a letter received too late for publication that he has had good results in a series of 50 cases of influenza from the use of intravenous injections of oil of garlic. After determining on himself that 3 mins. of *Oleum allii sativi* could be given with impunity, he administered the oil to patients suffering from influenza in a 10 per cent. solution, using equal parts of alcohol and pure ether as the solvent. The initial dose was 5–10 mins., repeated twice or thrice daily. In patients thus treated cough was relieved, sputum came away more freely, and temperature fell rapidly. In no instance did pneumonia supervene. The only drawback noted was an overpowering smell of garlic in the breath.

NASO-PHARYNGEAL INFECTION AT THE ONSET OF CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—The chief point at issue in the present controversy is the question of the constancy of the meningococcus in the naso-pharynx of the patient at the onset of cerebro-spinal fever. Staff Surgeon P. Fildes's letter in your issue of Oct. 26th does not help us at all, since he fails to specify to which of the contradictory views previously expressed by him he now inclines. Had his experience of outbreaks of cerebro-spinal fever extended beyond the perihelion of Haslar, perhaps Staff Surgeon Fildes would have realised that carriers of the meningococcus are of two kinds, namely, temporary or chronic, and that during an epidemic the former have been found considerably to outnumber the latter, to whom alone he seeks to confine the term carrier. If he will study particulars of the carefully investigated outbreak at a large military depôt described by Captain J. A. Glover in the *Journal of the Royal Army Medical Corps* of January, 1918, he should have his horizon enlarged upon the subject of carriers. At the height of the outbreak in question the carrier rate among non-contacts in the depôt was found to be over 70 per cent!

In spite of the views of Staff Surgeon Fildes and Major J. Dorgan I still maintain that the constant presence of the meningococcus in the naso-pharynx of the patient at the onset of cerebro-spinal fever indicates that every case may be regarded as an instance of a carrier developing the disease. Once the meningococcus is lodged in the upper respiratory passages, the question as to whether the host becomes a case, a temporary or a chronic carrier, would appear to depend upon the degree of his specific susceptibility or resistance to the particular type of meningococcus operating. Moreover, while the vast majority of carriers escape the disease, even chronic carriers occasionally develop it, as Colonel W. M. Flack has shown.

I am, Sir, yours faithfully,

M. H. GORDON,
Lieutenant-Colonel, R.A.M.C.

Central C.S.F. Laboratory, London, S.W. 1, Oct. 28th, 1918.

*** The opposing views have now been stated and in several directions repeated. It is clear that further bacteriological study of the conditions is required.—ED. L.

TREATMENT OF CONCUSSION APHASIA BY GENERAL ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—In 1915 I read an article on this subject in THE LANCET (Oct. 30th, p. 977) by Major A. P. Procter, C.A.M.C., who gave three cases of concussion aphasia treated by general anæsthesia with good results. He related a case of a soldier who, while in the trenches, was buried in a dug-out by an explosive shell, and when taken out he became unconscious. After a few days in the hospital he regained his consciousness, but was unable to speak. One day he was allowed to visit the village with some of his companions and while there became intoxicated; in this condition he found his voice and regained his power of speech. The other two cases were treated by ether and during the stage of excitement they were induced to speak.

On account of this useful article I have tried eight patients in Chulalongkorn Red Cross Hospital with successful results.

CASE 1.—Nai M., aged 20, had severe convulsions from tetanus for three days, and when recovered was unable to speak. He was admitted to Chulalongkorn Hospital and was then anæsthetised by ether just enough to induce excitement. At this moment he was asked a few simple questions, such as his name, address, age. At first he tried to utter two or three words with difficulty. Next day he was anæsthetised again; but this time he could speak a few words clearly, and after the third trial he regained power of speech completely. During the intervals of the anæsthesia the patient was roused to speak by asking him a lot of questions.

CASE 2.—Nai A., a cadet, aged 18, during the manœuvres "saw a ghost" and fell down unconscious. He was admitted, anæsthetised twice, and regained speech.

CASE 3.—Nai A., a private, aged 19, was put on scout duty, and was brought in unconscious without any apparent cause. For many days he was drowsy and unable to speak. He was anæsthetised, and could speak on the second trial.

CASE 4.—Nai C., a Chinaman, aged 30, got high fever some months ago and had lost power of speech during the height of the fever. He was anæsthetised and could speak on the first trial.

CASE 5.—Nang Y., a Cantonese, aged 26, came for the treatment once and never came again; perhaps she could speak afterwards and held herself as cured.

CASE 6.—A child, aged 5, got fright while the electric light was out; she saw many dreadful objects during the darkness. She was admitted and anæsthetised and her speech recovered.

CASE 7.—Nang N., aged 27, got high fever and could not speak. When she came to the hospital she had lost her speech for four months; she was then anæsthetised and recovered on the first trial.

CASE 8.—A child, aged 1½, lost speech after a high fever. When the temperature came down to normal for two days she was anæsthetised with chloroform in an operation for unerupted tooth. On the next day she began to cry all day and then regained her speech completely within three days.

These eight cases prove that temporary aphasia due to shock or high fever can be cured by general anæsthesia.

I must thank Captain Phien Sinhajai for his assistance in giving the anæsthetic in these cases.

I am, Sir, yours faithfully,

HLUANG SAKDA BHOLARAKSHA (NAI CHEUNE),
M.R.C.S., L.R.C.P.,
Lieutenant-Colonel; Director, Chulalongkorn
August, 1918. Red Cross Hospital.

INFLUENZA AND NASAL DRILL.

To the Editor of THE LANCET.

SIR,—I should like to draw your attention to the fact that the Hancock system of nasal hygiene described by me for the prevention and treatment of adenoids in your issue of August 24th is also proving a most successful preventive of influenza.

I think it is clear that the "induced sneeze" with its accompanying flow of lymph, followed by "handkerchief drill," is more likely to rid the nose of infection than any nasal douche. The advice so frequently given to "sniff up antiseptic lotions" may, indeed, prove harmful, as the germ-laden dust particles and smuts which nature endeavours to stop at the anterior nares may be carried up to the more vulnerable and sensitive part of the nasal mucosa.

Many of the parents of the children attending the Westminster Health Association clinic, where this system is practised, speak most enthusiastically of the way their children have escaped, although in some cases directly exposed to infection. I am, Sir, yours faithfully,

Hanover-square, Oct. 27th, 1918. ISABEL ORMISTON.

THE BROADENING OF THE PUBLIC HEALTH SERVICE.

To the Editor of THE LANCET.

SIR,—Might I be allowed to express the pleasure which will be caused to many by Lieutenant-Colonel Kenwood's Presidential Address on the Reconstruction of the Society of Medical Officers of Health, and especially by the part in which he advocates the formation of sections of the society representing the several branches of activity of public health officers, administrative school hygiene, tuberculosis, child welfare, and venereal disease? This suggestion was singled out by Sir Arthur Newsholme, who gave it his hearty approval, saying that all these officers were medical officers of health. In view of the probability of the formation of a National Medical Service the doings of the Society of Medical Officers of Health, as representing the oldest and most definite civilian medical service, have an added importance. Those of us who are serving in His Majesty's forces will look forward after the war to a state of affairs in which the many useful features of the naval and military medical services are preserved, and especially the perpetuation of the arrangement whereby a medical man automatically receives the advantage of his increased experience by promotion, no matter the branch of medical work in which he has been engaged. Such an arrangement cannot be said to exist in the Public Health Service as at present constituted.

I am, Sir, yours faithfully,

Oct. 21st, 1918. JUSTITIA.

REGULATION 40 D.—A meeting of protest against Reg. 40 D, D.O.R.A., will be held at the Queen's Hall, Langham-place, on Wednesday next, Nov. 6th, at 7.30. The following resolution will be submitted:—

"This meeting demands the immediate withdrawal of Regulation 40 D under the Defence of the Realm Act."

The chair will be taken by Mrs. Henry Fawcett, and free tickets of entry can be obtained from the Secretary of the Association for Moral and Social Hygiene, 19, Tothill-street, S.W. 1. Seats can also be reserved by small payments.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Surgeon Commander (ret.) to be Surgeon Captain (ret.): C. G. Matthews.

Surgeon Lieutenants (temp.): W. A. W. Parkes and H. S. Le Marquand to Haslar Hospital.

ARMY MEDICAL SERVICE.

Major-Gen. Sir Walter G. A. Bedford and Col. B. J. Inniss are placed on retired pay.

Temp. Col. Sir F. Treves, Bt. (Hon. Col., R.A.M.C., T.F.), relinquishes his temporary commission on re-posting.

Temp. Col. H. H. Tooth (Lieut.-Col., R.A.M.C., T.F.) relinquishes his temporary commission on re-posting, and is granted the honorary rank of Colonel.

Capt. (temp. Major) D. W. C. Jones, R.A.M.C., T.F., to be temporary Colonel whilst specially employed.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. F. McLennan to be acting Colonel whilst employed as Assistant Director of Medical Services of a Division.

Major D. G. Marshall (Indian Medical Service, ret.) to be temporary Lieutenant-Colonel whilst specially employed.

Major H. F. Shea to be acting Lieutenant-Colonel whilst specially employed.

Temp. Capt. (acting Major) J. O'D. Egan to be acting Lieutenant-Colonel whilst specially employed.

Capt. D. Pottinger relinquishes acting rank of Major on re-posting.

To be acting Majors: Capts. H. L. Howell, H. C. Todd, F. C. Cowtan, T. J. Hallinan, T. F. P. Breen, Lieut. (temp. Capt.) R. L. Ritchie, Temp. Capts. C. C. Court, W. E. Hallinan, T. T. Higgins, J. M. Renton, R. O. H. Jones, C. R. Wills, H. C. W. Allott, D. F. O'Kelly, Temp. Lieut. A. T. Mackenzie.

Temporary Captains to be acting Majors whilst specially employed: D. K. Henderson, H. D. Robb.

Late temporary Captains granted the honorary rank of Captain: W. Clow, M. B. Arnold.

Temporary Lieutenants to be temporary Captains: W. T. McCutcheon, A. Brown, J. A. O'Regan, G. R. Halloran.

Officers relinquishing their commissions: Temp. Capts. J. Morlet, J. F. C. O'Donohoe, H. L. H. Greer, J. M. Kelly, G. A. Lyons, G. Munro, O. Barton, A. R. O. Milton, L. F. Lovell-Keays (on account of ill-health, and is granted the honorary rank of Captain), H. C. Burbidge (on account of ill-health, and is granted the honorary rank of Captain), W. C. W. Glenny (on account of ill-health), Temp. Lieut. N. Beattie, Lieut. R. B. Fletcher (on account of ill-health contracted on active service, and is granted the honorary rank of Lieutenant), Temp. Hon. Lieut. C. F. Larson.

Canadian Army Medical Corps.

Temp. Capts. (acting Majors) to be temporary Majors; O. S. Waugh, W. G. Lyall, W. L. Mann.

Temp. Capt. F. J. Tees to be acting Major while employed as Surgeon.

SPECIAL RESERVE OF OFFICERS.

Capt. (acting Major) J. G. McCutcheon to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Capt. S. J. A. H. Walshe to be acting Major.

To be Lieutenants: Second Lieut. F. Holmes (from Unattached List, T.F.), G. P. N. Richardson, W. G. Burns (from Glasgow University Contingent, O.T.C.).

TERRITORIAL FORCE.

Lieut.-Col. (Hon. Col.) H. H. Tooth is restored to the establishment on relinquishing his temporary commission in the Army Medical Service.

Major C. H. Usher is restored to the establishment.

Major (Brevet Lieut.-Col.) F. E. A. Webb, from General List, to be Lieutenant-Colonel on the permanent personnel.

Capt. (acting Lieut.-Col.) (General List) G. E. G. Mackay reverts to acting Major on ceasing to command a Field Ambulance.

Capt. P. J. Sheedy relinquishes his commission on account of ill-health, and is granted the honorary rank of Captain.

Capt. G. Wright is seconded for service with a General Hospital.

Capt. (acting Major) G. B. Gill relinquishes his acting rank on ceasing to be specially employed.

Capts. G. B. Gill, J. L. M. Symns, J. A. Morris, J. L. E. McHugh, D. G. Kennard, and T. B. McKee to be acting Majors whilst specially employed.

Capt. A. Ramsbottom to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capts. (acting Lieut.-Cols.) H. B. Pope and H. A. Macmillan relinquish their acting rank of Lieutenant-Colonel on ceasing to command a Field Ambulance, and revert to the acting rank of Major.

Capts. (acting Majors) D. W. Reese and A. B. P. Smith relinquish their acting rank on ceasing to be specially employed.

Capt. (acting Major) A. G. Hebblethwaite, D.S.O., relinquishes his acting rank on vacating appointment as Deputy Assistant Director of Medical Services.

Capt. R. W. MacKenna to be acting Major whilst specially employed, and remain seconded.

Lieuts. R. S. Moon and A. C. Swanston-Thomas to be Captains.

W. W. Earwaker and A. S. Reeves to be Lieutenants.

ROYAL AIR FORCE.

Medical Branch.—H. T. H. Butt and H. Greenwood (late Captain, R.A.M.C.) are granted temporary commissions as Captains.

D. Cromie, H. Hilliard, and W. Inman are granted temporary commissions as Lieutenants.

Dental Branch.—B. G. Kechnie is granted a temporary commission as Lieutenant.

INDIAN MEDICAL SERVICE.

The services of Major R. F. Steel have been placed at the disposal of the Government of Bombay, and the services of the following temporarily at the disposal of the Government of India: Lieut.-Col. E. F. G. Tucker and Major W. H. Dickinson; Lieut.-Col. J. G. Hojel (for employment on military duty).

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Killed.

Major J. Morris, M.C., R.A.M.C., was educated at Edinburgh University, and qualified in 1904. He held appointments at the Dinorwic Quarries Hospital and at the Denbighshire Infirmary, and was a member of the R.A.M.C. (T.F.) prior to the war. At the time of going on active service he was in practice at Hyde, Cheshire, where he was also police surgeon and medical referee for several assurance companies. The award of the M.C. was recorded in THE LANCET of Jan. 6th, 1917, p. 38.

Capt. P. J. O'Reilly, M.C., R.A.M.C., attached East Yorks Regiment, qualified in Ireland in 1914, and prior to joining the R.A.M.C. was in practice in Dublin. The award of the M.C. was recorded in THE LANCET of Nov. 18th, 1916, p. 881.

Capt. J. G. MacNeill, Canadian A.M.C.

Died.

Major C. W. C. Myles, M.C., R.A.M.C., qualified in Dublin in 1912, and was in practice at Merthyr Vale, Glamorganshire, prior to joining the R.A.M.C. The award of the M.C. was recorded in THE LANCET of Jan. 12th, 1918, p. 79.

Capt. F. O. Spensley, R.A.M.C., was a student at St. Thomas's Hospital, London, and qualified in 1907. He held an appointment at the Lowestoft Hospital, and prior to joining up was senior assistant medical officer at the Darenth Industrial Colony, Dartford, Kent. He died from pneumonia at the Burdon Military Hospital, Weymouth.

Major R. H. McGillycuddy, M.C., R.A.M.C., was a student at University College Hospital, London, and qualified in 1911. Prior to joining the R.A.M.C. he was in practice in West London. The award of the M.C. was recorded in THE LANCET of Jan. 22nd, 1916, p. 215.

Major (acting Lieut.-Col.) T. C. Rutherfoord, I.M.S., was a student at St. Thomas's Hospital, London, and qualified in 1902. At the time of his death, from malaria, he was in command of a field ambulance.

Surgeon-Commander T. Austen, R.N., was a student at Charing Cross Hospital, London, and qualified in 1888. In 1894, when attached to the *Curacoa*, he had charge of wounded rebels after they had been shelled from their trenches near Apia; and in 1904, when attached to the *Talbot*, he rendered first-aid to the disabled Russian cruiser *Variag* after her engagement with a Japanese squadron at Chemulpo, Corea. He died at the R.N. Hospital, Chatham.

Major H. W. Carson, D.S.O., R.A.M.C., qualified in Ireland in 1905, and joined the R.A.M.C. soon afterwards. The award of the D.S.O. was recorded in THE LANCET of June 8th, 1918, p. 822.

Capt. J. H. Connolly, R.A.M.C., qualified at Edinburgh in 1902 and held appointments at the Throat Hospital, Golden-square, London, at the Chesterfield and North Derbyshire Hospital, and at the Royal Albert Hospital, Devonport. He joined up soon after the outbreak of war, at which time he was in practice at Putney and was surgeon in charge of the throat, nose, and ear department of the Queen's Hospital for Children and chief assistant in the aural department at St. Bartholomew's Hospital, London. He died at the Acheson Military Hospital, Regent's Park, London.

Major J. H. McNicol, M.C., R.A.M.C., was a student at Glasgow University, and qualified in 1909. He was at one time assistant to the professors of pathology and of medicine at Glasgow Royal Infirmary, and prior to joining the R.A.M.C. was in practice at Dennistoun, Glasgow. The award of the M.C. was recorded in THE LANCET of July 10th, 1915, p. 99.

Lieut.-Col. L. P. Demetriadi, R.A.M.C. (T.), was educated at Leeds University, and qualified in 1886. He was in practice at Edgerton, Huddersfield, where he was examiner for the St. John Ambulance Association and medical referee for several assurance companies. He was twice mentioned in despatches, and had command of the West Riding Casualty Clearing Station. He died after a long illness contracted whilst on active service.

Capt. R. D. D. D. Brownson, R.A.M.C., was educated at Cambridge University and at the London Hospital, and qualified in 1908. He held appointments at the Great Ormond-street Hospital, London, and at the London Hospital, and died at Peshawur, India, from influenza.

Lost at Sea.

Dr. T. R. Beale-Browne, West African Medical Service, was a student at Guy's Hospital, London, and qualified in 1901. He was at one time assistant medical officer at the Northampton County Asylum, and later joined the West African Medical Staff. He was lost in the s.s. *Baruta*, sunk in collision early in October.

Previously reported Missing, believed Drowned, now reported Drowned.

Capt. W. J. Enright, Canadian A.M.C., qualified at Laval University in 1897. Prior to joining the Canadian Contingent he was in practice at Port Daniel Centre, Quebec.

Wounded.

Capt. R. McC. Hill, D.S.O., R.A.M.C., attached Argyll and Sutherland Highlanders.
Capt. G. Davidson, R.A.M.C., attached R. Fusiliers.
Major D. McKelvey, M.C., R.A.M.C.
Capt. W. E. Elliot, M.C., R.A.M.C., attd. Dragoon Guards.
Capt. J. M. Elliott, R.A.M.C.
Capt. H. L. Garson, M.C., R.A.M.C.
Major W. W. Wells, R.A.M.C.
Major J. F. Burgess, Canadian A.M.C.
Lieut.-Col. D. P. Kappele, D.S.O., Canadian A.M.C.
Capt. D. G. Gardiner, R.A.M.C., attached Devon Regt.
Capt. E. W. D. Hardy, M.C., R.A.M.C., attd. Lancers.
Capt. J. D. Stewart, Canadian A.M.C.
Capt. H. S. Evans, R.A.M.C.
Capt. H. A. C. Swertz, R.A.M.C., attached Royal Scottish Fusiliers.
Capt. R. Lindsay, R.A.M.C., attached Grenadier Guards.
Capt. J. C. Ogilvie, M.C., R.A.M.C., attd. Border Regiment.
Capt. R. E. Pitts, R.A.M.C., attached Duke of Wellington's Regiment.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Second Lieut. N. Gardner, West Riding Regiment, attached Lancashire Fusiliers, killed in action, youngest and last surviving son of the late Dr. J. Gardner, of Kelvinside, Glasgow.

Capt. M. J. N. McCreery, Royal Dublin Fusiliers, died of pneumonia, son of the late Lieut.-Col. N. McCreery, R.A.M.C.

Capt. (acting Major) R. C. Lundie, D.S.O., R.E., killed in action, only son of Dr. R. A. Lundie, of Edinburgh.

Lieut. F. T. Maurice, Grenadier Guards, died of pneumonia, elder surviving son of Brevet Col. W. J. Maurice, R.A.M.C., of Reading, Berks.

Capt. H. G. Powers, M.C., killed in action, only son of Dr. C. H. Powers, late of Westend, Hants.

Midshipman J. D. A. Lane, R.N.R., lost at sea, only son of Capt. H. A. Lane, R.A.M.C., of Chelsea, London, S.W.

Major C. W. C. Myles, M.C., R.A.M.C., died of pneumonia, younger son of the late Dr. J. P. Myles, of Birr, Ireland.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.

The annual general meeting was held at 11, Chandos-street, London, W., on Oct. 25th. Sir Alfred H. Keogh was re-elected President; Lieutenant-General T. H. J. C. Goodwin, D.G.A.M.S., was elected Vice-President; and Major W. F. Brook, Colonel Sir Thomas Crisp English, Colonel J. E. Gemmell, and Lieutenant-Colonel F. S. Irvine were elected to the committee. The report of the recommendation of the Committee for Grants up to Sept. 30th, 1918, was adopted. The list of grants to orphans of officers under the Benevolent Branch totalled just under £400 in 11 separate grants.

At a committee meeting held previously grants were made to orphans of seven officers amounting to £240, and to the widows and orphans of six members of the rank-and-file amounting to £234. These Funds are for the education of the children of officers of the Auxiliary Royal Army Medical Corps who have lost their lives during the present war, or have been severely disabled by it; also for widows and children of similar members of the rank-and-file.

Requests for help, as well as subscriptions, should be addressed to the honorary secretary, 11, Chandos-street, Cavendish-square, London, W. 1.

INDIAN SCIENCE CONGRESS.—The sixth annual meeting of the Indian Science Congress will be held in Bombay from Jan. 13th to 18th, 1919. The Governor of Bombay will be patron of the meeting and Lieutenant-Colonel Sir Leonard Rogers, I.M.S., will be president. The sectional president, medical research, will be Lieutenant-Colonel Glen Liston, I.M.S.

OBITUARY OF THE WAR.

MICHAEL JOSEPH O'FLYNN, M.D.R.U.I.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant M. J. O'Flynn, who died of wounds in France on Sept 24th at the age of 39 years, was son of James O'Flynn, of Six Mile Bridge, co. Clare. He was educated at Black Rock, Dublin, and at the National University of Ireland, taking the degrees of M.B., B.Ch. in 1903, and the M.D. four years later. After gaining experience in resident hospital appointments, making a special study of eye work, he settled down in practice at Neath, Glamorgan, in 1909, and the following year married Florence, second daughter of J. H. Davey, J.P., of Briton Ferry. At the outbreak of war he acted as the local military civil doctor for the district, and in November, 1917, joined the R.A.M.C., when he was attached to various units in France, finally to the 1st Northamptonshire Regiment. He met his death while attending the wounded on the battlefield.

Dr. O'Flynn is described by his friends as one who loved his work and whose genial disposition and untiring devotion to duty made him beloved by a wide circle. He leaves a widow and four children. Two of his sisters are practising medicine.

WILLIAM LESLIE DANDRIDGE, B.A. CAMB., M.R.C.S. ENG.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant W. L. Dandridge, who died of wounds on Oct. 5th, was youngest son of Alfred Dandridge, of Beckenham, Kent. He was educated at Sherborne School, going on in 1912 to Emmanuel College, Cambridge, where he graduated in Arts. In 1916 he went to the Isonzo front with a Red Cross ambulance, returning to England after a few months to complete his medical curriculum. After obtaining the diplomas of the Conjoint Board, he joined the 103rd Field Ambulance in France, and it was while accompanying a party of stretcher-bearers to the front line on Oct. 3rd that he was wounded, surviving his injuries only for a few days. Enthusiastic in his work, and of a bright and cheery disposition, Lieutenant Dandridge will be missed by a large circle of friends. His eldest brother was killed at the Battle of the Somme in August, 1916.

Captain ANDREW ROSS, C.A.M.C., who was killed in action on Sept. 29th at the age of 42 years, was a native of Huron, Ontario, and graduated in medicine at the University of Toronto in 1904. He came overseas in April, 1916, as a private in the C.A.M.C. and went to France in June, 1916, with the 8th Canadian Field Ambulance. In July of last year he obtained a commission and was posted to No. 2 Canadian General Hospital and re-posted to a field ambulance in September, 1918.

FREDK. HOYSTED BRADLEY, M.B., CH.B. EDIN.,

DISTINGUISHED SERVICE ORDER;
LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel F. H. Bradley, who was killed in action on Sept. 22nd, at the age of 34, was youngest son of the late Canon Bradley, of Monaghan, Ireland. He was educated at Campbell College, Belfast, where he held a scholarship, and at Edinburgh University, where he graduated M.B., Ch.B. in 1906. After graduating he filled the posts of house physician and resident medical officer at the Stanley Hospital, Liverpool, and entered the R.A.M.C. in 1908, seeing service in various stations at home before he was sent to India in 1910. He went to France in the second month of the war and served there continuously until his death. Latterly he was in command of the 15th Field Ambulance, and was awarded the D.S.O. in January of the present year. A friend and colleague writes of Colonel Bradley: "I had known him ever since he came as O.C. to the ambulance, and he has always shown the greatest kindness and consideration for all his officers. When there was any difficulty he was always ready to come to one's help, and in times of danger he was always ready to take his part."

Colonel Bradley married in 1912 Esther Ellen Lacey, daughter of the late William Hargreaves, of Liverpool, who predeceased him.

WILLIAM BOYD JACK, M.D. GLASG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. B. Jack, who died of wounds on Oct. 11th, was a student at Glasgow University, graduating M.B., Ch.B. in 1905 and taking his doctorate three years later. He held successive house appointments at Glasgow Royal Infirmary before joining Dr. W. B. Cockill in private practice at Kendal in 1907. He was an able and conscientious practitioner, who quickly gained the esteem of all and the gratitude of many. His fellow-practitioners felt that they had in him a steadfast and loyal comrade, and his never-failing kindness and courtesy endeared him to a wide circle of patients and friends. In 1911 he joined the staff of the Westmorland County Hospital, where his sound judgment and professional knowledge were of the greatest value to the patients and help to his fellows. He obtained a commission in the R.A.M.C. in March of last year and was attached to a Leicestershire regiment. In May last he was gassed, and it was while advancing with his regiment in the fight for St. Quentin that he received the wounds which he himself quickly recognised as mortal. The deepest sympathy goes to his wife and three young children.

Captain HERBERT ANTHONY CULHAM, C.A.M.C., who was killed on Oct. 4th, aged 35 years, was a native of Hamilton, Ontario, and graduated in medicine at the University of Toronto in 1910. He came overseas in October, 1916, serving with units in England until November last, when he went to France with No. 2 Canadian Field Ambulance. At the time of his death he was attached to a brigade of Canadian Field Artillery.

Obituary.

ROBERT BRUDENELL CARTER, F.R.C.S.,

CONSULTING OPHTHALMIC SURGEON TO ST. GEORGE'S HOSPITAL; FORMERLY PRESIDENT OF THE MEDICAL SOCIETY OF LONDON.

ONLY a few weeks ago we announced Mr. Brudenell Carter's ninetieth birthday, and on Wednesday evening in last week his long life came to an end. It is 50 years since he first joined the staff of THE LANCET, and in those early years of his connexion with us his forcible editorial contributions made a weekly appearance in our columns. Then for some years, especially during the last 20 years of the past century, his public work made it inconvenient for him to assist us, but in 1899, having by that time ceased to be a member of the General Medical Council, he resumed his close editorial connexion with us. As age grew on him his contributions became less frequent, but, nevertheless, his clear and vigorous leading articles were always acceptable to our readers; on his eightieth birthday he wrote a leading article on the same subject for the *Times* and THE LANCET in which identical general views were expressed, but in which he exactly hit off in the arguments employed and the methods of employing them the due variations in the audiences he was addressing. As late as 1915 in a private letter to the present editor of THE LANCET, who had mentioned that the war had depleted his staff, Carter observed: "You speak of being short-handed; if this refers to writers I might possibly do something to help, and I need not say that you could command my services although I should not like to attempt writing under much pressure as to time." He was then 87 years of age. Carter's death is truly for us a break with the past.

Robert Brudenell Carter, the son of an officer in the Royal Marines, was born at Little Wittenham, Abingdon, in 1828, and entered the medical school of the London Hospital at the age of 19, after having served the course of apprenticeship to a general practioner which in those days was the orthodox method of entering the medical profession. He became M.R.C.S. in 1851 and L.S.A. in the following year, when he went into general practice in the north of London. But in the spring of 1854, when England and France declared war against Russia, Carter, like many other young surgeons, went to serve in the Turkish Army in a voluntary capacity, and while there he contributed both to the *Times* and THE LANCET letters and papers of his Crimean experience. The letters to the *Times* had a great future influence on his career. On his return to England he again went into general practice in suburban London, and then left for Nottingham, where he remained for some years, and where he was first attracted to ophthalmology in particular, while writing also on general medical subjects Later he moved to Chatham, and in 1868, being then 40 years of age, he came up to London, deciding to tempt fortune as an ophthalmic surgeon, being now in possession of the F.R C.S. This bold step he has described in a further letter to the editor of THE LANCET in the following words:—

"My life generally is calculated to encourage hopefulness under adverse circumstances. Up to the age of 40 I was a conspicuously unsuccessful general practitioner in the country. In my forty-first year I decided to burn my very small and shallow boats and to come to London. Within a year I was a leader writer for the *Times*, a constant contributor to the editorial columns of THE LANCET, and surgeon to the Royal South London Ophthalmic Hospital. Within two years I was ophthalmic surgeon to St. George's and my way was fairly clear.

I think it is a point in my favour that, as I could not afford the six years' hospital practice as a student necessary for the Fellowship of the Royal College of Surgeons, I determined from the first to maintain my knowledge of anatomy and to keep fully abreast of surgery. The result was that as soon as I had completed the necessary 12 years as a Member, I was able to go up from my country practice for the Fellowship examination without either rest for study or coaching, and to pass. But for this, of course, I could not have obtained hospital posts.

Pray excuse my troubling you with this yarn about myself, and please excuse the bad writing. I am in a reclining chair and write on a pad held in my left hand."

From 1870 until 1893 Carter was ophthalmic surgeon to St. George's Hospital, and during all that time he conducted a large ophthalmic practice and communicated to the professional world some admirable work on eyesight generally. His lectures on Cataract, on Eyesight in Schools, on Optical Appliances, and on the General Cause of Good and Bad Eyesight were all valuable expositions on questions that required to be treated in a plain manner by a well-informed writer.

In 1881–82 he was Hunterian professor of surgery and pathology in the Royal College of Surgeons of England, and shortly afterwards was elected President of the Medical Society of London, having in 1884 been Lettsomian lecturer. A Knight of Justice and Honorary Commander of the Order of St. John of Jerusalem, he was consulting surgeon to the ophthalmic hospital at Jerusalem; while his knowledge of French, which equalled his knowledge of German, was placed at the disposal of the cause of sanitation generally when he became Foreign Secretary to the French Society of Hygiene. In 1893 he was, after 23 years' service, elected consulting ophthalmic surgeon to St. George's Hospital and also to the Royal South London Ophthalmic Hospital.

In 1875 appeared his "Practical Treatise on Diseases of the Eye," which was at once recognised as a valuable addition to ophthalmic literature. An extremely skilful man of letters, he got over the difficulty supremely well which a specialist has in writing a text-book. Such a medical author may propose to write for the benefit of the general profession, discovering for them the principal points of his own branch of practice, or he may write as a specialist for specialists, submitting his own views and practice to expert criticism. Carter managed to do both things. He gave a general view of the present state of knowledge with regard to the nature and treatment of the more important diseases of the eye, but from individual experience he was able to add original suggestions and to subject the work and views of other well-known specialists to just and lively criticism. His whole object was to see general practitioners skilful in detecting and treating eye disease, and he placed in their hands a manual of great value to that end. Several editions of his book were issued, edited by himself and later by Mr. W. Adams Frost, while he also wrote the articles on Diseases of the Eye in "Quain's Dictionary of Medicine," and the section of ophthalmic surgery in "Holmes's System of Surgery." He also translated Zander's original work on the ophthalmoscope and Scheffler's "Optical Defects of the Eye." Carter's contributions to medical and special scientific literature were, it will be seen, numerous, and they always possessed the particular virtues of clearness and force. Eloquent, incisive, more than occasionally bitter, he was also a generous writer, and few members of the medical profession have wielded greater power with the pen, while he possessed the equally valuable gift of being able to speak in public with the same command of language and high level of literary style. Carter's "leaders" belong to an older day—he used the Latin "period" and orotund full-dress methods—but any appearance of pomposity thus given to his writings was purely superficial; no writer of to-day is more fastidious than was Carter in his choice of language or more resolutely averse from the use of stale metaphors, trite tags, and obvious morals.

Clear speaking and close debating made him during his 20 years on the General Medical Council a force in the proceedings of that body, and strongly conservative member although he always was, it should be placed on record that he was the author of that change in the methods of the Council by which it was rendered possible to deal in a suitable measure with comparatively trivial professional offences. Carter devised the expedient of postponing decision upon small offences until the next session, the interval being thus rendered a period of probation. When he joined the Council there were many cases in which there was no choice but to inflict the penalty of erasure from the Register for quite trivial offences or else to condone them altogether. Even if they came within definitions of "infamous conduct," which the Council had already laid down, cases of "covering an unregistered practitioner," for example, differed immensely as to degree of turpidity. More than once men who had but just entered the profession were expelled from it for what was little more than foolish good nature and which only needed an admonition, and this was the cruelty that Carter set out to right. Since he succeeded in introducing the change there has been scarcely a session in which it has not been brought into useful operation.

Carter was of ancient family, being eleventh in descent from Thomas Carter, a gentleman bearing arms who was settled at Higham, Bedfordshire, in the reign of Edward IV. He married first Helen Ann Beauchamp, daughter of John Becher: and secondly Rachael Elizabeth, daughter of Stephen Hallpike and widow of the late Walter Brown. By his first wife he had four sons.

This is but a brief chronicle of a long and busy career, but Carter's life in far greater detail is chronicled in "Doctors and their Work," a volume which he wrote some 15 years ago.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Housing Bill.

A SECOND reading was given to the Housing Bill in the House of Commons on Monday, Oct. 28th, but a certain amount of criticism arose on the fact that its scope was limited. Mr. HAYES FISHER, the President of the Local Government Board, however, explained in moving the second reading that the Bill was only an instalment of the Government programme which he had unfolded to the House in May during the discussion on the estimates of his department. That programme would again be brought before the House in a much larger measure dealing with the whole of the financial aspects of the problem and incorporating many other means by which the action of the State could be linked up with that of local authorities, public utility societies, and also, he hoped, private enterprise. The right honourable gentleman could not say when that measure would be introduced. The first clause in the present Bill gave financial encouragement to county councils to build houses for their own employees. The second clause gave powers whereby where the smaller local authorities had not taken adequate steps to provide houses for the population of their areas the Local Government Board should have the right to call in the county council to carry out the duty. Several honourable Members emphasised the connexion of housing and health, and expressed regret that the Government had not brought forward a larger measure now.

The Midwives Bill.

The Midwives Bill was read a second time in the House of Lords on Tuesday, Oct. 29th. As the Bill now stands, Clause 12 repeals Section 9 of the Midwives Act, 1902, which enabled county councils to delegate their powers over midwives to district councils. Where such delegation has already occurred, it shall not be affected unless the county council concerned, with the consent of the Local Government Board, withdraws the delegation.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 23RD.

Cooking in Military Hospitals.

Answering Mr. GILBERT, who asked whether there were many complaints as to the way in which food was cooked in London Military Hospitals, Mr. MACPHERSON (Under Secretary for War) wrote: Some complaints of the nature mentioned have been received, and an officer from the War Office has been sent to investigate the matter and make suggestions with a view to improvement. I would add that the whole question of cooking in military hospitals is receiving close attention, and the appointment of expert lady cooks to act as inspectors of cooking in military hospitals is at present under consideration.

Prevention of Anthrax.

Mr. JOWETT asked the Home Secretary what action he had taken to secure the disinfection of dangerous wool since he received the report of the Departmental Committee which reported, on Nov. 23rd, 1917, that at a very small net cost infected wool could be rendered free from danger from anthrax.—Sir G. CAVE replied: The honourable Member refers presumably to the preliminary report of the Disinfection Subcommittee of the Departmental Committee which was received and presented to Parliament last spring. The report deals only with the results of the investigation into methods of disinfection; it contained no proposals for applying its conclusions, and in the covering letter submitting the report the Committee expressly advised that no action should be taken pending their final recommendations. The final report, which is being issued to-day, was only received last month. It makes a series of far-reaching proposals, involving the erection of disinfection stations abroad as well as in this country, the establishment of a special authority, and international coöperation. These proposals will be considered and the necessary action taken without delay.

THURSDAY, OCT. 24TH.

Venereal Disease and Regulation 40 D.

Mr. LEES-SMITH asked the Home Secretary whether any provision was to be made by which women who were arrested under the Defence of the Realm Act, Regulation 40 D, and against whom no conviction was obtained, were to receive compensation for undergoing the special medical examination for venereal disease.—Sir G. CAVE answered: The reply is in the negative.

Mr. LEES-SMITH: Has the right honourable gentleman taken into account the statement made last week that of the prosecutions made under this regulation, almost one-half of the women are found to be not guilty, but although not guilty they are subjected to this examination, which is a terrible penalty in itself; and will he either give them compensation or withdraw the regulation?—Sir G. CAVE: No, Sir, when the examination is made it is made by consent.

Mr. LEES-SMITH: Is the right honourable gentleman aware, with regard to his statement that this examination is made by consent, that the prosecutor for the Government stated that if the women refused to undergo the examination it would be taken as proof against them?—Sir G. CAVE: I am not aware of that. It would not be a proper statement to make.

Mr. LEES-SMITH asked whether the right honourable gentleman would now issue instructions that the consent of women to undergo the special medical examination for venereal disease provided for in the Defence of the Realm Act, Regulation 40 D, should in all cases be obtained in writing.—Sir G. CAVE replied: The question is under the consideration of the committee recently appointed.

Medical Men and the Pensions Ministry in Ireland.

Mr. NUGENT asked the Parliamentary Secretary to the Ministry of Pensions whether he had refused applications for employment under Government by medical officers who had previously served in any capacity under the National Insurance Commissioners in Ireland, irrespective of previous long or active service; and, if so, whether he would explain why this course had been adopted, in view of the promise given by the Prime Minister.—Sir A. GRIFFITH-BOSCAWEN said in reply: I am not aware of any ground for this suggestion. The selection of medical men to act as referees in Ireland was entrusted by the Minister of Pensions to a committee specially appointed for the purpose, consisting of representatives of the Irish Local Government Board, Irish Insurance Commission, Ministry of Pensions, Ministry of National Service, Irish Medical War Committee, President of the Royal College of Surgeons, and Irish Medical Committee. The report received from the committee shows that very great care was exercised in the duty entrusted to them and that the medical men selected were unanimously agreed to.

Medical Women in Military Hospitals.

Sir P. MAGNUS asked the Under Secretary for War whether, having regard to the fact that medical women serving in military hospitals discharged similar duties and received the same pay as men doctors and were entitled to wear the Royal Army Medical Corps badge, he would take steps to rectify the anomaly of their being refused even honorary commissions or to wear badges of rank which would be helpful to them in maintaining discipline; and whether he could arrange that they should obtain equivalent relief from income-tax as was granted to men doctors under the service rate.—Mr. MACPHERSON replied: I am reconsidering this question. Perhaps my honourable friend will be good enough to ask me a question on the subject next week. The last part of the question is one for the Treasury.

Effect of Occupations on Women's Health.

Mr. ROWNTREE asked the Minister of Reconstruction whether, in preparation for the task of demobilisation, any careful inquiry had yet been made into the effect of different occupations on the health and physique of women; and, if so, could the result of such inquiry be made public.—Dr. ADDISON wrote in reply: In addition to the reports of the Health of Munition Workers Committee, which has recently been published, the Home Office has undertaken an inquiry into the question referred to. The inquiry is now completed and the question of publication is a matter for the Home Secretary.

Rabies and the Pasteur Treatment.

Mr. R. MCNEILL asked the President of the Local Government Board whether, in view of the danger arising from the existence of rabies in the country, he would issue information to the public as to what facilities there were for obtaining Pasteur treatment, and as to the steps that should be taken by individuals who might be bitten by suspected dogs.—Mr. HAYES FISHER replied: A circular on the procedure to be adopted was sent to medical officers of health in Devonshire and Cornwall as soon as the Local Government Board was informed of the presence of rabies among dogs in these counties. It has now been revised, and a copy of the revised circular will be sent to the press.

Maternity Benefit.

Sir C. KINLOCH COOKE asked the President of the Local Government Board whether he was aware that cases had arisen where women, insured under the National Insurance Act, had taken advantage of the workhouse for their confinement and subsequently drawn the maternity benefit; and would he consider the advisability of making some provision so that in cases of this kind guardians might be in a position to apply for and receive some portion of this benefit.—Mr. HAYES FISHER answered: The reply to the first part of the question is in the affirmative. In view of the provisions of Section 111

of the National Insurance Act, 1911, and Section 20 of the National Insurance Act, 1918, I could not take the action suggested in the latter part of the question.

Sanatorium Treatment.

Replying to Mr. BOWERMAN, Sir E. CORNWALL (representing the National Insurance Commissioners) wrote: Some 30,000 insured persons annually have, since the National Insurance Act, 1911, came into operation, received residential treatment for tuberculosis in sanatoria and hospitals in addition to the large numbers which have received dispensary and domiciliary treatment. But this still leaves a regrettable number of cases for which accommodation is lacking. The war has made serious difficulties in regard to building operations and other matters involved in providing more institutional accommodation.

MONDAY, OCT. 28TH.

The Influenza Epidemic.

Mr. DENMAN asked the President of the Local Government Board whether he could make any statement as to the prevalence of an epidemic of influenza; whether it was causing a rise in the rate of mortality; whether it was associated with other diseases; and what steps were being taken by his department and should be taken by the public to combat it.—Mr. HAYES FISHER replied: The present epidemic of influenza is causing a considerable rise in the rate of mortality, as will be seen from the weekly returns of the Registrar-General, but happily the rise is not so great as that experienced in Vienna and Paris, and, I believe, in other such large towns. Numerous conferences have taken place between representatives of my department, of the naval and military authorities, and the Board of Trade in regard to the transport of troops. The medical officers of my department have also been in consultation with the Army Medical Department and the Medical Research Committee, and bacteriological investigations have been continuously made since the commencement of the summer outbreak. These show that bacteriologically this outbreak does not differ from other outbreaks of influenza, the fatality being due to secondary infections chiefly by pneumococci and streptococci. I have also called a special conference of the representatives of all the departments concerned. As to the steps which can be taken by the public, I may refer to the memorandum of my medical officer which has been issued. This memorandum emphasises the fact that control over this catarrhal disease is only practicable by the active coöperation of each member of the community, and medical officers of health have brought the precautions recommended by the memorandum to the notice of the local public by means of special leaflets and in other ways.

Mr. DENMAN: Are we to anticipate a Ministry of Health in the near future?—Mr. HAYES FISHER: I do not think that arises.

Colonel C. LOWTHER: Is it a fact that there are two distinct epidemics—influenza and septic pneumonia?—Mr. HAYES FISHER: I do not think that we can say that there are two.

Mr. PONSONBY: Is the spread of this disease largely due to malnutrition?—Mr. HAYES FISHER: I have no reason to think that that is the case.

Mr. PRINGLE: Will the right honourable gentleman make representations to the National Service Department to refrain from calling up further medical men, and to the War Office to release more medical men from the Army for civilian service?—Mr. HAYES FISHER: I am sure the Minister of National Service must have taken notice of the fact that medical men are seriously wanted in every department of civil life.

Administration of Medical Benefit.

Mr. CURRIE asked the representative of the National Insurance Commissioners whether his attention had been drawn to the difficulty arising out of the issue of his Departmental Circular 242 X, dated June, 1918, which would result in numbers of insured persons losing medical benefit by reason of their earnings now exceeding £160 a year; whether he would, by legislation or otherwise, take steps to prevent this result, in view of the fact that £160 was now of less value than £100 when the 1911 Act was passed; and whether meantime he would suspend or modify the said circular.—Sir E. CORNWALL answered: In view of the numerous inquiries received as to the position in insurance of non-manual workers in receipt of war bonuses or other increase in wages bringing their rate of remuneration to over £160 a year the Commissioners felt that the question could no longer be left in uncertainty, and a circular to which my honourable friend refers sets out what the Commissioners are advised to be the legal position in such cases. The difficulty, of which I am fully aware, arises not from the circular but from the general increase in wages. There is no intention at present to introduce amending legislation on the subject.

TUESDAY, OCT. 29TH.

Medical Services and the Influenza Epidemic.

Mr. TYSON WILSON asked the Minister of National Service what steps he had taken to provide an adequate medical service for the civil population in view of the present serious epidemic of influenza.—Sir AUCKLAND GEDDES replied: All arrangements made in connexion with the employment of medical men under the Ministry of National Service and all withdrawals of medical men from civil life for service with the armed forces of the Crown during the past year have been made with full regard to the contingency of a widespread epidemic disease affecting the population. Influenza has been more or less prevalent in epidemic form for some months, and the calls on the civil medical profession have been consequently very heavy. Simultaneously, severe fighting on a great scale in all theatres of war has imposed an additional heavy strain on our medical resources. In April Parliament conferred powers on the Minister of National Service which enabled him to examine men of military age at any time. In view of possible emergencies this power was largely used, approximately 7000 medical men being employed and very large numbers of men being examined. Concurrently with the increase of influenza the number of medical men employed on Medical Board work has been reduced, thereby rendering an increasingly large body of medical men available for exclusively civil practice. The number of Medical Board sessions has been reduced from approximately 3500 to 1000 per week. This has not affected recruiting, as the pool formed by examining men in advance has been sufficient to maintain the flow of men to the forces. In order further to reinforce the doctors available to attend the civil population I have given instructions that all medical examinations in advance are to be suspended for the present. Pensions examinations and the examinations of men reporting for service will, of course, continue. Arrangements have also been made to reinforce the medical staffs available at hospitals so far as our resources will permit. In conclusion, I should like to express my deep appreciation of the way in which the medical profession has coöperated with the Ministry of National Service in meeting unprecedented and often conflicting demands for medical personnel.

Mr. PRINGLE: Has the right honourable gentleman any information as to the effect of the influenza epidemic on medical men themselves, and is he prepared to suspend for the present any further calling up of them?—Sir AUCKLAND GEDDES: I have not got any complete figures showing the numbers of medical men who are down with influenza, but I know the numbers have been considerable. We have released from calling upon their time a very large number of medical men who are now devoting the whole of their time to civil practice. We are putting at the disposal of districts where we can full-time medical men. We cannot create medical men for the emergency, but we have to do the best we can to spread the resources we have. It happens that at the moment there is a very heavy demand for young fit doctors for the front. The casualties amongst the medical profession have been very heavy, and we have had to call up a certain number of young fit men because we have nobody else to send to the front. By the front I mean the real fighting line. We have arranged that a certain number of young naval surgeons shall go to France, and they have gone. We are doing our best to have the older and less fit men made available here. The pressure is so great that it is not a simple problem for us to move the men to the place where they are most required.

Mr. PRINGLE: Will the right honourable gentleman secure that no medical practitioner over 40 may be sent out of the country now?—Sir AUCKLAND GEDDES: It would be very difficult to give a pledge, but we are doing the best we can with the resources at our command.

R.A.M.C. Officers in India.

Colonel YATE asked the Under Secretary for War what arrangements had now been made for the relief of time-expired Royal Army Medical Corps officers who had been retained in India since the commencement of the war and had had no opportunity for service at the front.—Mr. MACPHERSON answered: Twenty-four officers have been sent to India in relief of a similar number of time-expired, and two are awaiting passage. Until the relieved officers return home it is impossible to spare further officers for the purpose, as the system involves the loss of the services of the officers for a period of two to three months.

R.A.M.C. Officers, Territorial Force.

Sir FRANCIS BLAKE asked the Under Secretary for War whether a general promotion list for officers of the Royal Army Medical Corps, Territorial Force, had now been prepared and published; and whether he would state the authorised establishment of colonels, lieutenant-colonels, and majors in that force, and the existing number in each rank.—Mr. MACPHERSON replied: In accordance with

the recommendations of the Committee on Promotion of Officers in the Special Reserve, New Armies, and Territorial Force, a seniority list has been prepared for all officers of the Royal Army Medical Corps, Territorial Force, other than the administrative and *à la suite* staffs of Territorial Force General Hospitals and the Sanitary Service. This list is included in the Army List. The establishment authorised is: colonels 19, lieutenant-colonels 107; and the existing officers of these ranks are colonels 9 and lieutenant-colonels 75. Promotion to the rank of major being governed by a time-qualifying period, the establishment of this rank is not limited. The actual promotions consequent upon the determination of the establishments to which I have referred are under consideration and will be published as soon as possible after the receipt of the information which it is essential to obtain from various theatres of war where the officers concerned are serving.

WEDNESDAY, OCT. 30TH.

The Influenza Epidemic.

Mr. ROWNTREE asked the President of the Local Government Board whether in view of the continued spread of influenza he would state to the House how many medical advisers there were attached to the Local Government Board, whether they were all at present engaged in giving their whole time to preventive measures dealing with the epidemic, whether in view of the grave results arising from the spread of the disease he considered the staff wanted strengthening, and whether he did not think it advisable to issue broadcast advice as to what steps could be taken by the public to prevent the spread of infection.—Mr. HAYES FISHER replied: The staff of the Medical Department of the Local Government Board consists of a medical officer and four assistant medical officers, together with 20 medical inspectors. A memorandum of instruction as to the preventive measures available, which was prepared by the medical officer, has been issued to every sanitary district in England and Wales, and the sanitary authorities, under the advice of their medical officers of health, are urging the adoption of the preventive measures in their several districts. In the invaded towns information as to the precautions available has been distributed broadcast by means of leaflets, posters, and press notices. In many of these areas day schools and Sunday schools have been closed and the public have been advised to avoid crowded assemblies. In some instances voluntary arrangements have been made for excluding children from cinema performances, and also for increasing the time between performances so as to allow the air in the building to be thoroughly changed. The medical staff of the Board are devoting all such time as is necessary to this epidemic and will continue to do so. I do not at present consider that the staff needs enlargement in consequence of the epidemic.

Answering supplementary questions, Mr. HAYES FISHER expressed the view that the information which it was advisable to bring to the notice of the public was best communicated through the channel of the medical officers of health. He was quite ready to make further inquiries how far this had been effectively done. Conferences had been taking place during the last few days to which the medical officer of the Board of Education had been contributing his wide experience and knowledge. He would give his attention to cases of sanitary districts where there was at present no medical officer of health acting.

Mr. ROWNTREE asked the President of the Board of Education whether in view of the continued spread of influenza he would state what was the view of the Medical Department of the Board regarding the advisability of closing schools at the first appearance of influenza in the school; and whether he thought it desirable to issue some general advice as to what steps could be taken to prevent the spread of infection through the association of so many children.—Mr. HAYES FISHER answered: The closure of schools or the exclusion from school of children suffering from infectious diseases, including influenza, is a matter which rests with the local education authorities or the governors of the schools concerned. Appropriate directions issued by the Board of Education in conjunction with the Local Government Board for the prevention of the spread of infectious diseases occurring among children attending public elementary schools have long been in the hands of all local education authorities and school medical officers. The wisdom or propriety of closure or other action is obviously dependent on the local conditions of the case, upon which it is, of course, impossible for the Board to pronounce. Among such conditions is the degree of prevalence and severity of the disease, as well as the home or other alternative circumstances of the children thus excluded from school. The case of each school must be determined on its merits. It is, of course, essential that all children suffering from catarrhal symptoms, feverishness, or other illness, should at the present juncture be at once excluded, and in many cases it will be found advisable to close the whole school or, at least, departments or classes in the school. As a rule, school closure is more effective in rural districts than in towns. Playgrounds should not remain open when schools are closed. As regards the second part of my honourable friend's question, I have not, up to the present, thought it necessary to issue any general advice of the nature suggested by him. It is obviously impracticable to consider school children separately from other sections of the population which are not within the province of the Board of Education.

Answering Mr. A. WARD respecting a serious epidemic of influenza at the R.A.F. camp at Blandford, Dorset, Major BAIRD (Under Secretary to the Air Ministry) stated that the prevailing influenza epidemic reached the camp on Sept. 21st and had continued to the present date. The number of cases increased in the week ending Oct. 26th, during which 252 cases were reported. Of these 198 were sent to hospital. The number of deaths since Sept. 21st was 59. The average daily strength of the camp was about 15,000. Since the epidemic started five additional doctors and 19 additional nurses had been sent to deal with the situation. For administrative reasons, independent of the epidemic, the drafting of recruits to the camp had been stopped for a period of one week.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

MEETINGS OF SECTIONS.

Wednesday, Nov. 6th.

OPHTHALMOLOGY (Hon. Secretaries—Leslie Paton, Malcolm Hepburn): at 8.30 P.M.

Presidential Address:

Mr. W. T. Holmes Spicer: Changes in the Cornea after Inflammation.

Papers:

Dr. J. B. Christopherson and Major Archibald: Nocardia (Lutea) of the Lacrymal Gland.

Major Fenwick: Brittle Bones and Blue Sclerotics.

Thursday, Nov. 7th.

OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—Comyns Berkeley, J. S. Fairbairn): at 8 P.M.

Presidential Address:

Mr. J. D. Malcolm: Developments in Abdominal Surgery since 1834.

Paper:

Mr. John Adams: The Treatment of Ante-natal and Post natal Syphilis.

Members of other Sections are specially invited to attend.

Friday, Nov. 8th.

EPIDEMIOLOGY AND STATE MEDICINE (Hon. Secretaries—William Butler, M. Greenwood): at 5.30 P.M.

Paper:

Capt. Hawn, Capt. Hopkins, and Capt. Meader (U.S.A. Expeditionary Force): Outbreak of Typhoid Fever in Inoculated Soldiers.

RÖNTGEN SOCIETY, at the Royal Society of Arts, 18, John-street, Strand, W.C.

TUESDAY, Nov. 5th.—8.15 P.M., Dr. G. B. Batten: The Presidential Address (illustrated by lantern slides).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY, Nov. 4th.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Out-patients each day at 2.30 P.M.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY, Nov. 4th.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures on Public Health Problems under War and After-war Conditions (each Lecture will be followed by a Discussion):—

WEDNESDAY, Nov. 6th.—4 P.M., Lecture V.:—Prof. J. M. Beattie, M.D.: Infection and Disinfection in War Time, especially in Regard to the Present Outbreak of Influenza.

Appointments.

COOPER, J. S., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Clitheroe District of the counties of Lancs. and Yorks.

DESAI, H. M., D.Ch.O. Liverp., Surgical Officer in Charge, Durham County and Sunderland Eye Infirmary.

Vacancies.

For further information refer to the advertisement columns.

Birkenhead Borough Hospital.—Jun. H.S. £170.
Birkenhead Union.—Sen. and Jun. Res. Asst. M.O's. £350 and £300.
Birmingham City Sanatorium and Anti-Tuberculosis Centre.—Jun. Asst. M.O. £350.
Birmingham, Erdington Infirmary.—First Asst. M.O. £375.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Cambridge, Addenbrooke's Hospital.—H.S. £300.
Chichester, Graylingwell War Hospital.—Res. M.O. £1 per diem.
Dagenham (Temporary) Sanatorium.—Res. M.O. £300.
Dorchester, Dorset County Council Education Committee.—School Dentist. £350.
Edinburgh, Scottish Women's Hospitals.—Female Asst. M.O. £300.
French Red Cross, 9, Knightsbridge.—Dental Surgeons.
Glamorgan County Asylum, Bridgend.—Temp. Asst. M.O. £6 6s. p.wk.
Holborn Borough Council.—M.O. 52 guineas.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. £100.
Huddersfield County Borough.—Female Asst. M.O.H. £400.
Leeds City Infectious Diseases Hospital, Seacroft.—Asst. M.O. £300.
Leeds City Public Health Department.—Female Med. Asst. £400.
London Temperance Hospital, Hampstead-road, N.W.—Medical Registrar. 40 guineas.
Manchester County Asylum, Prestwich.—Locum Tenens. £7 7s. p.wk.
Manchester Education Committee.—Two Temp. Asst. M.O's. £400.
Manchester Northern Hospital for Women and Children, Park-place Cheetham Hill-road.—H.S. £150.
Montgomeryshire Education Committee.—School Dentist. £350.
Netley, Welsh Military Hospital.—M.O. £400.
Norwich, Norfolk and Norwich Hospital.—H.P. and H.S. £400 each.
Perth, James Murray's Royal Asylum.—Phys.-Superintendent. £800.
Plaistow Fever Hospital.—Asst. M.O. £300.
Sheffield, East End Branch of the Children's Hospital.—H.S. £150.
Stoke-on-Trent County Borough.—Temp. Tuberc. Officer. £350.
Wakefield, Clayton Hospital.—H.S. £250.
Western General Dispensary, Marylebone-road, N.W.—Hon. Oph. S.
York City.—Temp. Tuberc. Officer. £500.

Births, Marriages, and Deaths.

BIRTHS

ALEXANDER.—On Oct. 26th, at a nursing home in Edinburgh, the wife of R. Charles Alexander, M.B., Ch.B., F.R.C.S. Edin., Major, R.A.M.C., B.E.F., of a son.

BURTON.—On Oct. 23rd, at Princes-gate, S.W., the wife of Major C. F. Burton, M.C., R.A.M.C. (S.R.), of a son.

CLIFF HODGES.—On Oct. 19th, at Brompton-avenue, Liverpool, the wife of Major W. Cliff Hodges, M.D. Camb., R.A.M.C. (T.), of a son.

HENDERSON.—On Oct. 24th, at Brighton, the wife of Major A. T. Henderson, C.A.M.C., of a son.

YOUNG.—On Oct. 15th, to Tina, the wife of W. A. Young, B.Sc., M.B., B.S., Captain, R.A.M.C. (S.R.)—a son.

MARRIAGES.

GRIFFITH—SORANZO.—On Oct. 28th, at Palazzo Vidoni, Cremona, Italy, Arthur D. Griffith, M.B., B.S., F.R.C.S., Bt. Major, R.A.M.C. (T.F.), to Aurora, daughter of Conte Tomaso Mocenigo Soranzo and the late Principessa De' Soresina Vidoni, of Cremona.

JOSEPH—HOLMAN-HUNT.—On Oct. 22nd, Captain Henry Michael Joseph, M.C., R.A.M.C., to Gladys, only daughter of the late William Holman-Hunt, O.M., and Mrs. Holman-Hunt.

MARSHALL—PHILIP.—On Oct. 26th, at Mather's Hotel, Dundee, Major Geoffrey Marshall, R.A.M.C. (S.R.), to Belle, youngest daughter of George Philip, Dundee.

WALKER—NOSWORTHY.—On Oct. 24th, at Derby, Ernest H. Walker, M.B., Ch.B. (Manchester), to Alice E. Nosworthy, of Torquay. 34, Charnwood-street, Derby.

DEATHS.

CARTER.—On Oct. 24th, at South Side, Clapham Common, S.W., Robert Brudenell Carter, F.R.C.S., Knight of Justice of the Order of St. John of Jerusalem, late ophthalmic surgeon to St. George's Hospital, aged 90.

DEMETRIADI.—On Oct. 26th, at Southport, Lieutenant-Colonel Louis P. Demetriadi, T.D., R.A.M.C., M.D., F.R.C.S.E., in his fifty-sixth year.

MACKLEY.—On Oct. 29th, Ernest Herbert Alborough Mackley, L.D.S. R.C.S. Eng., of Vermont Dean Park, Bournemouth, aged 46.

PATTEN.—On Oct. 22nd, at Mount Park-road, Ealing, Charles Arthur Patten, L.R.C.P., M.R.C.S., aged 79 years.

SPENSLEY.—On Oct. 23rd, of pneumonia, at the Burdon Military Hospital, Weymouth, Frank Oswald Spensley, Captain, R.A.M.C.

TODD.—On Oct. 13th, at Dordrecht, South Africa, of pneumonia, Dr. C. Gordon Todd (late Captain, South African Medical Corps), younger son of the Rev. James and Mrs. Todd, of Sale, Cheshire.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical News.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The following candidates have passed the Final Examination and have been granted the diploma L.D.S. R.C.S. Edin.:—

Edward Clive Smith, London; Charles Henry McComb, Belfast; John Sharpe, Piquetberg, South Africa; Albert Donald Barnes, Hereford; and Richard Lisle Eskell, Port Elizabeth, South Africa.

THE Metropolitan Borough of Poplar is supplying, free on application at a number of depôts, electrolytic disinfecting fluid to be used as a mouth-wash and gargle for preventing influenzal infection.

A MEDICAL ASSOCIATION FOR EGYPT.—Hitherto there has been no organisation among medical practitioners in Egypt, and the lack of a representative body has long been felt. A committee has now been appointed to elaborate a scheme for an association or council to look after the interests of the medical profession. The draft project will be submitted to a general meeting of medical men, and if approved by them the Government will be asked to give its formal sanction.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.
War Surgery from Firing Line to Base. By Basil Hughes, Temp. Major, R.A.M.C. (T.), and H. S. Banks, Captain, R.A.M.C. (T.), and Others. 30s.

CHAPMAN AND HALL, London.
Out of the War? By Mrs. Belloc Lowndes. 7s.

CHURCHILL, J. AND A., London.
Text-book of Pharmacology and Therapeutics. By A. R. Cushny, M.D. 7th ed. 18s.
Surgery in War. By A. J. Hull, F.R.C.S. Preface by T. H. J. C. Goodwin, Director-General Army Medical Service. 2nd ed. 25s.
Diseases of the Eye. By J. H. Parsons, F.R.C.S. 3rd ed. 16s.

CONSTABLE AND CO., London.
The Life and Letters of Joseph Black, M.D. By Sir William Ramsay, K.C.B., F.R.S. With an Introduction dealing with the Life and Work of Sir William Ramsay. By F. G. Donnan, F.R.S.
The Future Citizen and his Mother (Chadwick Lectures). By Charles Porter, M.D. 3s. 6d.

Communications, Letters, &c., to the Editor have been received from

A.—Mr. F. W. Alexander, Lond.; Association for Moral and Social Hygiene, Lond.
B.—Capt. J. Brereton-Barry; Mr. J. Best, Lond.; Dr. C. R. Box, Lond.; Mr. J. L. Balderston, Lond.; Mrs E. M. Bahr, Lond.; Prof. B. Bell, Liverpool; Mr. T. Bennett, St. Albans; Dr. Bishop, Wylam-on-Tyne; Mr. J. C. Buchanan, Lond.; British Waterworks Association Lond.
C.—Mr. S. A. Cowper, Darlington; Messrs. Cassell and Co., Lond.; Dr. S. Chelliah, Colombo; Mr. J. Cabburn, Lond.; Messrs. Clement and Johnson, Lond.; Dr. J. B. Crozier, Lond.; Mr. W. M. Coleman, Harston.
D.—Dr. O. T. Dinnick, Lond.; Dr. H. A. Des Vœux, Lond.; Decimal Association, Lond.; Maj.-Gen. Sir B. Dawson, G.C.V.O., C.B., A.M.S.; Dr. R. Donaldson, Reading.
E.—Mr. D. L. Eadie, Edinburgh; Major R. C. Elmslie, R.A.M.C. (T.)
F.—Dr. C. E. S. Flemming, Bradford-on-Avon; Lt.-Col. N. Faichnie, R.A.M.C.
G.—Prof. E. E. Glynn, Liverpool; Garden Cities and Town Planning Association, Lond.; Lt.-Col. M. H. Gordon, R.A.M.C.; Mr. E. H. Glenny, Lond.; Capt. H. E. Gibson, R.A.M.C.(T.)
H.—Mr. W. H. Harris, Farningham; Dr. A. H. Hogarth, Aylesbury; Mr. V. J. Harding, Montreal.
I.—Incorporated Society of Chiropodists, Lond.
J.—Mrs. J. G. Jack, Kendal; Mr. M. H. Judge, Lond.
K.—Prof. H. Kenwood, C.M.G., Lond.; Mr. R. Kirkland, Wishaw; King Edward's Hospital Fund for London, Hon. Secs. of.
L.—Sir W. Arbuthnot Lane, Bart., C.B., Lond.; Local Government Board, Lond., Medical Officer of.
M.—*Municipal Engineering and the Sanitary Record*, Lond; Dr. W. C. Morton, Leeds; Medico-Legal Society, Lond.; Capt. A. L. McLean, A.A.M.C.; Mr. G. Mayall Bolton; Medical Research Committee, Lond., Asst. Sec. of; Prof. B. Moore, Lond.; Dr. J. Matthews, Lond.; Lt.-Col. J. N. MacLeod; Sir John W. Moore, Dublin.
N.—National Committee for Relief in Belgium, Lond., Hon. Sec. of; National Hospital for the Paralysed and Epileptic, Lond.
O.—Overseas Military Forces of Canada, Director-General Medical Service of.
P.—Dr. H. R. Prentice, Lond.; Mr. J. J. Perkins, Lond.; Mrs. E. Priestley, Birmingham; Major R. H. Paramore, R.A.M.C.; Mrs. C. W. Pocock, Portishead; Press Bureau, Lond.; Major J. Phillips, R.A.M.C.; Capt. E. Prideaux, R.A.M.C.
R.—Royal Earlswood Institution for Mental Defectives, Red Hill; Capt. E. D. Roberts, R.A.M.C.; Röntgen Society, Lond.; Royal Sanitary Institute, Lond.; Col. R. D. Rudolf, C.A.M.C.; Royal College of Surgeons of England, Lond., Sec. of.
S.—Mr. G. Stoker, C.M.G.; Capt. C. P. Symonds R.A.M.C.; Société de Biologie, Paris; Dr. G. E. Shuttleworth, Lond.; Mrs. D. W. Singer, Oxford; Mr. W. G. Spencer, Lond.; Dr. G. de Swietochowski, Lond.
T.—Major G. Taylor, R.A.M.C.; Dr. J. Tatham, Oxted.
V.—Mr. T. Vivian-Rees, Cardiff.
W.—Dr. L. A. Weatherly, Bournemouth; Dr. F. P. Weber, Lond.; West London Medico-Chirurgical Society; Dr. F. J. Waldo, Lond.; Col. A. Webb.
Y.—Mr. M. Yearsley, Lond.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

THE WORK OF THE LONDON PORT SANITARY AUTHORITY.

THE activities of the Sanitary Authority of the Port of London were described by Dr. W. M. Willoughby, medical officer to the port, in a lecture on the Obviation of Ship-borne Infections at the Royal Institute of Public Health on Oct. 23rd. The lecturer prefaced his remarks with a quotation from Gibbon's History which showed that in the reign of Justinian, a time not unfairly comparable with the present, plague was recognised as a ship-borne infection, while the direct infectiousness of the pneumonic form was then appreciated in distinction to the comparative benignity of the bubonic and septicæmic forms. The influence of wars and emigrations on the dispersal of the infection was also known. But it was not, he said, until the concerted work of the Indian Plague Commission from the year 1905 onward showed us the correlation between rodent, flea, and man in the spread of plague that precautionary measures had been effective. Gibbon had remarked that "the wind might diffuse that subtle venom, but unless the atmosphere be previously disposed to its reception the plague would soon expire in the cold or temperate climates of the earth," but the lecturer pointed out that the visitations of the past indicated all too clearly that no reliance was to be placed on the indisposition of England's atmosphere. While the absence of epidemic plague for generations showed the potency of this indisposition as the main factor in our immunity, sanitary measures which did not take the flea and rat into account were incomplete. No poison was more lethal to rats than that of plague, and as the rat population of a vessel was often wiped out during a voyage quarantine had acted as an efficient safeguard against the introduction of the infected rodent. Our immediate ancestors smelt a rat, opened the floor boards and found it, but the present generation was for the most part unfamiliar with the rat, dead or alive. The town-dweller and the rat now lived apart and sweeping epidemics of plague in England were impossible. But dock infections might still occur at points where Eastern trade existed. Prevention consisted in making every storage place for food rat-proof, in removing regularly and rapidly rubbish and discarded foodstuffs, and in a systematic reduction of the number of rats in any district by means of cats, traps, and poison. The inevitable residuum, isolated in small colonies on becoming plague-infected, might be wiped out by the disease without spread of infection. The recent Rat Order of the Ministry of Food had, the lecturer said, followed the correct line in recognising rattiness of premises as a responsibility, monetary and otherwise, of the owner of those premises, and through this Order he hoped that the atmosphere of England might be rendered yet more unreceptive for plague. International agreement laid down certain rules in the case of plague-infected ships, which included the medical inspection of crew and passengers, the disembarkation and isolation of the sick and suspected cases, the disinfection of infected articles and infected quarters, the destruction of rats on board either before or after discharge of cargo, and the observation and surveillance of contents. Dr. Willoughby described the detailed working out of these principles and the special importance of preventing infection by fleas. Other infections were lightly touched upon. In conclusion, the lecturer put forward a plea for a more general education of the public in the rudiments of these relatively simple but fascinating problems.

Dr. G. S. Buchanan spoke of the high degree of efficiency maintained by the London Port Sanitary Authority under circumstances of peculiar difficulty.

COLONIAL HEALTH REPORT.

Ashanti.—The Census of 1911 gave the population as 287,814—141,231 males and 146,583 females—but these figures were admittedly incomplete, and the population has increased since then. The Europeans in 1917 comprised 140 officials, 100 merchants, 122 engaged in the mining industry, and 20 missionaries—total, 382. Coomassie has a population of 24,000, of whom 4000 are described as Ashantis, 4000 as Coast people, 14,000 as North Country people (Hausas, Wangaras, Grunshis, Dagombas, Moshis, &c.), and 2000 as various. The medical report states that the general health of Europeans and natives in 1917 was not so good as in the previous year. There appears to be a steadily increasing tendency for the Ashanti and Hausa elements of the population to come to the Native Hospital for treatment. There was an outbreak of small-pox at Wenchi during the year, which caused 29 deaths out of 164 cases. There was also an epidemic of influenza in Coomassie. Of other diseases the most common were malaria and pulmonary and skin diseases. Of a total number of 140 European officials, with an average of 60 residents, 4 died and 6 were invalided. Among the European non-official population 10 were invalided and 1 died of hæmoglobinuric fever. The sanitation of the towns of Coomassie and Obuasi has been efficiently maintained, if not distinctly improved. A genuine wish for village improvements and the building of better houses is noticeable amongst the Ashantis. The Commissioner of the Western Province writes:—

"The natives of the country thankfully welcomed the visits of the medical officer and his subordinates when engaged in village improvements or employed in prophylactic measures against small-pox, and they brought their children in large numbers to be vaccinated. The alien settlements, however, were suspicious and gave some trouble, particularly the large Wangara population of Wenchi, who are singularly averse to any form of control."

ROYAL ALBERT INSTITUTION FOR DEFECTIVES, LANCASTER.

IT is refreshing in these days of pecuniary strain to receive the report of a charitable institution which has not to complain of financial stringency owing to the war. We have much satisfaction in congratulating the Central Committee of the Royal Albert Institution, Lancaster, on being able to submit in their recently issued fifty-fourth annual report so encouraging a statement as to their financial position. In the auditor's report the following passage occurs: "In Maintenance Account, it is satisfactory to note increases in donations, annual subscriptions, and payments for patients. Interest on invested funds is also higher." Of course, the committee have again to note a progressive increase in the average cost of maintenance, necessitating an increase of the charge for patients sent by public authorities, but not interfering with that for those paid for by necessitous relatives, for whom the original rates of reduced payments are retained. Altogether during the past 50 years the subscribers have elected 2158 inmates dependent either solely or in great part upon the charitable funds so liberally contributed by all classes of the inhabitants of the northern counties. The report concludes with a grateful acknowledgment of the support received in the past, and an aspiration towards increased progress in the future, adumbrating an "ambitious scheme" of enlargement when restrictions occasioned by the war have passed away.

The report of the Medical Superintendent (Dr. W. H. Coupland) for the year ending June 30th, 1918, records the daily average of patients resident as 732 (486 males and 246 females); 59 had been admitted, 39 discharged, and 19 had died, the mortality percentage having been 2·6 on the average number in residence. Eight out of the 19 had died from some form of tuberculous disease and 3 from epilepsy. The general health had been on the whole satisfactory, notwithstanding rationing restrictions in force.

PREVENTION OF VENEREAL.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Sept. 28th it is stated that in a police-court case, under 40 D, a bacteriologist gave evidence to the effect that his examination was negative. Is it not time the College of Physicians, or the Roy. Soc. of Medicine stated definitely whether the absence of spirochete, or of the gonococus, or the Waserman reaction, decided *absolutely* whether the individual concerned is, or is not suffering from syphilis or gonorea? Many think that the absence of the gonocous is not *evidence* that the individual is cured, or that he or she is non-infective, and the same of the Waserman test. It will be a pity if some case come into court when it can be shown that the bacteriological tests can not be relied upon absolutely. Therefore let us have a defenite reliable, and authorative statement.

Liverpool. ROBERT R. RENTOUL.

*** Dr. Rentoul states that he is in favour of phonetic spelling.—ED. L.

"A MEDIÆVAL MEDICAL AUTHOR."

To the Editor of THE LANCET.

SIR,—My attention has just been drawn to your paragraph under this heading in THE LANCET of Sept. 21st. Your correspondent may be interested to know that the French version of John of Burgundy's Tractate is not lost, but exists in the Bibliothèque Nationale, and was published by me in full in the Proceedings of the Royal Society of Medicine, Historical Section, 1916, Vol. IX., page 200. Experts in mediæval French consider, however, that this French version was most probably translated from the Latin, which exists in many MSS. enumerated by me in the same issue of the Proceedings of the Royal Society of Medicine.

On the other hand, the Hebrew text in the Bibliothèque Nationale, Fonds Hébreu MS. 1191, is not a complete translation of the work. It and another Hebrew text, which together do make an almost complete version, have just been published by Mr. Reuben Levy and myself in the "Annals of Medical History," Philadelphia and New York, Vol. I. No. 4.

I am, Sir, yours faithfully,

Oxford, Oct. 25th, 1918. DOROTHEA WARY SINGER.

The Bradshaw Lecture
ON
NEUROSES AND PSYCHOSES OF WAR.

Delivered before the Royal College of Physicians of London on Nov. 7th, 1918.

BY WILLIAM ALDREN TURNER, C.B., M.D.,
TEMPORARY COLONEL, A.M.S.; AND CONSULTING NEUROLOGIST.

MR. PRESIDENT AND FELLOWS OF THE COLLEGE,—Under the terms of the lectureship, the Bradshaw lecturer is free to promote the interests of medicine by a discussion of any relevant subject. I have undertaken, therefore, to bring to your notice a short account of the neuroses and psychoses of war, confining my remarks especially to the neuroses more directly attributable to the stress of active warfare and what has been popularly called "shell shock." Without this limitation it would have been necessary to have begun with a description of the neuroses and psychoses which occur during the training of the recruit. This, indeed, might be a fruitful introduction to the subject, as the nervous and mental disabilities of this period are instructive in relation to those of active warfare. During the early months of the war, under the voluntary system of recruitment, neurasthenic symptoms were not uncommon in association with conflicts in the minds of conscientious men, who were torn between duty to their country and their personal feelings, opinions, and habits.

NEUROSES AND PSYCHOSES OF TRAINING.

In more recent times, under compulsory service, many men have entered the army who are constitutionally and by upbringing and education unable to adjust their outlook to service conditions. In other words, the young soldier becomes neurasthenic owing to a failure of adaptation to a continued emotional cause and the struggle to bring about such adaptation (Dejerine). This failure may take the form of either a nervous or a mental disability.

In the neurasthenic type the symptoms are those well known in the neurasthenia of civil life—fatiguability, digestive disturbances, vague myalgic pains, and hypochondriacal feelings. This is a nervous reaction to camp life, and is frequently accompanied by fears and dreads in anticipation of what may happen when the soldier proceeds on active service, such as death or serious incapacitating wounds. A large number of these men are constitutional neurasthenics, and have suffered from a nervous condition previous to joining the army.[1]

Those who have had opportunities of working in the mental war hospitals know how frequently young soldiers, especially when below the normal standard of mental development, are prone to mental breakdown during the early months of training, and how readily any latent morbid or abnormal trend may be brought quickly to the surface under the stress of camp life and military discipline. (Henderson.[2])

PSYCHOSES OF WAR.

Although a large number of recruits with definitely neuropathic or psychopathic tendencies may pass through the period of training successfully, there remains a liability to breakdown when the soldier finds himself under the stress and strain of active service. Here the emotional causes are obviously more potent and more continuous, and the psychoses are the reactions to a situation which cannot be adequately met. Although the statistics from the mental war hospitals differ to some extent, one is struck by the numbers of mental defectives and of those with known psychopathic heredity or disposition admitted as patients. Approximately 10 per cent. of the patients coming into the mental war hospitals from overseas have had a previous attack of certified insanity.

A confusional psychosis is probably the most common type of mental reaction observed in soldiers coming from overseas. In many cases it is superimposed upon a foundation of feeble-mindedness. In others it forms the basic reaction and is attributable to a cerebral commotion, shell shock, or psychical trauma occurring in soldiers with a psychopathic inheritance. In both these types the prognosis is good, the duration of the confused state being relatively short and lasting from a few days to several weeks.

There is another variety in which a confusional psychosis is the early phase or the onset of an underlying and more deeply rooted disorder, such as dementia præcox. Eager[3] has recorded that amongst the large number of cases admitted to the Lord Derby War Hospital 28 per cent. belonged to the manic-depressive group, 19 per cent. were classified as mental deficiency and delusional insanity respectively, and 8 per cent. as dementia præcox.

Although the study of mental reactions attributable to stress of campaign is of great psychiatric interest,[4] I do not propose to continue the subject further, but ask you to accompany me to a neurological centre in France, where we shall have an opportunity of observing some types of cases illustrative of the neuroses of war.

CLINICAL TYPES OF WAR NEUROSES.

We would see amongst the patients men who had been sufferers from a war neurosis on previous occasions, and who had been returned to duty.

We would see also young and inexperienced soldiers who had given way to fear or alarm at their first experience of bombardment. Some of them would show the acute symptoms of fear in dilatation of the pupils, staring eyes, rapid action of heart, and sweating. Others would give the impression of having lost, at all events for the time, their self-respect and self-confidence. A few of them exhibit rhythmical tremors, which had, no doubt, been involuntary and irrepressible at first, but which were now within the range of voluntary control and susceptible of relief by distraction, persuasion, and encouragement.

There would also be patients suffering from fatigue and nervous exhaustion, requiring rest in order to restore them to duty. The symptoms complained of by these patients, in addition to a sense of weariness, consist of irritability and jumpiness, with difficulty in concentrating attention. Some would probably say that their sleep was disturbed by unpleasant dreams connected with their duties, and that they had difficulty in falling off to sleep and might waken with a start. Others might complain of palpitation, giddiness, breathlessness, and a feeling of oppression or anxiety in the region of the heart.

Our attention would be called to another class of case in which the symptoms are those of an anxiety neurosis. The patients are commonly young officers. A frequent history is that after he has been abroad for several weeks or months the officer begins to sleep badly and loses appetite. Worry and anxiety follow on this; he loses confidence in himself and thinks that he is incapable of doing his duty adequately. He becomes shaky, unduly emotional, and finds that his sleep is disturbed by nightmares referring to his experience of trench warfare. Even the waking hours may be distressful from the acute recollection of these experiences intruding into his memory. Headache, mental depression, and a fine tremor may accompany these symptoms, but the reflexes are normal, the tongue is clean, and the pulse of normal frequency. In the more exaggerated types fears as to his sanity, as to his ability to "carry on," as to whether his comrades may think he is a coward, begin to obsess him. This condition may continue, and the soldier perseveres with his work until a commotional shock, an upsetting experience, or bad news from home precipitates an incapacitating disability and he is sent to hospital.

On our progress through the wards our attention would be called to a class of case presenting very definite objective signs, such as we are accustomed to see more commonly in the neurological hospitals at home. Probably the largest class would show speech defects, such as mutism, deaf-mutism, aphonia, and stuttering. Others would present diverse types of tremor and tic-like movements. We would see various forms of paralysis, especially of the lower limbs, with disturbances of gait of the astasic-abasic type. We might see one or more cases of "bent back."

Examination would reveal the fact that these symptoms were of a functional or hysterical character, and that many of the patients had been admitted to hospital in a state of stupor following a shell explosion or burial.

STUPOR, DELIRIUM, AND AMNESIA.

The cases forming the next group are especially interesting, as they demonstrate what may be regarded as the most acute expression of psychoneurotic symptoms, due to fear, horror, and profound emotional or commotional causes. Stupor and delirium are the outstanding features, and of the two types one is distinguished by torpor or cerebral inactivity, the other by what has been called "visionary" or "oneiric" delirium. The symptoms of the stupor type are quite distinctive. In

the more severe class of case the patient is entirely unconscious of his surroundings; he lies motionless in bed and makes no reply to questions; his eyes show no recognition of what is before them; all the usual tests applied with the object of arresting his attention fail to provoke a response. A close examination reveals in many cases some rigidity of the limbs of the catatonic type. The deep reflexes may be normal or exaggerated; the pupil light reflex may be impaired or lost; the plantar response may be flexor or abolished. Urine may be passed normally, or catherisation may be necessary for a day or two. Swallowing is effected usually without difficulty.

In milder cases stupor is less profound. The patients may carry out simple actions, but in a slow and hesitating way. They present a dazed or confused appearance, are startled easily, and take little or no notice of what is going on around them. In the other type the delirium is accompanied by gestures. These patients would appear to be living as in a dream through a recent terrifying experience. When information has been obtained as to the onset of the symptoms it has been found to be connected with a psychical shock, such as the mutilation or burial of a comrade or friend from shell explosion.

The duration of the stupor varies. In some instances the intensity of the stupor may have passed away before admission to hospital. It lasts usually from a few hours to several days and may pass off suddenly or gradually. This symptom is found mainly in young soldiers.

With the disappearance of the stupor the soldier may find that he is mute, deaf, paralysed, or unable to walk without assistance, the subject of a tremor, or, very commonly, the victim of an anxiety condition in which intense headache, battle dreams, insomnia, vertigo, lack of mental concentration, and fatigue are prominent symptoms. The memory for the stupor period and probably also for some days antecedent to it is obliterated. In the milder cases it is merely confused and uncertain. Cases may be found in which the memory of the whole life antecedent to the shock has been wiped out; and there are other cases in which the memory of the specific emotional episode which precipitated the stupor may be retained, though that of the subsequent days is abolished. The amnesia of cerebral concussion is probably more profound than in the emotional cases and is of both retrograde and anterograde type. It is to this period of stupor and amnesia that the soldier applies the term "loss of consciousness" or "loss of memory."

The majority of the cases of stupor and delirium are examples of psychoneurotic mental states, attributable to fear and horror, but phenomena essentially identical to them may be found in men who have been exposed to a cerebral concussion or commotion.

ORGANIC AND FUNCTIONAL CONDITIONS.

At all times there may be a difficulty in the differential diagnosis of the concussion from the so-called emotional cases, but such diagnosis is more easily effected the earlier the patient is brought under observation. A careful neurological examination of men who have been exposed to the effects of shell or mine explosion or who have been buried and are suffering from loss of consciousness, stupor, mental confusion, delirium, or paralysis would in some instances reveal the physical signs of minor structural lesions of the brain or spinal cord.

In the writings of the earlier observers on this subject, and in some at the present time, there is a tendency to attribute many of the phenomena of shell shock and the war neuroses to physical causes, such as concussion, fatigue, or gas-poisoning, and perhaps to ignore, or at all events underestimate, the influence of the psychical factor. A school of the French neurologists in particular has laid stress upon the importance of "cerebral commotion" in the causation of the psychoneuroses of war.

The modern school of psycho-pathologists, on the other hand, may incline too much in the contrary direction, and claim all the symptoms of the war neuroses to be of psychogenetic origin. This school maintains that the neuroses of war arise from an inability on the part of the soldier to react to his environment; in other words, they are brought about by a failure of psychological adaptation and to the repression of one of the conflicting emotions which arise therefrom.

In many of the published records of cases of war neuroses and shell shock the distinction has not been drawn with sufficient clearness between those symptoms which arise in consequence of physical and psychical causes respectively; nor is this altogether an easy matter, even when each case has been examined neurologically in the earliest stages after the shell explosion.

We may now proceed to examine in fuller detail the origin of the neuroses of war, and in particular their relation to the sudden incapacitating agency of "shell shock."

CONCUSSION SHOCK.

Some of the French neurologists draw a distinction between direct and indirect concussion.[5] In the former the symptoms are those of structural lesions of the central nervous system. In the latter there is no visible external injury, but a "cerebral commotion" is produced indirectly by exposure to the forces generated by the explosion of powerful shells through atmospheric vibrations transmitted to the nervous tissues by the cerebro-spinal fluid.

The immediate clinical effect upon the soldier of cerebral commotion due to the forces generated by the explosion of shell or mine is a loss of consciousness which may last from a few minutes to several days. This may give place to a partial loss or "twilight state" of consciousness, with which may be associated mental confusion or a "visionary" delirium resembling that which has been described.

A detailed neurological examination, therefore, is necessary in quite the earliest stages of all cases in order to determine the existence or otherwise of structural changes in the central nervous system.

We are indebted more especially to the French neurologists,[7] working in the neurological centres of the French Armies, for observations on this point. The following have been observed in the earliest stages of shock: muscular relaxation and hypotonia, impairment or abolition of the deep reflexes, the presence of an extensor plantar response, retention of urine, inequality of the pupils, and impairment of the light reflex, hæmorrhages into or rupture of the retina, and voltaic vertigo. The examination of the cerebro-spinal fluid during the first two or three days following the shock may exhibit blood staining, raised pressure, increase of the albumin content, and sometimes a lymphocytosis.

These objective signs may be quite transitory, and disappear rapidly within a few days, so that when the patient is re-examined after a short interval, no evidence of their existence is detected; but the presence of other symptoms may be observed. It is most unlikely that concussion, pure and simple, unaccompanied by any emotional element, gives rise to psychoneurotic symptoms. There is, however, a class of case probably belonging to the suggestion hysterias in which early organic symptoms may be succeeded by those of a hysterical character.

"TRAUMATIC NEUROSIS."

It would appear, therefore, as if minor recoverable changes of a structural character due to "commotion" may play an indirect part through suggestion and association in the pathogenesis of those symptoms, which disappear under persuasion. This leads to the subject of "traumatic neurosis," the original idea of which was that the nervous and psychical symptoms were dependent upon organic lesions of the brain arising in consequence of the trauma. A conception more in harmony with current psychological doctrine attributes the symptoms of the neurosis to psychical causes. Farrar [9] has thus expressed it:—

> "The injury of nervous tissue is not necessarily the cause of any possible manifestations which may follow, but it may serve as the starting point of certain trains of association which need never be fully in the consciousness of the patient, but which nevertheless eventuate in the developed fixed neurosis, with all its psychical, neurological, and somatic phenomena."

The chronic symptoms of the fixed neurosis or sequelæ of concussion are, on the neurological side, persistent and often severe headache, photophobia, hyperæsthesia to sounds, vertigo associated with labyrinthine hyperæsthesia, insomnia, and battle dreams. On the psychological side, loss or perversion of memory, irritability, loss of self-confidence, defective concentration and slowness of thought, over-emotivity, depression, anxiety, and even melancholia. Amongst these symptoms are several which are more characteristic of the anxiety neurosis, such as over-emotivity, "terror dreams," anxiety and depression. It is unlikely that concussion gives rise to anxiety unless this neurosis was in process of development at the time of the shock. Concussion, therefore, happening to soldiers in whom neurotic symptoms are already present, may cause a sudden accentuation of the anxiety picture.

Although the symptoms mentioned may scarcely be regarded as peculiar to cerebral commotion in the orthodox sense, they are characteristic of quite a numerous class of patients in the war hospitals at home. The course of this disability is always protracted and improvement may not take place until after many months. From the purely military standpoint the class is important, as a relapse almost invariably follows a return to active service. Moreover, it is always a difficult matter to determine just the point where the neurosis merges into a subconscious or partially conscious exaggeration of symptoms. So many influences combine to favour exaggeration or prolongation of symptoms in soldiers, such as return to further service, permanent incapacity, and considerations over pensions, that there is no question in the whole range of psycho-neurotic disorders upon which medical officers have greater difficulty in giving a decision. But malingering in the sense of being a conscious and reasoned simulation or creation of a pathological picture for the purpose of deceit is rare in our military neurological hospitals.

FAILURE OF PSYCHOLOGICAL ADAPTATION.

Contemporary psycho-pathologists maintain that all neuroses are "reactive" disorders—that is to say, they are the consequences of a failure of psychological adaptation or readjustment to environment. Associated with the process of readjustment is repression, which, as Rivers[11] says, is not in itself harmful, but only under conditions in which it fails to adapt the individual to his surroundings.

The psychological history of every individual will reveal how far he has been able to adapt his mental outlook to the ordinary and accidental circumstances of his life.

On entering the Army, as we have seen, men may break down owing to a failure to react normally and to readjust themselves to the conditions of military service, discipline, and training.

On entering the zone of the active operations of war circumstances calling for adaptation and readjustment at once present themselves, and it is remarkable how large is the number of men who are able within a very short time to react physiologically and maintain their nervous health for long periods under the exacting conditions which characterise modern warfare. It is not easy, for various reasons, to estimate the number of men admitted to hospital on account of war neuroses and the effects of shell shock, but an approximate estimate puts the number at from 5 to 6 per cent. of the total sick transferred to the hospitals at home.

It is well known that soldiers wounded physically do not as a rule suffer from shell shock, although no doubt they have been exposed to the effects of shell or mine explosion just as have the unwounded. Wiltshire[12] explains the immunity of the wounded on the ground that a physical wound neutralises the action of the psychical causes of shell shock, but it is more likely that the somatic wound, being the ideal form of relief, is to the soldier the fulfilment of his wish to get away from an intolerable situation. Both anxiety and hysterical symptoms may appear later on, when the wound is healed. In all warfare, but especially in the trench form, which has been a special feature in the present war, numerous factors are at work to impair the soldier's resistance.

PRODROMATA OF "SHELL SHOCK."

It has been stated by one writer on the subject (Forsyth[13]) that the situation derives its psychical importance from the fact that it involves the risk of death.

Core,[14] in a suggestive paper on "Instinct Distortion or War Neurosis," points out that in modern warfare men are daily put into positions of imminent danger; the danger to life under certain conditions of military duty may be so great as to render death a practical certainty.

MacCurdy,[10] who has written an instructive paper on the war neuroses, gives a graphic account of the development of the anxiety states, which are amongst the commonest of the war neuroses. This writer has referred in detail to the mental conflict in soldiers on active service, and officers in particular, between desire to continue on duty and the repression of an increasing feeling of incapacity and apprehension. The soldier becomes fatigued and his adaptation becomes weakened and finally lost. He feels every day more acutely sensitive of the horrors around him. He becomes apprehensive and his courage is forced. He begins to feel ashamed that he may be regarded as a coward by his comrades. He grows mentally and nervously more unstable. He regards as a weakness the thought of going sick. He fears that he may not be able to hide his fear.

Under the influence of mental conflicts such as these the soldier may resort to reckless and daring deeds. He becomes hypersensitive, irritable and jumpy, and his sleep may be disturbed by dreams connected with his duties. Eventually the idea develops of how he can escape from an unbearable situation, and sometimes with this the desire for death and thoughts of suicide.

When this degree of mental anxiety and depression has been reached, and in many cases long before, any shock may precipitate a breakdown. Amongst such shocks may be horrible sights, partial burial in consequence of shell or mine explosion, an unusually dangerous situation, a serious disappointment or bad news from home, but most common of all a cerebral concussion or commotion from shell explosion. The effect of one or other of these traumata, but especially the last, is the onset of a stupor, a delirium, or an amnesic "fugue."

PSYCHOLOGICAL CONTENT OF STUPOR.

The acute or major symptoms of the war neuroses follow upon the shell explosion or other precipitating cause.

The onset of these symptoms occurs usually under two conditions. First, they are observed as the soldier recovers from a stupor or amnesia of the onset and duration of which he has no recollection. In some cases, however, a brief interval may elapse between the shell explosion and the loss of consciousness, in which an emotion of intense fear or horror may be active.

Secondly, the symptoms may develop after an interval of variable duration from the shock, during which the soldier may have attempted to "carry on," may have been found wandering behind the lines in a somnambulistic "fugue," or may have been able to find his way back, alone or assisted, to a regimental dressing-station or ambulance. In this last event the memory of what has occurred is retained, although the mental perspective may be blurred, and the man may state that he "fainted" or was momentarily stunned at the time of the shock. These patients may be able to describe the circumstances of the shell explosion or give a vivid account of the horrible sights which they had seen.

As already described, the shell shock is the coping-stone or precipitating agent in a series of mental pre-occupations which may have troubled the soldier for weeks or months. It will be of interest, therefore, to analyse, so far as this is possible, just what is the psychological content of the stupor, as the effect of it upon the soldier's mind is such that he traces the development of his subsequent symptoms mainly to the "loss of consciousness" or "loss of memory" which he associates with the shock. In some cases stupor-amnesia is of "dynamic" nature, arising from a cerebral concussion or commotion. In other cases it is "functional" and of a psychical character, but it is not unlikely that the latter may emerge from an original transient commotional loss of consciousness.

W. Brown,[15] who was for some months in medical charge of a neurological centre in France, says that an examination of many of these cases under hypnosis shows that there is a dissociation or splitting of the personality rather than a true loss of consciousness. He is of opinion that the stupor-amnesic phase corresponds to a period of subconscious emotional development dominated by fear and not to the working merely of suggestion. Acting on this hypothesis, he has treated his patients by means of light hypnosis, during which they go through their trench experiences, and in this way "work off" the suppressed emotion. It is this which, in his opinion, brings about the return of the power of speech, and not direct suggestion.

Myers,[16] who also has had favourable opportunities of studying cases of shell shock in the stupor phase, states that under hypnosis these men often become excited, and not infrequently show clear evidence of living again through scenes which come vividly to their minds. In his view, dissociation arising from inhibition is the fundamental cause of the effects of shell shock.

MUTISM AND ASTASIA-ABASIA.

It has been mentioned already that certain objective functional symptoms may be observed as the soldier emerges from the stupor which follows a shell concussion or psychical shock. Of these the most important are mutism, deaf-mutism, and the minor speech defects—aphonia and stuttering. Indeed, mutism and deaf-mutism are prominent symptoms during the period of stupor, and are attributable

to the inhibiting influence of the fear or horror which underlies the stupor.

Mutism is accompanied frequently in the earlier stages by other symptoms of the neurosis, such as headache, tremors, twitchings of the limbs, and insomnia; and, apparently as a kind of counterpoise to the dumbness, a certain fluency of expression in writing is not uncommon.

Myers, who has made a special study of mutism in relation to shell shock, states that in nearly every instance mutism is closely dependent on some form of stupor and is a relic of that condition after it has passed off. As he regards stupor as a state of functional inhibition, it is not difficult to understand that inhibition should disappear last in the case of hearing and speech, which are the two main channels of intercourse with others.

Another and less common motor disability resulting directly or indirectly from the effects of shell shock is astasia-abasia, in which on attempts at walking the limbs are incapable of action, in spite of obvious effort to move them. This paraplegic disorder may be accompanied by clonic tremor. It is observed in many atypical forms, some of which resemble the disordered gait accompanying organic disorders of the nervous system.

A variety of this disability is accompanied by anxiety, in which the patient is obsessed by a fear that he is unable to walk; he clutches at any support; he can only be made to take a single step forward, and if he puts one leg forward he quickly draws it back, certain that he is about to fall.

These disabilities of speech and gait, if left untreated in the early stages, may become "habits" and join the other functional disorders described under hysteria as unconsciously developed "defence mechanisms."

ANXIETY AND DEPRESSION SYMPTOMS.

The anxiety neurosis and anxiety depression are amongst the most common symptoms of the war neuroses. They may occur alone or in association with mutism and paralytic symptoms. We have already seen the development of an anxiety neurosis prior to the receipt of the psychical shock or cerebral commotion. The effect of these agents is to determine a more acute development of symptoms, which incapacitate the soldier and render him temporarily unfit for duty. The outstanding symptom of the anxiety neurosis is the recurrence of terrifying nightmares or "terror dreams" which torture the patient during sleep, and in consequence add to his troubles a fear of going to sleep.

Mott,[17] who has made a study of them, says that although the soldier sometimes may have no conscious recollection of the dream he may wake up suddenly in terror, bathed in perspiration, or he may have been heard to shout in his sleep and seem to go through a pantomime of fighting with bombs, rifle, and bayonet.

The patient's progress towards recovery may be estimated largely by the degree and frequency of his dreams. The first sign of recovery from the neurosis is when the dreams no longer wake the patient, although he may remember that he has had them. As the patient continues to improve the element of fear disappears from his waking life and in the course of time from the dreams. (Core.)

The prominent mental symptom of the anxiety neurosis is depression, coloured by underlying fears and dreads. This depression is not continuous, nor is it of the negative type characteristic of the melancholic. It may be revealed outwardly by a drawn and anxious facial expression, and a lack of interest or of desire for companionship. There are periods when the patient is relatively free from anxiety, but such spells of intermission may be broken by apparently causeless waves of depression, accompanied by anxiety and apprehension, and often associated with the intrusion into consciousness of the memory of a particular and unpleasant incident of war experience.

Rivers has pointed out that many of the most trying and distressing symptoms of war neuroses are not the direct result of the strain and shock of warfare, but are due to the attempts to banish from the mind distressing memories or painful affective states which have come into being as the result of war experience.

Rows[18] has shown that of equal and perhaps greater importance in the maintenance of the anxiety symptoms in soldiers, after the more acute or immediate symptoms of the war shock have passed away, are the memories of experiences in earlier life, with which a strong emotional tone is connected. These memories may be revived in dreams, which are often added to the war dreams; or they may be associated with delusions and hallucinations of hearing, often of a persecutory type.

Cases such as those last mentioned, and they are not so uncommon as might be supposed, require prolonged mental analysis and much patience for their elucidation. If the patient can be brought to understand the nature of his trouble, to face it, and to recognise in it simply a memory of the past, the anxiety will lessen and eventually disappear.

An objective sign of the anxiety neurosis observed at the outset and subsequently is profound loss of body weight. This may occur to a remarkable extent, up to as much as one or two stones. The recovery of the weight is coincident with the disappearance of anxiety and general improvement in the patient's health. Lowered blood pressure and an unusual degree of fatigue on physical effort are associated phenomena.

A number of those who suffer from the milder forms of the anxiety neurosis, coming home from overseas, recover in a relatively short time, varying from a few weeks to three or four months, under conditions entailing rest, quiet, and attention to sleep. About an equal number require special psycho-therapeutic attention before they find relief from their more persistent symptoms. But if the mental disorder has become fixed and systematised the difficulties may be great, and recovery will not always take place.

SYMPTOMS IN OFFICERS AND MEN.

It is a common observation that symptoms of anxiety and so-called neurasthenia are more common in officers, and that the more objective symptoms of hysteria—mutism, contractures, paralysis, astasia-abasia—are more frequently observed in men. In a general way this is true, but a combination of anxiety-depression and gross hysterical symptoms is by no means uncommon amongst men in the ranks.

Several explanations of this difference have been offered, but the most likely reason is found in the position of greater responsibility in which the officer is placed, and to the mental struggle which he undergoes in order to banish from his mind doubtings as to his adequacy or competency. The statement has been made that the mental background of hysteria in the men is an attitude of antagonism to the fighting, accompanied by an idea of release from an unbearable situation (McCurdy). This release may be obtained through several agencies, but a slight concussion, a psychical shock, partial burial, a minor and not necessarily incapacitating wound, an accident or an illness, may be sufficient.

HYSTERIA IN SOLDIERS.

The functional disorders of speech have been given separate mention, as mutism is due to dissociation arising from inhibition or subconscious emotional development during stupor. Interference with consciousness, indeed, appears to be the crucial test of so-called "shell shock."

In Dejerine's[19] view emotion alone is much more powerful than suggestion in creating symptoms by dissociation, although he admits the secondary rôle of suggestion in the persistence of hysterical symptoms.

Babinski,[20] on the other hand, holds that suggestion plays the essential part in the production of hysterical phenomena, and that the neurology of the war has strengthened in his mind the idea of the indispensable rôle of suggestion in their production.

It has been observed by all workers in the neurology of the war that hysterical manifestations are less frequent and less striking in the front lines. It is when the soldier is removed to calmer surroundings away from danger, such as a casualty clearing station, that the psycho-neurotic condition comes to light. If the patient is not treated suitably at this period the emotion which causes the symptoms becomes fixed and more deeply rooted the older its inception. Hence hysterical paralyses, contractures, disorders of speech, of hearing, of gait, and of vision are more numerous in the base hospitals, and especially in those at home.

Local trauma, such as a minor gunshot wound when applied to any part of the body, may produce a psycho-neurotic disturbance in a predisposed person. It acts through auto-suggestion, as well as through emotion, in that it creates the idea of an organic disorder and constitutes the agent which fixes the neuropathic condition.

The onset of local pain also, with or without bruising of the part, may act as a determinant of a functional disorder. Following upon a fall or being thrown against some object in consequence of shell explosion or burial, but without any

loss of consciousness, the soldier may complain of a severe pain in the back, which may be followed by loss of power in the legs of a functional character. In other cases the pain may interfere with extension of the spine. In order to relieve the pain an attitude of flexion of the body is assumed, and the condition known as "bent back" or camptocormia is evolved. This is primarily an antalgic posture, which may eventually lead to a contracture of the muscles of the trunk of hysterical character.

Hysterical contractures of the hand or foot are frequently the outcome of a wound of the arm or leg, with or without implication of the peripheral nerves of the limb. The exciting cause may be anything from a slight and superficial abrasion to a penetrating gunshot or shrapnel wound. Sometimes the contracture instantaneously follows the receipt of the wound, but in the majority of cases it would appear to be the outcome of suggestion following immobilisation of the limb in a sling, splint, or other mechanical apparatus.

It is not exceptional to find paralyses and contractures preceded by more or less vague pains in the joints of limbs which have been bruised. These pains may be the origin of hysterical paralyses or contractures, apparently of spontaneous origin, and which persist long after the pain has disappeared. Hysterical disorders, moreover, may develop while the soldier is in hospital suffering from a medical or surgical disability, connected or not with war experience, such as trench feet or appendicitis.

Most of the war hysterias, if allowed to become habitual, are eventually "defence mechanisms," developed unconsciously, but persisting as reactions against various contingencies, of which the chief is a desire not to return to the firing-line or, indeed, to any form of active warfare.

Any suggestion of organic disease on the part of the medical officer, on whose opinion the soldier rightly lays great stress, should be carefully avoided, as the latter is always ready to accept and retain in his mind any suggestion that he is not likely to recover.

TREATMENT OF WAR NEUROSES.

It is a matter of practical experience that the hysterical symptoms of the soldier can be cured rapidly and effectively by a well-directed and convincing psychotherapy, consisting of suggestion, persuasion, and re-education. On the contrary, their duration and persistence may be prolonged indefinitely by repeated changes from one hospital to another and by unsuitable and misguided methods, by which is meant a therapy promoted to suggest to the patient that he is suffering from a serious disability of organic nature, especially when this treatment is carried out in an atmosphere of sympathy and hero-worship. Treatment given at spas, where great attention is paid to electrotherapy, balneotherapy, and massage, undoubtedly tends to fix the neurosis in the patient's consciousness.

It is universally admitted that the sooner soldier patients suffering from any form of functional nervous disorder are submitted to a therapy in accordance with the psychogenetic origin of their symptoms the more rapid and satisfactory is the cure.

PROVISION FOR TREATMENT OF THE NEUROSES IN THE ARMY.

Early in 1915, in consequence of the large number of cases of this character requiring expert diagnosis and treatment, the Director-General of the Army Medical Service established neurological sections in all the general Territorial hospitals in the United Kingdom, under the care and direction of physicians who had special knowledge of, and experience in, diseases of the nervous system. A limited number of special hospitals were also set up for patients suffering from the more obviously psychical effects of shell shock and the war neuroses, and who were not suitable for treatment in general hospitals.[22]

As time went on fuller knowledge and larger experience of these cases were acquired from a study of them in the special hospitals. It became evident that the multiform symptoms of the war neuroses and minor psychical disturbances following stress and strain of the campaign were of psychogenetic origin, and that a knowledge of normal and abnormal psychology and of mental disorders was essential in order to obtain correct insight into diagnosis and skill in treatment.

In consequence a larger measure of success attended the treatment of those patients in special than in general hospitals, where the essential conditions of treatment were not available. Numbers of soldiers, therefore, were being discharged from the service on account of functional nervous disorders of a kind curable under proper conditions of treatment. In order to remedy this state of affairs it was necessary largely to increase the number of special hospitals, to divert as far as this could be done the admission of functional cases from the general to the special hospitals, and to make provision for the training of special medical officers. Recommendations based on these principles were laid before the Director-General at a conference of neurologists and psychologists at the War Office in the autumn of 1917, and have now largely been carried into effect.

Training of Special Medical Officers.

In order to meet the needs of the special hospitals a training centre for medical officers was established in connexion with the Maghull Military Hospital, under the direction of Lieutenant-Colonel R. G. Rows, who has done so much towards developing the psychological treatment of the war neuroses. In addition to acquiring a sound clinical knowledge of these disorders medical officers are grounded in the principles of psychology and psycho-pathology. I mention this especially, as it is the first and at present the only school of clinical psycho-pathology in this country, although other training centres are now being established. It is the hope of those who are interested in this branch of medicine that so favourable an opportunity of continuing a school of this character should not be allowed to lapse, and that something should be done during the period of reconstruction after the war to establish on a permanent basis and for the benefit of the civilian patients one or more institutions similar to that which has been founded to meet the urgent claims of the soldier.

Principles of Treatment of the War Neuroses.

There would appear to be general agreement upon the value of the segregation of soldiers suffering from the neuroses of war and three to four years' experience has justified the principle. It is essential that these patients, when segregated, should be under specially trained medical officers and that "an atmosphere of cure" should pervade the special hospital. The great value of segregation is that all patients may be studied individually and all agents determining causation, exaggeration or prolongation of symptoms may be sought out and eliminated. There is no evidence that in properly conducted hospitals these patients imitate each others' tremors or abnormal gaits, while it is well known that in general hospitals the eccentricities of conduct and behaviour of the hysterical patients make them objects of curiosity and often of humour to the other patients.

It has long been recognised that the sooner the patients are brought under skilled treatment the more rapid and satrsfactory is the cure. By these means the symptoms which in the early stages are removable and "fluid" are prevented from becoming fixed and a "habit" established. The French Military Medical Service recognised this early in the war and established neurological centres in the zones of their armies. In consequence of the success attending the treatment of the war neuroses in these centres similar centres were established in the areas of the British armies in the winter of 1916–17.

A large number of cases of war neuroses in the early stages of their disability derive great benefit from a modified rest cure. In the later or "habit" stages a judicious combination of suitably directed psychotherapy and selected occupation, according to the mental and physical fitness of the soldier, gives the most satisfactory results. Occupation further supplies the best means of grading the soldier when the time arrives for his discharge from hospital to duty.

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FACTORY AND WORKSHOP CONDITIONS AND THE PREVALENCE OF PULMONARY PHTHISIS:

THE NEED FOR AN INDUSTRIAL HEALTH SERVICE.

BY BENJAMIN MOORE, D.Sc., F.R.S.

THE recent inspiring speech of the Prime Minister, dealing with industrial health conditions after the war, has led the civilised world to hope for the dawn of a new era, in which all the resources of science and research will be as strenuously employed in devising means for the preservation of life, health, and happiness as they now are in the invention of instruments of destruction and the production of untold suffering and human misery. The recent Census of physical fitness for military service has, moreover, revealed appalling shortcomings in the physique and health of our nation, which possesses a well-deserved repute as one of the healthiest and most hygienic of all civilised peoples.

This being the case, it is little wonder that the attention of both statesmen and people is turned with one accord to the urgent problem of applying the knowledge of science to the eradication of disease and the evolution of a physically fitter race. If disease caused, as is so commonly erroneously supposed to be the case, an elimination of the unfit, then the recent Census ought to indicate that Great Britain would soon be inhabited by a superbly fit race, for it contains assuredly a sufficient number of people who have been attacked or are now suffering from the ravage of disease, hitherto unsuspected, and unrevealed by our present methods of attempting to bring the doctor in touch with the patient.

But disease is unfortunately no eliminator of the unfit, and never was; it is merely a blind destroyer, like the mechanism of war, and its bullets fall like rain upon the just and the unjust, the fit and the unfit, and maim and slay both alike indiscriminately. The fittest individual to resist and survive in an unhealthy environment may not be the fittest to survive in a healthy environment, and it is the latter, not the former, that is required for the higher purposes of the best civilisation.

Phthisis has deprived the human race of some of its greatest geniuses at the period of their maximum productivity, and the loss to civilisation has been incalculable. At the same time that this disease has robbed the world of men and women of the highest mentality there exists not an iota of proof that the destruction of the millions who have succumbed to it has by one jot improved the physique of any race. Rather by the misery and semi-starvation which have followed the decease of parents the physique of the race has deteriorated, and if tuberculosis could be eliminated the general standard would improve, for susceptibility to the *Bacillus tuberculosis* by no means connotes general physical debility.

Incidence of Phthisis.

During the past few years I have been engaged in a series of efforts to study in how far the rate of incidence of phthisis in the different sections of the community varies with the nature of the employment, and the strain of living conditions, such as indoor and outdoor work, and prolonged or irregular hours of employment. For the purposes of this inquiry I have made many observations of the actual conditions of work in those occupations most heavily hit by this disease during prolonged visits to workshops, and investigations of workmen in such crafts after long periods of overtime; secondly, I have studied statistically and individually the insurance cards since the beginning of operation of the National Health Insurance Act; and, lastly, I have investigated by means of the returns of the Registrar-General the effects of the aggregation in workshops of men engaged upon urban types of labour as distinct from the effects of urban housing as shown by the incidence amongst the female urban populations.

The results of the last-named type of inquiry are so striking and demonstrate so clearly the effects of urban types of employment in increasing the prevalence of phthisis that they deserve some brief description at a time when it is becoming so essential to conserve the young adult male population. The other methods mentioned will only be used incidentally to point out methods by which the evil may be minimised.

It is fairly well known that phthisis destroys more lives amongst males than amongst females, it is less known that this applies only to urban conditions of life and that the exact reverse holds for rural dwellers; nor is it appreciated that the greater death-rate amongst males is entirely due to the modern conditions of factory and workshop life, and did not exist 70 years ago. Again, up to the period when employment begins, or at least began before the war—that is to say, the fourteenth or fifteenth year of life—the death-rate of females from phthisis is about 50 per cent. greater than that of males, and between the tenth and fifteenth years, whether in town or country, the death-rate from phthisis of girls is almost double that of boys.

Until the twentieth year is reached the mortality in both sexes is considerably greater in rural districts than in urban districts, between the twentieth and thirtieth years the conditions become reversed, and after the thirtieth year there commences an enormous preponderance of the disease amongst urban males which is not shared by urban females, and no such disparity is observable between rural males and rural females.

Economic Importance of Mortality from Phthisis.

The enormous importance of these variations may be appreciated from a study of the accompanying graphs, in which the death-rates have been calculated and plotted at different age-periods from the figures given in the last published decennial report of the Registrar-General for the decennium 1891–1900.

It scarcely strikes the imagination when flat rates at all ages for males and females in town and country are given, such, for example, as that, per million living, there die annually 1750 urban males, 1250 urban females, 1317 rural males, and 1240 rural females. But when the death-rates are plotted graphically and it becomes apparent that nearly all the differences lie in the main working period of life between 25 and 65 years of age, and that in this all-important interval rural males and both urban and rural females possess death-rates lying nearly at the same level, while urban males on the average throughout the whole of England *die at double this rate or over*, then it becomes manifest that the sanitarian stands face to face with a great problem worthy of the completest investigation.

When it is remembered that the vast majority of the males of the country are engaged upon urban occupations, it is easily realised that this doubled death-rate from phthisis means an annual loss of several thousand males in the economically most efficient period of life. From this the purely materialistic standpoint alone, each such life is worth some hundreds of pounds to the community, so that the aggregate annual loss from deaths alone far exceeds what it would cost to limit the loss on the lines presently to be proposed. The death-loss alone is, unfortunately, not the only toll, for millions of pounds annually are lost by the incapacity for work of those suffering from the disease. In the next place, these sufferers are a constant source of danger as carriers of disease to those who work or live with them, and if the great excess of phthisis amongst these urban males could be cut off by tackling its causes at their sources, there would doubtless occur a decrease in the incidence of phthisis amongst all the rest of the community.

Lastly, this enhanced rate amongst employed urban males, which is responsible for the death of about one urban male in every five dying between 25 and 65, is one of the causes of disparity in numbers between males and females in the physiologically reproductive period of life. This disparity was sufficiently marked before the war and is now being accentuated by the large loss in young adult male life, so that any influence which can be set to work to reduce the male death-rate from phthisis towards that obtaining amongst females is also highly desirable on sociological grounds.

Causes of the Disparity in Incidence.

Before proceeding to discuss the remedial measures which ought to be set in action, some additional discussion of the causes of the disparity is essential, since these measures themselves must be based upon the true causation of the phenomenon.

In the first place, the enormous difference during the working period of life between urban and rural males is not due to housing conditions, for if this were so similar differences ought to be seen between urban and rural females, but, as the graph shows, no such characteristic difference exists. The form of the curve varies somewhat as between rural and urban females, the maximum death-rate falling somewhat later amongst the town's women, but taken throughout the whole period of life the death-rates are almost identical in value.

Again, if the predisposing factor to the high prevalence amongst urban males were some factor of urban environment not connected with employment this ought to be obvious in the earlier years of life, but up to the twentieth year of life the four curves run fairly close together on nearly parallel courses. In fact, so far as differences exist, males, both urban and rural, are healthier than females, and in the case of both sexes urban dwellers are healthier than rural dwellers. It is quite clear that the difference is not one due to sex, occurring after the twentieth year, for in that case the rural males ought to be up somewhere alongside the urban males, instead of where they actually stand nearly at the levels of both urban and rural females.

The problem under consideration is, then, one which appears in five to ten years after the commencement of employment and persists throughout the working period of life, attaining its maximum between the thirtieth and sixtieth years. It is characteristic of male urban workers, and is inconspicuous amongst urban females, who do not continue to work in factories and large workshops in large numbers after the thirtieth or thirty-fifth year, or at least did not do so in pre-war times, to which these statistics refer.

It might be urged that if the effect is due to urban working conditions it ought to start at the commencement of employment—that is to say, about the fifteenth year. The reply to this is that these records are records of deaths due to a chronic disease, and that some years are required to produce debility and infection and for the disease to run its course to a fatal issue. There are certain occupations in which there is no question of the conditions of labour conducing to phthisis, such as printers, bootmakers, quartz workers, cutlers, grinders, and file-makers. In all these trades there is a latent period of variable length but always of some years' duration, and the form of the curve of mortality from phthisis in such trades conforms in general to that shown in Diagram 1 for all urban males.

It would appear from these considerations clear almost to a demonstration that the greatly enhanced prevalence of phthisis amongst urban male workers is not due to housing conditions, faulty though these may be, for the females, who stay more at home than the males, are not subject to the effects, nor are the males until a few years after they have passed to their occupations. The most obvious cause revealed by a statistical study is accordingly some circumstance, or set of circumstances, connected with the daily occupation.

Observations within the factory of the conditions of work, of the correlated variations in different trades, and a study of the illnesses shown by the Health Insurance cards have convinced me that this is the true cause at work.

The Two Main Factors.

It may be said at once that the two main factors are long-continued strain at work under unhealthy conditions and infection of men so reduced in resisting power by fellow-workmen actually at work alongside them while suffering from open phthisis and disseminating the bacillus of the disease. This is proven by the fact that the heaviest incidences of the disease are found amongst those occupations in which the demand for muscular exertion is so slight that a consumptive worker can still continue at work intermittently until he is in the last stages of the disease and in a highly infectious condition. If such an occupation is carried on in a workshop where the atmospheric conditions are bad, and long and irregular shifts of work, including a good deal of night work, are frequent, and if the workers come into close contact, then the death-rate from phthisis becomes a maximum one. Sedentary occupation alone, even accompanied by long hours of labour, does not lead to an excessive death-rate provided there is sufficient isolation and lack of means of infection. Again, the workers may be crowded together indoors, but if the exertion be sufficiently strenuous to preclude the sufferer from phthisis continuing at work there is not a high occupational death-rate from the disease.

But if the working conditions are such as to favour infection from man to man, and superadded to this there be a close stagnant atmosphere, long hours of labour and much overtime unevenly distributed, eating of meals in common on the premises under unhygienic conditions—in short, all those conditions which reduce stamina and induce mental and physical depression—then a maximum death-rate from phthisis appears.

These conclusions are the result of observations in the workshops of occupations heavily hit by phthisis, and are confirmed by the opinions of employers and employees in such trades. In so far as improvements in the deleterious conditions mentioned have occurred in trades over a considerable period of years, the statistics of the trades unions demonstrate that there have taken place corresponding improvements in the amount of illness and deaths from phthisis. Space will not permit the marshalling of all the evidence which goes to establish the truth of this position, but a few facts may be quoted in illustration from my observations in the different branches of the printing trade.

Investigations in the Printing Trade.

Examination of the obituary lists of the membership of the two large unions of compositors over a period including the 35 years previous to the outbreak of war proves that the relative death-rate from phthisis fell during that interval from one death from phthisis in three total deaths to less than one death from phthisis amongst five total deaths. This improvement far exceeds that seen in the average of all urban males in the same period, and must be ascribed to the better printing shops which now exist, the larger use of printing machinery, and the more regular hours worked. It is thus due to two primary factors: less strain on the workman and less chance of infection.

It is commonly supposed that compositors are the most heavily hit in the printing trades by phthisis. This is not, however, the case, for amongst one unfortunate set of these workers—viz., the operative printers' assistants, *nearly one-half of all the deaths are due to phthisis even in present times.* A close investigation soon discovers the cause of this appalling death-rate. In addition to all the disabilities in the nature of the occupation which cause the high death-rates amongst the members of the other printing fraternities these operative printers' assistants often work long periods of overtime at night. There is a pernicious habit, largely obtaining in this branch, of working an all-night shift in order to turn out weekly papers. This long shift is paid for well as overtime, and the men are so induced to perform it, to the great detriment of their own health. A man taking such a long shift undergoes the following strain. After a full day's work he continues on at work all night, and then goes on again for a full day's work the following day, so completing a continuous working period, save for short meal periods within the works, of 30 hours. Another set of workers, better paid and organised, called machine managers, do not commit this error, but relieve each other after shifts of normal length, and their death-rate from phthisis is only about one-third of that of the operative printers' assistants.

The clearest evidence has been obtained by tracing out many instances that both compositors and printers' assistants ill with phthisis and discharging bacillus-laden sputum go on working intermittently in the printing shops to within a few days of their death.

There were numerous cases discovered of men off work for several weeks with the cause of illness certified as catarrh, and in certain cases these died later after having been at work intermediately, with the cause of death certified as phthisis. Men showing all the facies of phthisis have been observed at work during visits to the workshops in most intimate proximity to other workmen.

In many establishments in the hand-composing section, to save a little space the composing frames containing the type are set back-to-back, so that a consumptive printer can spray the man working opposite to him and facing him at a distance of only 2 or 3 feet. If the latter individual is predisposed to infection from the nature of his work and general environment, it is easy to see how the infection can be passed on.

Instances might be multiplied from this and other trades which would go far to explain why there is such an abnormally high death-rate from phthisis amongst urban males, but, admitting the conducive elements, let us proceed to consider remedies.

The Need of a Medical Service in Factories.

Practical experience in the tackling and successful reduction almost to vanishing point of another type of illness amongst munition workers, which had cost a good many lives and caused much sickness and economic loss of time and efficiency, has convinced me that the urgent necessity is the institution of an efficient factory service of medical men. The doctor must be introduced into the factories and work-

shops to do battle with this evil; he cannot achieve victory by waiting in his consulting room till the patient comes to him of his own initiative. The patient himself is often one of the last to realise that he is seriously ill, and even then has always the *spes phthisica* to buoy him up that he is getting better. The foreman, or shop steward, and his fellow-workmen know much better than himself that he is running down and slowly growing weaker, but all under present conditions are unable to extend aid to him, and so he goes on intermittently working and exposing others to danger.

It is a melancholy picture over which industrial hygiene wrings its hands in vain, while men go on dying who ought to be saved. Yet the problem is not one of colossal dimensions if only statesmen and doctors could be persuaded to tackle it together and mutually assist in its solution.

Even in one of the occupations most heavily scourged by phthisis, such as the printing trades, there is not at any given time more than about one man in between 200 and 300 employed actually ill with phthisis. If these could be efficiently treated and prevented from infecting others, and at the same time general conditions altered in a manner which would involve but little expense, an enormous improvement could be effected.

A national colony containing hygienic dwellings and thoroughly sanitary workshops, which might serve as models for all the rest of the country, could be constructed in which these affected workmen could work at their own occupations, as has already been suggested by Dr. J. E. Esslemont, of Bournemouth. Here as recovery progressed the patient, instead of being suddenly thrust back into the full strain of work under conditions which make for the re-establishment of the disease, could be brought back to full vigour by a graduated course of resumption of his own work, and far fewer relapses would occur. On return to the ordinary workshop he would for a time remain under careful supervision by the doctor of the Industrial Medical Service who had medical supervision of the workshop.

Although such a colony would repay the nation many times over the cost of its establishment, in the present only half-awakened state of the public conscience over health protection it might be considered by statesmen Utopian, or unrealisable on account of opposition of employers and employees.

A fairly considerable amount of acquaintance, and many friendly discussions, with both employers and secretaries of trades unions and foremen of shops, have convinced me that there would be no opposition, but rather the most friendly coöperation, over any practical scheme to improve the health and physique of the workers. All that is required is tact and friendliness and education as to the nature of the scheme and the result aimed at, and then works managers, foremen, and workers become as enthusiastic as the doctor.

Personally, I have always found in research in factories employers willing to spend money in equipment and for experimentation, and workers in most cases willing to undergo considerable inconvenience in experimentation to benefit themselves and their fellow-workers.

Functions of the Proposed Industrial Health Medical Service.

It would be by no means necessary in such an Industrial Health Service for the doctor to make medical examinations of all workers at frequent intervals, as is done, for example, in working the School Medical Service. Such a procedure would arouse opposition, would require an inordinately large medical staff, and would not repay the labour spent upon it. It has always been to me an open question whether too much of the time of the school medical officer is not tediously and monotonously spent in this fashion, and whether more practical results would not be attained by enlisting the services of the teachers and giving the main attention to children who may need aid themselves or be a source of danger to their school-mates.

At any rate, it is from the preventive point of view that I would earnestly urge the formation of an Industrial Health Medical Service, and upon the lines on which I should project it I have estimated that it could be efficiently manned for England and Wales with a staff of about 1500 medical men. This new corps would in no wise interfere with the work of the private practitioner or panel practitioner; its function would be to see, by inspection of factories and by education of those in charge of them, that sanitary conditions in factories were improved, and when resistance or wilful obstruction could not be overcome by other means, then by compulsion securing amendment. Much could be achieved here by a pooled system to raise compensation payment to workpeople turned off for being in enfeebled health or a source of danger to the health of others. It could be made to pay the factory employer to keep his workshops sanitary and his people healthy.

After this survey of material environment the next concern of the factory doctor would be the health of the workers individually, with especial stress upon the preventive side and upon those conditions which precede chronic illnesses. For example, the prospective consumptive patient should, if possible, be caught before he is consumptive; a week or two of rest at the needful moment, when as yet the worker would have had no dreams of going to a doctor, may save many months in a sanatorium later.

Utopian, it may be said—Who will pay the worker his wages while he goes off to take a fortnight's holiday? On the contrary, I claim it will repay both the nation and the employer, the worker and the trades unions' funds, over and over again. The worker is not to be allowed to propose holidays for himself; an entirely unbiased doctor is going to prescribe it on obvious physical signs which no malingerer can induce.

Rarely have I gone into a large workshop containing 200 or 300 workers that I have not observed one or two who ought to have been resting. The neglect of such incipient cases of illness is a foolish, short-sighted policy for all concerned.

The Relations of the Scheme to the General Practitioner.

It has been said above that this new service would be no rival or competitor to the private or panel practitioner; on the contrary, it would be a succour and a support to him. The competitors for private work would be so much the fewer by the number of men willingly drafted into the industrial health service, but none of the insured workers, who are all panel patients, would be withdrawn from the panels. The panel patient with a chronic and oft-recurring illness requiring periods off work under medical treatment is a good asset at present to no one, and least of all to the panel doctor. In fact, it is unfair both to doctors and patients that such chronic illnesses as phthisis should be treated under a panel system of capitation payment. It is an undue risk to ask the doctor to take from the financial point of view, but it is a still graver risk for the patient, since it often involves the loss of his life. How can a panel doctor treat a case of phthisis in a working-class dwelling when the patient, and probably his dependants also, have only an allowance of a few shillings a week to live on and the patient keeps on intermittently going on and off work? It is certainly better than when the patient had no weekly allowance and had to pay his doctor's bill, but even yet it is a disgrace to civilisation and a real live danger to the community and ought to be abolished as soon as possible.

It is such cases that the medical officers of the new corps would seek out early in the workshops and send to suitable sanatoriums attached to the Industrial Health Service. This is not going to cost industry and the country more; it is going to cost less, very much less, than practically unrestrained phthisis is costing, and many thousands of healthy valuable lives will be saved, and countless families spared the greatest sacrifice, followed by grinding poverty.

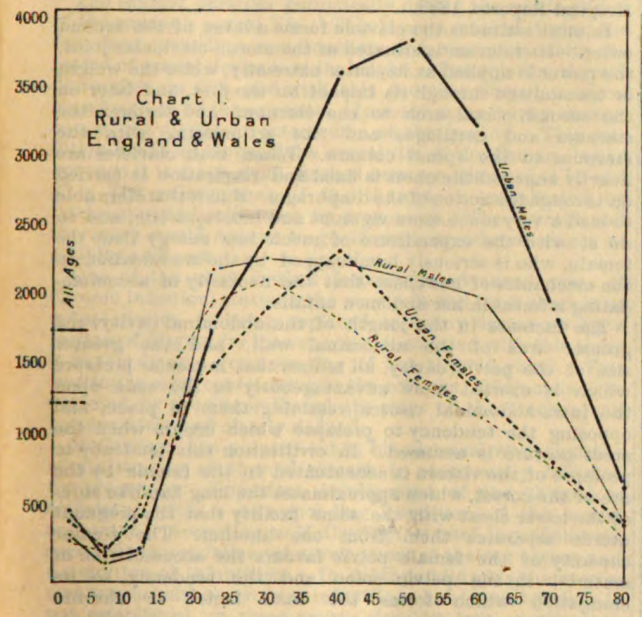
There never was a more opportune moment than is the present for initiating this great reform. Practically all the young medical men that the medical schools have turned out in the past ten years, who are still living, are in khaki carrying on superbly one of the noblest services that medical science has ever rendered to humanity. The majority of them during the past four years have learnt the régime of corps work, preventive work, and hospital treatment, scarcely a man in this young virile force has a practice worth coming home to, and they deserve better of their country than being turned into medical squatters.

Moreover, as this paper shows, the medical needs of the homeland are crying out for good team-work on the side of preventive medicine, applied not merely to material environment, but to suffering men and women. Many of these young men have been training for just this work that is crying aloud to be undertaken, and most of them probably possess little of either zest or training for private practice.

All that is needed is a statesman of power and imagination who will put this scheme in being, and so let Great Britain lead the world to the greatest conquest that has ever been won.

Charts to Illustrate the Difference in the Prevalence of Pulmonary Phthisis between Rural and Urban Conditions.

In all the charts continuous lines show male death-rates and interrupted lines female death-rates per million at the ages shown on the base line. The thicker lines represent urban and the thinner lines rural areas. The horizontal lines at the left of each chart show average death-rates at all ages.



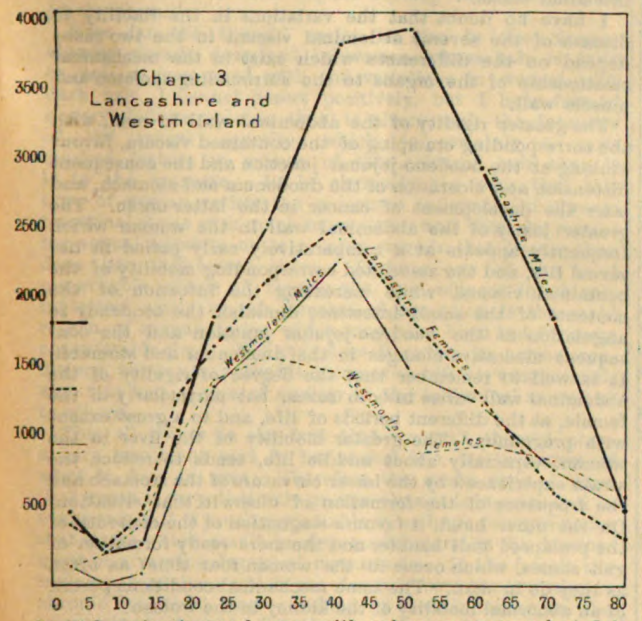
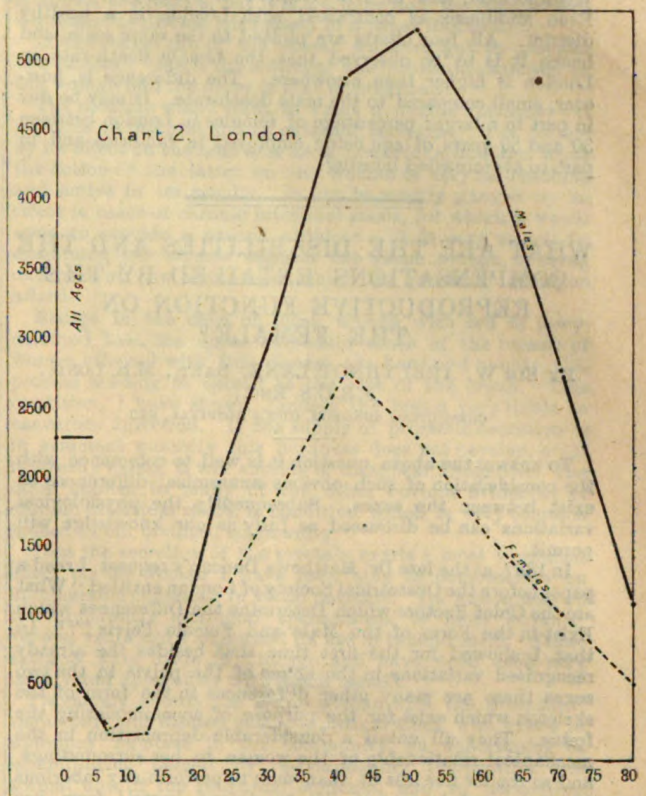


Chart 1 contrasts rural areas with urban areas, as selected by the Registrar-General. The urban areas were Glamorgan, Lancashire, London, Middlesex, Monmouth, Northumberland, Nottingham, Stafford, Warwickshire, Yorkshire (East and West Ridings), with a population of 16,465,427. The rural areas were Buckingham, Cambridge, Cornwall, Hereford, Huntingdon, Lincoln, North Wales, Norfolk, Oxford, Rutland, Salop, Somerset, South Wales (less Glamorgan), Suffolk, Westmorland, Wilts, with a population of 4,265,578. It is obvious that a purer contrast could easily be made with a heightened effect, but still the difference is most striking.

Chart 2 shows the London area, which for clearness is left uncontrasted with other areas to bring into as strong relief as possible the enormous difference between males and females. Whether the cause be that ascribed in this paper or not, here is a matter of national importance.

Chart 3 contrasts Lancashire and Westmorland, the two heavier curves showing Lancashire and the two lighter ones Westmorland. Observe how all four curves run together until about the twentieth year, and then how Lancashire males alone soar in death-rate away from the others.



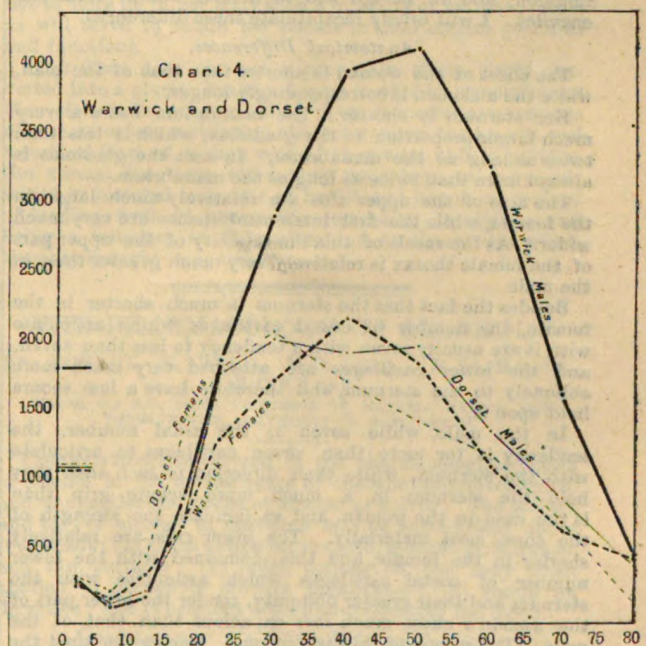


Chart 4 shows the same for Warwickshire and Dorset, and exactly the same holds for the West Riding and North Riding of Yorkshire. It is, in fact, a universal rule that in typical rural districts death-rates of males and females lie close together, whilst in urban districts the male death-rate is double that of the female or higher.

The four charts given are selected to illustrate differences between rural and urban conditions. Many others could be given, and the statistics of the whole country prove the enormous effects of

urban conditions of labour upon male deaths from phthisis. The differences are in no sense geographical, for rural areas in Lancashire can be picked out which are as healthy as Westmorland, and in Warwickshire as healthy as Dorset. Even Middlesex as contrasted with London is a healthy district. All four charts are plotted to the same scale, and hence it is to be observed that the female death-rate in London is higher than elsewhere. The difference is, however, small compared to the male death-rate. It may be due in part to a larger percentage of females in London between 30 and 50 years of age being employed in factories and in part to overcrowded housing.

WHAT ARE THE DISABILITIES AND THE COMPENSATIONS ENTAILED BY THE REPRODUCTIVE FUNCTION ON THE FEMALE?

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To answer the above question it is well to commence with the consideration of such obvious anatomical differences as exist between the sexes. Subsequently the physiological variations can be discussed as fully as our knowledge will permit.

In 1887, at the late Dr. Matthews Duncan's request, I read a paper before the Obstetrical Society of London entitled "What are the Chief Factors which Determine the Differences which Exist in the Form of the Male and Female Pelvis?"[1] In that I showed for the first time that besides the already recognised variations in the shape of the pelvis in the two sexes there are many other differences in the form of the skeleton which exist for the purpose of accommodating the fœtus. They all entail a considerable depreciation in the mechanical relationship of the woman to her surroundings, and so render her less fit than man to perform any laborious function, and in savage life to defend herself from her enemies. I will briefly recapitulate these differences.

Anatomical Differences.

The chest of the woman is shorter than that of the man, while the abdomen is correspondingly longer.

Her sternum is shorter. The manubrium bears a very much larger proportion to the gladiolus, which is less than twice as long as the manubrium. In man the gladiolus is always more than twice as long as the manubrium.

The arcs of the upper ribs are relatively much larger in the female, while the first intercostal spaces are very much wider. As the result of this the capacity of the upper part of the female thorax is relatively very much greater than in the male.

Besides the fact that the sternum is much shorter in the female, the number of costal cartilages which articulate with it are usually seven with a tendency to less than seven, and the lower cartilages are attached very much more obliquely to the sternum, and therefore have a less secure hold upon it.

In the male, while seven is the usual number, the tendency is for more than seven cartilages to articulate with the sternum, while their direction is such that they hold the sternum in a much more secure grip than is the case in the woman, and so increase the strength of the chest most materially. The lower ribs are relatively shorter in the female, and this, combined with the fewer number of costal cartilages which articulate with the sternum and their greater obliquity, render the lower part of the woman's chest much less capacious than that of the male. The reason of this is obvious. During the time the abdomen is occupied by the fœtus in the later months of pregnancy the respiratory capacity of the lower segment of the chest is considerably reduced, so that a correspondingly greater change must be carried on in the lungs in the relatively more capacious upper thorax. This explains the mode of respiration which is peculiar to the sex. The arrangement of the lower chest also permits of its lateral expansion by the pregnant uterus.

[1] Trans. Obstet. Soc., 1887.

The male and female types of thorax are exaggerated in the case of cervical and bicipital ribs. These conditions are very well illustrated in a paper entitled "Cervical and Bicipital Ribs in Man," which I published in the Guy's Hospital Reports, 1883.

In most attitudes the clavicle forms a lever of the second order. Its fulcrum is situated at the sterno-clavicular joint, the power is applied at its outer extremity, while the weight is transmitted through its impact on the first, and later on the second, costal arch to the sternum, and through the sternum and cartilages and ribs articulating with the sternum to the spinal column. When both clavicles are heavily engaged the chest is fixed and respiration is carried on through the action of the diaphragm. Man is therefore able to lead a very much more vigorous and laborious life, and to do so with the expenditure of much less energy than the female, who is seriously handicapped by the modification in the mechanics of her chest that the necessity of accommodating a fœtus in her abdomen entails.

The increase in the length of the abdominal cavity, the greater area of the abdominal wall, and the greater size of the pelvic cavity, all reduce that muscular pressure which is exerted more advantageously in the male upon the intra-abdominal viscera, retaining them in place, and opposing the tendency to prolapse which occurs when the erect posture is assumed. In civilisation this tendency to prolapse of the viscera is accentuated in the female by the use of the corset, which approximates the long flap-like sides of the lower chest with the same facility that the pregnant uterus separates them from one another. The greater capacity of the female pelvis favours the accumulation of material in the pelvic colon and the tendency to its elongation which forms the basic factor in chronic intestinal stasis.

I have no doubt that the variations in the liability to disease of the several abdominal viscera in the two sexes depend on the differences which exist in the mechanical relationship of the organs to the surrounding skeleton and muscle wall.

The greater rigidity of the abdominal wall in man, with the corresponding cramping of the contained viscera, favour kinking at the duodeno-jejunal junction and the consequent distension and ulceration of the duodenum and stomach, and later the development of cancer in the latter organ. The greater laxity of the abdominal wall in the woman which frequently appears at a comparatively early period in her sexual life, and the associated corresponding mobility of the contained viscera, while increasing the infection of the contents of the small intestine, diminish the tendency to angulation at the duodeno-jejunal junction and the consequent ulcerative changes in the duodenum and stomach. It is well to remember that the degree of rigidity of the abdominal wall varies in both sexes, but particularly in the female, at the different periods of life, and to a great extent with pregnancy. The greater mobility of the liver in the woman, especially about middle life, tends to reduce the strain experienced by the lesser curvature of the stomach and the frequency of the formation of ulcers in that situation. On the other hand, it favours stagnation of the contents of the prolapsed gall bladder and the more ready formation of gall stones, which occur in the woman four times as often as they do in man. The same mechanical conditions permit of an abnormal mobility of the kidney in the woman.

The following proportions which I have obtained from the statistics of the Mayo Clinic are very suggestive. 75 per cent. of peptic ulcers are duodenal; 11 per cent. of patients with gastric ulcer have duodenal ulcer; 3·2 per cent of cases of duodenal ulcer have gastric ulcer; more than 30 per cent of all cancers in man are in the stomach; cancer of the stomach occurs in the proportion of 38 per cent. in the male to 22 per cent. in the female; 85 per cent. of all cancers and ulcers in the stomach involve the lesser curvature; diverticulitis occurs in the proportion of 66 per cent. in the male to 33·4 per cent. in the female; and cancer of the rectum is a little more common in the male. With a view of demonstrating the mechanical factor more clearly I have attempted to obtain further details as to the incidence of disease at different ages in the two sexes, but without success.

The Part Played by the Thyroid Gland.

As regards the various organs of the body, that one which is most closely associated with the sexual function in the female is the thyroid gland. The variations in the size of the

thyroid afford clear confirmation of the preponderating influence of sex in the woman as compared to the part it plays in man.

The thyroid enlarges periodically during the whole period of the woman's sexual life. This is more marked during the few days preceding menstruation, and continues while the period of sexual desire is at its height. After this the thyroid diminishes in size, and with this decrease there is a corresponding loss of the appetite. In some cases it may amount to a strong dislike for intercourse at this period. This condition exists all through the sexual life of the woman, but in our race it is much more marked between the ages of 19 and 23. The enlargement of the thyroid is accentuated by intercourse and still more by pregnancy. The thyroid and the ovary would appear to go through associated stages of activity and rest.

One of the most marked features in advanced cases of chronic intestinal stasis in the woman is the total absence of sexual desire, it being replaced in many instances by a feeling of disgust for intercourse. Associated with this there is in this disease great wasting of the thyroid gland. This wasting is most conspicuous in the isthmus, which cannot be detected by the finger though the rings of the trachea can be accurately and clearly defined.

McCarrison has pointed out in his classical work that the administration of thyroid extract is occasionally followed by pregnancy. Imperfect development of the thyroid is associated with a corresponding condition of the sexual apparatus. According to McCarrison, "total loss of thyroid secretion causes failure of development of the sex organs and a condition of infantilism. In subthyroidic girls the ovaries and uterus either remain infantile when menstruation is not established, or these organs develop late, resulting in amenorrhœa."

How far the thyroid varies in size in the circumstances already described in women whose hair is towy or red, as compared with the variations in women with dark hair, I cannot assert positively, but I have formed a very definite opinion that it alters with the intensity of the sexual appetite, which is certainly a more marked feature in women of this coloured hair than it is in the brunette. It is obviously the case that this type of woman resists the poisonous influences of chronic intestinal stasis with much more vigour and that she retains her sexual appetite up to a later stage in that disease than does her dark-haired sister. Perhaps one of the most remarkable effects of freeing the ileal effluent in chronic intestinal stasis by the removal of the colon is the rapid return of sexual desire, which may have been lost for some considerable time. Not only does it return to normal conditions, but in many cases it becomes manifestly exaggerated, and may be a source of anxiety to the individual as well as to others.

This all points to the fact that woman's thyroid plays a very important part in her sexual life, far in excess of what it does in man. Therefore the strain exerted upon that organ is very distinctly greater than it is in man, and in consequence it is much more liable to undergo changes under that stress which result in degeneration and in the development of a varying degree of myxœdema. In the female the toxins or organisms which are derived from the intestine in chronic intestinal stasis produce by their influence on the overstrained thyroid, directly through its blood-supply or indirectly through its nerve-supply, a far greater change than in man, and this occurs during the period of greatest sexual activity. The incidence of exophthalmic goitre in the two sexes affords a very good illustration of the truth of this view. 30 per cent. of the cases occur in women between the ages of 20 and 25. Murray found that it arose 18 times more often in females than in males, while Mackenzie estimates the proportion as 9 to 1. Personally I would make the proportion very much higher than either of these observers, as I believe that a number of trivial cases escape observation and recognition.

McCarrison has shown that up to the age of puberty the sexes are affected by endemic goitre almost equally. From the age of puberty onwards females are much more liable to suffer than males. He finds what he calls the simple toxæmic goitre as we see it in this country to be incomparably more common in the female than in the male. He also insists on the serious damage which the infant sustains from the presence of any form of toxic goitre in the mother.

Two Factors in the Sexual Life of Woman.

I have here dealt with the function of the prostatic fluid as it affects the female, but it is too large and too complicated a question to discuss adequately in a paper like this.

In the sexual life of the woman we have got to consider two factors. One is the action of the prostatic secretion on the woman and the other is that of pregnancy.

The prostate would seem to exert a double function. It provides an internal and an external secretion. The former by its effect on the man acts as a powerful stimulant, while the action of the latter on the woman is very far-reaching and active in its results. It can be readily gauged by its effect in cases of chronic intestinal stasis, for which it would seem to provide a natural antidote. It is easy to tell by examining her breasts whether the static woman is being deprived of the advantages which the prostatic secretion affords.

Except in the case of those women with red or towy-coloured hair, the upper and outer zones of the breasts of women affected with this disease are hard and nobbly, this process tending to spread to the rest of the organ. This condition, I have shown, renders the breast very liable to cancerous infection. If the supply of prostatic secretion is in sufficient quantity this hardness does not develop, or, if it already exists, it will subside or disappear altogether. The same applies to many of the other obvious evidences of chronic intestinal stasis, a condition which is very common indeed in our civilised community.

That the secretion of the prostate exerts a most beneficial effect on the woman I have been able to demonstrate on innumerable occasions in static patients. Its action also on the apparently moribund spermatozoa is most striking. Several years ago I suggested its use in tabloid form. These extracts were made in Chicago and have been used very largely and apparently with much benefit.

Pregnancy affords the static woman with the prolapsed, angulated, and dilated gastro-intestinal tract, who exists in enormous numbers in the community, an opportunity of rehabilitating herself by re-establishing temporarily the normal flow of the intestinal contents, and so permitting her to store up in her body such a quantity of fat and muscle as will serve to retain her viscera in their correct positions and functions.

How often does one see a poor thin static virgin converted into a plump, healthy, happy mother by a pregnancy? How often is the surgeon called upon to perform operations of a more or less mutilating character upon the breasts and intestinal tract of women who, if they were able to perform the normal functions which they were born to carry out, would be restored to a state of health and happiness instead of leading lives of necessarily increasing invalidism and being a nuisance to themselves and to those with whom they are brought in contact?

THE PHARMACOLOGY OF ALCOHOL.*

BY ROBERT B. WILD, M.D. LOND., M.SC. MANCH., F.R.C.P. LOND.,
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I INTEND to confine myself to the pharmacological action of alcohol in the narrow sense of the word pharmacological and to consider the action of alcohol as a drug. The actions and uses of alcohol in medicine may be summarised under four heads: (1) Local action on the skin, mucous membranes, and raw surfaces; (2) reflex actions on the body when applied to accessible mucous membranes; (3) action on digestion; and (4) actions after absorption into the blood.

Local Action of Alcohol on External Surfaces.

Its action on the external surface depends upon its volatility, its affinity for water, its power of coagulating proteid, and its antiseptic action.

Owing to its volatility it is an almost invariable ingredient of cooling lotions when allowed to evaporate freely from inflamed surfaces. Somewhat paradoxically the same property determines its inclusion in most liniments and other preparations intended to irritate the skin, for when the alcohol

* Part of a paper read before the Society for the Study of Inebriety on Oct. 8th, 1918.

is not allowed to evaporate the vapour easily penetrates the skin and irritates the sensitive and highly vascular tissues beneath the horny epidermis. Its affinity for water causes it to harden the tissues by extracting water from them, and this hardening effect is increased by the coagulation of the proteid in the still unkeratosed or partially keratosed cells of the deeper layers of the epidermis. In a more dilute form the same properties are used in astringent gargles and lotions.

The antiseptic properties of alcohol are responsible for the existence of a great part of our museums of natural history, anatomy, and pathology, and although inferior in degree to many other antiseptics they add largely to its value as a local application. The fact seems too little known that the most powerful antiseptic effects are produced, not by absolute alcohol, but by alcohol of from 40 to 70 per cent.[1]

Reflex Actions of Alcohol.

The reflex actions which follow the local application of alcoholic solutions of a strength of 20 to 25 per cent. or over to the mucous membrane of the lips, mouth, and pharynx are of considerable importance because it is largely to these actions that alcohol owes its popular reputation as a stimulant. Its action is that of a local irritant and on a par with the action of ammonia or strong acetic acid and many other volatile irritants. The effects observed are a rousing of the latent consciousness, an increase in the movements of respiration, an increase in the force and frequency of the heart—in short, a hastening of the recovery.

That these results are reflex is shown by the fact that they begin at once, long before any of the alcohol can have been absorbed; that they occur even when none of the drug is swallowed but merely retained for a short time in the mouth and then rejected; that they are proportional to the strength of the alcohol and not to the quantity, a few drops of strong alcohol merely applied to the lips is often effective, while a considerable quantity of dilute alcohol produces little effect, even if swallowed; finally, they do not occur if alcohol is injected directly into the circulation in animals.[2]

The effects are also of a very temporary character and pass off in about ten minutes unless the alcohol is swallowed, when they may persist for half an hour, probably owing to the additional reflex from the mucous membrane of the stomach. I think much confusion has been caused in the discussions upon the action of alcohol by the failure to distinguish sharply between these reflex effects common to all volatile irritants and the effects of alcohol after absorption.

The Action of Alcohol on Digestion.

The action of alcohol on digestion is made up of two factors—viz., its action on the stomach and its action upon the stomach contents. The former is a combination of its local action on the walls of the stomach with the effects of its reflex action; the latter is purely chemical and due to the action of the drug upon the gastric secretions and upon the constituents of the food.

It appears to be established that in dilutions up to 5 per cent. no deleterious effects are produced upon the action of the digestive ferments, nor any hardening of the proteid food which would make it more slowly digested. In this dilution the activity of gastric digestion is increased (1) by the action of the alcohol upon the mucous membrane of the mouth and pharynx, causing a reflex flow of saliva and gastric juice; and (2) by its local action upon the mucous membrane of the stomach, causing increased vascularity and a further flow of gastric juice.

The stomach is practically a closed cavity with a temperature of 98·6° F., and no matter how dilute a solution of alcohol may be, the alcohol will be partially vapourised at this temperature, and that part of the stomach unoccupied by food will contain a comparatively concentrated alcoholic vapour which is a marked irritant to a delicate mucous membrane. I believe this is the cause of the feeling of warmth in the stomach which usually follows the taking of even small quantities of alcohol, and that it is the vapour rather than the alcohol in solution which acts as an irritant and causes the increased vascularity. The rapid absorption of alcohol from the stomach—as compared, for example, with water—is probably also due, in part, at any rate, to the alcoholic vapour diffusing rapidly through the delicate epithelial cells of the mucous membrane.

In concentrations over 5 per cent. almost all observers are agreed that alcohol delays digestion by interfering with the action of the digestive ferments and possibly hardening the proteids of the food, while strong concentrations set up an actual catarrhal inflammation of the stomach, as was demonstrated many years ago by Dr. Beaumont in the classical case of Alexis St. Martin.

The increased movements of the stomach supposed to be set up by alcohol and so aid digestion have not been demonstrated by the more recent experiments, and it is doubtful if they occur in the case of dilute solutions. In certain concentrations, however, alcohol acts like a volatile oil, regulates peristalsis, relieves spasmodic pain, and removes flatulence.

Action of Alcohol after Absorption.

It is now universally admitted that the main action of alcohol after absorption is on the central nervous system, and I think it is also admitted that the action of large doses is always a depressing or paralysing action. The various centres are affected in the inverse order of their development so that the first to go are the highest centres of judgment and emotional control, comparison, and inhibition. Those inhibitory centres which are so constantly in action in all civilised communities to restrain the inclinations and impulses of the natural man are early affected, and as civilisation becomes more complex and life more intricate, these inhibitory centres are sometimes strained to breaking point. In such cases alcohol may benefit a patient by giving his inhibitory centres a rest and time for recuperation. Released from the habitual control of the higher centres the lower centres tend to become more purely reflex and to over-act in response to various stimuli, giving rise to that increased activity, muscular or emotional, which, together with the reflex effects already considered, is responsible for the popular conception of alcohol as a stimulant. As the action of the alcohol proceeds these lower centres are themselves paralysed and the paralysis spreads to the still lower motor centres, then consciousness itself is lost and the full action of alcohol as a narcotic poison is manifested.

The question is, however, more difficult in the case of the small doses of alcohol usually given for therapeutic purposes. The study of the various published researches leads me to the conclusion that so far the case for any preliminary stimulant action of alcohol on the central nervous system is not proven, and that all the phenomena attributed to such action can be equally well explained by assuming the action of alcohol to be consistently depressing throughout.

I cannot now go into the subject of the anatomical basis for the action of alcohol upon the brain cells—whether it is directly upon the cell protoplasm itself, or in combination with the lipoids of the brain cells, or upon the dendrites so as to interrupt communication of impulses from neuron to neuron; any or all of these hypotheses are possible. It appears, however, to be certain that the neurons of centres having certain functions are more sensitive than others, and probably the relative sensitiveness of the centres may vary somewhat in different individuals. With small doses, not sufficient to cause noticeable excitement, painful sensations are less acute and sources of mental worry, anxiety or irritation no longer occupy so large a place in the field of consciousness; there is consequently a feeling of euphoria or general well-being, and a tendency to drowsiness or actual sleep if the environment is favourable. It is this sedative influence which is often so valuable in dangerous and exhausting illness, and the judicious use of alcohol may suffice to turn the balance in a debilitated and despairing patient. I wish to lay stress on the fact that this effect is obtained by small doses, and is not preceded by any indication of a preliminary stimulation unless the drug is given in sufficient concentration to cause a temporary reflex effect.

Effect on Heart and Blood-Vessels.

The action of alcohol on the circulation after its absorption into the blood has been carefully worked out by experiments upon animals. The results are not entirely in accord, but the conclusion we are forced to come to is that there is no proof from these experiments that alcohol present in the blood in any concentration compatible with the amount given and with the symptoms exhibited has any action on the heart or blood pressure sufficiently marked to be of importance in therapeutics. The presence of alcohol in the blood to an extent of 0·1 per cent. causes definite symptoms of intoxication, and when given in therapeutic doses where such symptoms are never produced the quantity in the blood must be less than this amount.

While evidence of stimulation is absent, one result of perfusion experiments upon the isolated heart by Loeb,[3] Dixon,[4] and Hamill[5] is worthy of notice—viz., that in an exhausted or feebly-beating heart the addition of small quantities of alcohol to the perfusing fluid causes an improvement in the beat, and at the same time some of the alcohol was removed from the perfusing fluid, having apparently been utilised by the heart muscle as a source of nourishment. The improvement in the circulation clinically observed in cases of exhausting disease is probably due to a similar action, combined with a sedative action on the nerve centres which regulate the action of the heart, and also to a diminution of pain and anxiety.

The effect upon the pulse-rate in healthy men appears to vary with the individual, and when the disturbing influences of movements and excitement are avoided, as in the experiments of Higgins,[6] an increase of 1 to 4 beats per minute was found in 45 per cent. of the experiments, and in 55 per cent. no acceleration occurred.

The most marked effect of alcohol upon the blood-vessels is seen in the skin. The flushing is due to a paralysis of the muscular fibres in the walls of the small vessels which results in the capillaries being distended with blood; when frequently repeated a permanent enlargement of these vessels ensues. The increased amount of blood in the skin may relieve a possibly dangerous congestion in certain cases, and also promotes perspiration. Most important, however, is the effect of this dilatation of the superficial vessels upon the temperature of the body. Alcohol is a cooling agent; the large amount of warm blood in the skin rapidly loses heat. The increased heat production due to the oxidation of the alcohol in the body is quite inadequate to compensate for this loss of heat. When it is desired to increase directly the heat loss from the body and at the same time relieve congestion of internal organs and calm the nervous system alcohol may be used as an antipyretic drug: but the danger, now so well known, of the use of alcohol before exposure to cold must never be lost sight of.

Other Effects.

Apart from its reflex effects alcohol has singularly little action upon respiration; this question, after the careful work of Higgins,[6] may be considered settled. The same may be said of its action upon the kidneys. This, of course, does not imply that large quantities of alcohol, or alcoholic beverages containing other constituents, have no action on the respiration and kidneys; indeed, the contrary is the case, but this action has no bearing upon the use of alcohol as a drug. Upon the action, if any, of alcohol upon those small but important structures, the endocrine glands, we know nothing.

As to the influence of alcohol upon the various infection diseases, the possible concentration of alcohol in the blood, even in a state of intoxication, rarely exceeds 0·25 per cent., and 0·6 per cent. is usually fatal. This concentration is quite insufficient to have any antiseptic action upon pathogenic organisms. Alcoholic subjects with degenerated tissues are well known to fall easy victims to infectious diseases, and there is considerable evidence that even in non-alcoholic subjects a dose of alcohol will lower the resisting power to infection by the pneumococcus, *Streptococcus erysipelatosus*, *Staphylococcus pyogenes*, and probably *Diplococcus rheumaticus*.[10,11] There is some evidence that alcohol has some power to neutralise the toxins produced by the *Bacillus typhosus*, the *Bacillus coli*,[7] and the tubercle bacillus.[8,9] Much further work is required on this interesting and important subject.

The alcohol circulating in the blood is gradually burnt up in the body, and by its combustion it supplies heat and energy; as the rate of oxidation is comparatively slow it serves the purpose of a food for some considerable time, but with therapeutic doses 95 per cent. is burnt up in 24 hours and only 5 per cent. excreted. The amount which can thus be utilised is strictly limited, and an increase in the amount taken does not lead to a more rapid oxidation; for example, Higgins found that 45 c.cm. is not burned at a faster rate than 30 c.cm.—the former required 12 and the latter 8 hours.

The careful experiments of Neumann[12] have shown that alcohol up to 100 g. daily can replace a chemically equivalent amount of fat in the dietary. 1 g. of alcohol gives 7 calories, compared with fat 9·3 and sugar 4·1. As much as 40 per cent. of the carbohydrate needs of the body can be supplied by alcohol, and a still larger proportion in the case of a patient confined to bed.

The value of alcohol as a food must be discounted by its concomitant actions as a drug. There is no doubt that it is not a necessary food in health; whether it is a desirable food is largely a matter of opinion, but there can be no doubt that there are conditions of disease where its sedative action on the nervous system may be desired and where the digestive functions are in abeyance. Here a form of hydrocarbon of high calorific value, which requires no digestion, is quickly absorbed, and readily oxidised may be of very considerable value, and on this account alcohol may be preferred in such cases to other narcotics of greater potency, but which lack any nutritive properties.

Therapeutic Considerations.

I have now enumerated all the actions of alcohol which can be utilised in the practice of medicine; and powerful as these actions are I want to lay stress upon the fact that we have no proof of any direct stimulating action of pure ethyl alcohol upon the functions of the body after absorption. A substance which possesses such powerful actions may be approved or disapproved, but cannot be ignored as a drug, and our knowledge of the true place of alcohol in therapeutics would soon be largely increased if it were always prescribed with a definite aim and an exact idea as to what it was expected to do in any particular case, and not in that vague indefinite way in which it is sometimes the custom to order so-called stimulants.

For therapeutic purposes I should place the dose at the equivalent of from 20 to 180 c.cm. of pure ethyl alcohol in the 24 hours, and I doubt whether any further benefit can be obtained by more than the latter amount, even in subjects already habituated to alcohol.

The alcohol can often be prescribed with advantage as 50 per cent. alcohol (proof spirit) made up like any other powerful drug in a mixture with such disguising agents as tinct. gent. co., tinct. card. co., tinct. cinchon. co., or spir. chloroformi.

So far I have considered only the effects of pure ethyl alcohol, and I hesitate to enter upon the difficult and debateable ground of the actions of the various alcoholic beverages as compared with pure alcohol; for some purposes they may be better and for others worse owing to the presence of other constituents, but exact knowledge on these points is still lacking. These other constituents include a number of volatile substances, some the higher alcohols, and others the so-called ethers, of the constitution and action of which we know little; wines and beers contain in addition sugars, gums, organic acids and their salts, tannins, bitters, and colouring substances. How far and in what manner these substances modify the action of ethyl alcohol requires investigation.

In experiments upon animals the action of the potable spirits is essentially that of ethyl alcohol and proportional to their alcoholic content, therefore any difference observed in their action on man must be due to an action upon those brain centres which are not developed in the animals used for experiment. Part at any rate of the difference not infrequently noticed between the effects of different alcoholic beverages may be due to the specific stimulation of olfactory nerve-endings. We all know how extraordinarily powerful an odour is in reviving old memories and starting trains of association in our consciousness. Possibly some of the differences noticed in the relative effects of different alcoholic beverages may be due to the effects of the volatile odoriferous constituents arousing different trains of association.

I am of the opinion that it would be of advantage to the community if all distilled spirits were looked upon and used as drugs only.

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Manchester.

A FURTHER INVESTIGATION INTO THE AGGLUTINATING PROPERTIES OF CERTAIN SERA AGAINST *B. TYPHOSUS*, *B. PARATYPHOSUS A* AND *B.*[1]

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THE following is an account of the results obtained with 227 [2] sera of antityphoid-inoculated men tested by the Oxford method. The material was obtained from the same source as that which was the subject of a previous paper.[3] The sera had been sent from the Military Hospital, Portobello, to this laboratory, University College, Dublin, National University of Ireland, for the Wassermann test, and had been taken from men who had received antityphoid inoculation. None of these cases were suffering, or had recently suffered, from enteric fever. Information was procured as to the number of inoculations together with the date of last inoculation which the man had received, but no data as to the type of vaccine employed were obtainable. As regards agglutinins for *B. typhosus*, the results obtained with the sera of 269 inoculated men previously examined and reported on are included. The standard cultures were kindly supplied to me by the Director of the Standards Laboratory, Oxford, whom I have to thank for a very regular and liberal supply. The research was carried out under the supervision of Professor E. J. McWeeney, and I have to express my indebtedness to him for many valuable suggestions.

Agglutination Results with B. Typhosus.

In Table I. are set down the results obtained with 227 sera of the present series of cases together with 269 specimens which formed the subject of a previous communication. This gives in all the results of the examination of 496 sera of inoculated men. From this it will be seen that:—

1. The number of sera which failed to agglutinate Ty.,[4] designated as 0 units, increase as the time since last inoculation is prolonged—viz., 10·9 per cent., 11·5 per cent., 14·6 per cent., 12·8 per cent., 15·9 per cent., 24·0 per cent., 8·0 per cent. (few sera), and 23·9 per cent. at the various three months periods. It will be noticed that there is a sudden increase in the number of negative sera at the end of 15 months.

2. The highest number of units is obtainable during the first three months since inoculation, 4·8 per cent. giving 650–1250 units. After three months since inoculation no sera came into the 650–1250 units group, and only a small percentage, 0·9 per cent., came within the 350–650 unit group. This indicated a sudden drop in high titres after the third month. In the three groups 7–9. 10–12, 13–15 months —i.e., between the seventh and fifteenth month since inoculation, no serum reaches 350–650 units, but there are a good many (4 per cent., 4·6 per cent., 2·2 per cent.) to be found in the 150–350 unit group. After 16 months none of the sera reached the 150–350 unit group. As might be expected, as the number of sera giving high titres diminish, the figures for the lower titres increase—e.g., under the group 3–15 units, reading down, the figures in the column for the time periods since last inoculation are 9·7 per cent., 26·5 per cent., 24 per cent., 31·4 per cent., 45·4 per cent., 44 per cent. and 48 per cent.

From a study of these 496 sera it would appear that, in so far as agglutinins may be taken as an index to immunity against infection, during the first three months since inoculation immunity is high, from 4–15 months it is moderate, and after 15 months it is poor. After 15 months the number of negatives increases, and among the positive sera the titres are low. To secure immunity, therefore, the inoculation should be repeated after the lapse of not later than 15 months.

TABLE I.—*Agglutination Results with* B. Typhosus (*This and Last Year Combined*).

Months since last inoculation.	No. of sera.	Agglutinin units.							
		0	3–15	15–35	35–65	65–150	150–350	350–650	650–1250
1–3	82	10·9	9·7	15·8	17·0	21·9	12·1	7·3	4·8
4–6	113	11·5	26·5	15·9	24·7	14·1	6·2	0·9	—
7–9	75	14·6	24 0	37·3	14·6	5·3	4·0	—	—
10–12... ...	86	12·8	31·4	18·6	22·1	10·4	4·6	—	—
13–15... ...	44	15·9	45·4	20·4	13·6	2·2	2·2	—	—
16–18... ...	25	24·0	44 0	16·0	12 0	4·0	—	—	—
19–23... ...	25	8·0	48·0	36·0	4·0	4 0	—	—	—
24 and over	46	23 9	32·6	26·0	10 8	6·5	—	—	—
—	496	14·1	28·4	21·9	17·5	10·6	5·0	1·4	0·8

The Effect of Multiple Inoculation with B. Typhosus *Vaccine.*

A chart was constructed giving the agglutination results obtained with *B. typhosus* with the sera of men who had been inoculated once, twice, and three or more times. The chart would seem to show that (1) fewer non-agglutinating sera are met with in multiple inoculation, particularly during 16–24 months after inoculation; (2) multiple inoculation does not produce such a high response as the first single inoculation, but, on the other hand, in the sera of men who have been inoculated several times a high agglutinin content is persistent. The result of one inoculation might be compared to the brilliant, though not permanent, effect of a large single dose of salvarsan in a case of syphilis, as compared with the slow, but more permanent, improvement brought about by smaller doses frequently repeated.

The Effect of Typhoid Mixed "T.A.B." Vaccine on the Typhoid Agglutinin Titre.

It is stated in the directions issued with the Oxford standard cultures that an attack of paratyphoid fever may raise, either slightly or markedly, the artificial typhoid agglutinins already present in the serum of an inoculated individual, apart altogether from the production of specific paratyphoid agglutinins. Arising out of this statement the question presents itself—granting that a man has already received *B. typhosus* vaccine, if he be now injected with mixed T.A.B. vaccine, will his artificial typhoid agglutinins be raised to a higher point and will they become more lasting than if he had received a second dose of simple *B. typhosus* vaccine only? If this were the case, inoculation with T.A.B. vaccine would be actually preferable.

Unfortunately, in the present series of cases no details as to the type of vaccine employed for inoculation were obtainable, but it perhaps may be fairly assumed that the men whose sera agglutinated A or B, or both, as well as Ty. had received mixed T.A.B. vaccine, whereas those which agglutinated Ty. only, had only received simple Ty. vaccine. None of these cases had a history of recent typhoid or paratyphoid fever, so that the presence of natural agglutinins could be excluded.

With the above point in view Table II. has been drawn up. The sera are arranged under four heads: (1) Those sera which agglutinated Ty. only; (2) those which agglutinated both Ty. and A; (3) those which agglutinated Ty. and B; and lastly (4) those which agglutinated all three. The sera which failed to agglutinate any of the micro-organisms have been omitted from the list. The figures in these columns indicate the average agglutinin units (i.e., the total number of units divided by the number of sera examined) for Ty. in all cases, and they are further arranged according to the number of months since last inoculation.

It will be noticed that the Ty agglutinin content is higher in mixed vaccine cases, at practically all periods, than was obtained in cases inoculated with simple Ty. vaccine (first column). This marked difference between the Ty. agglutinin content of sera of persons who had received simple Ty. vaccine and mixed T.A.B. vaccine may be due (1) to the typhoid element in T.A.B. vaccine; (2) to the A and B elements together; (3) to the A or B elements individually.

Before determining whether this relatively high Ty. agglutinin content is due to the A or B constituents it is necessary to make sure that we are not comparing, in the first column, the sera of men who have received but one dose of Ty. vaccine with the sera of men in the other columns, who have, in all probability, received the T.A.B. vaccine as a second dose (T.A.B. inoculation having been introduced at a much later

[1] Abridged from a report to the Medical Research Committee, read before the Section of Pathology, Royal Academy of Medicine in Ireland.

[2] These 227 are taken from a batch of 421 specimens examined in connexion with parallel Bordet-Gengou tests carried out by my colleague Dr. W. D. O'Kelly.

[3] THE LANCET, 1916, ii., 970.

[4] For the sake of simplicity *B. typhosus*, *B. paratyphosus A* and *B* will be referred to as Ty., A, and B respectively.

TABLE II.—*Agglutination Results with* B. Typhosus *arranged according to the Agglutinating Properties of the Sera for* B. Paratyphosus A *and* B *(to Demonstrate Effect of Simple* B. Typhosus *and Mixed T.A.B. Vaccines).*

(*a*) No. of sera. (*b*) Average typhoid agglutinin units.

Months.*	Ty. only.		Ty. and A.		Ty. and B.		Ty., A, and B.	
	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)
1	1	21	2	48	—	—	7	75
2	1	20	3	179	—	—	4	78
3	5	7	1	26	—	—	3	146
4	6	59	1	8	2	281	2	111
5	11	25	3	46	—	—	8	94
6	7	55	2	41	—	—	1	59
7	7	34	—	—	—	—	3	16
8	3	14	1	10	—	—	2	34
9	6	42	3	12	—	—	2	34
10	5	79	1	34	—	—	6	64
11	6	20	—	—	1	26	3	24
12	2	79	—	—	2	41	—	—

* Since last inoculation.

period than simple Ty. inoculation), because in this event (as has been shown before) cases who have received two doses of Ty. vaccine would have a higher unit content than those who had received only one dose, apart altogether from the question of A and B constituents.

In drawing up Table II. due attention has been paid to this point and only the sera of men who have received more than one inoculation have been included, so that the excess of Ty. agglutinins in the T.A.B. cases cannot be ascribed to the difference in effect which would be produced by two doses of Ty. vaccine over that produced by one dose only. The elimination from the table of all cases who had received only a single dose of vaccine reduces the total number of cases to a considerable extent. Further accuracy might be obtained if cases who had received two doses of vaccine and three doses of vaccine respectively were compared, but the relatively small number of cases would not allow of any further subdivision.

Now, granting that the Ty. element of the T.A.B. vaccine is not responsible for this increase in Ty. agglutinins, it must be due to the A or B element, or both equally, or to their combined presence. Although the number of cases have become smaller when so many factors have to be taken into consideration, the figures would seem to point to the fact that the combined presence of the A and B elements is responsible for the rise in the Ty. agglutinin titre. From the figures available it would not be possible to say whether the A and B elements taken individually can claim priority in causing this effect.

Agglutination Results with B. Paratyphosus A *and* B.

The results obtained are set out in Tables III. and IV. On the whole, these results are disappointing, as a large number of sera failed to agglutinate either A or B. This

TABLES III. and IV.—*Agglutination Results with B. Paratyphosus A and B.*

III.—*B. Paratyphosus A.* IV.—*B. Paratyphosus B.*

Months since last inoculation.	Number of sera.	Agglutinin units.								Agglutinin units.				
		0	3–15	15–35	35–65	65–150	150–350	350–650	650–1250	0	3–15	15–35	35–65	65–150
1–3 ...	34	29·3	8·8	11·7	23·5	17·6	5·8	—	2·9	52·9	29·4	8·8	8·8	—
4–6 ...	54	64·8	18·5	12 9	1·8	1·8	—	—	—	72·2	14·8	5·5	5 5	1·8
7–9 ...	35	65·7	20·0	5·7	2·8	2·8	—	2·8	—	77·1	17·1	—	5·7	—
10–12 ..	32	56·2	21·8	18·7	3·1	—	—	—	—	56·2	21·8	9·3	12·5	—
13–15...	18	68 8	11·2	—	—	—	—	—	—	100	—	—	—	—
16–18...	9	88·8	—	11·2	—	—	—	—	—	77·7	11·1	11·1	—	—
19–23..	12	91·6	—	—	8·4	—	—	—	—	100	—	—	—	—
24 & over	33	87·8	6·0	3·0	—	3·0	—	—	—	87·8	6·0	3·0	3·0	—
—	227	66·0	13·6	9·2	5·2	3·9	0·8	0·4	0·4	74·0	15·0	4·8	5·7	0·4

may be partly explained by the absence of the A and B elements in the vaccines in the case of men who had received inoculation more than 12 months before the examination of the sera was made; but one would expect to get more sera agglutinating A and B among those men who had been comparatively recently inoculated, say within 12 months, when inoculation with mixed T.A.B. vaccine had become more general.

Two other factors which might produce this poor response may also be taken into consideration: 1. The dose of A and B in mixed T.A.B. vaccine is only half the strength of the Ty. 2. The agglutinins resulting from an injection of T.A.B. vaccine would greatly favour the Ty. agglutinins in the case of a man who had already been inoculated with simple Ty. vaccine; that is to say, the A and B elements in the vaccine might be only the first dose of these particular micro-organisms, and consequently their agglutinins would fade away more quickly from the serum, whereas the Ty. element in the vaccine might represent the third or fourth dose of this microbe; consequently the agglutinins would persist for a longer time in the serum.

This extraordinary discrepancy between Ty. and A and B agglutinins was well seen in a chart where the percentage of negative sera obtained with Ty., A, and B are set out. So far as these cases are concerned one would be inclined to say that A and B agglutinins begin to disappear rapidly three months after inoculation; after twelve months they are practically gone, except in the case of A, where they persist longer than B agglutinins. As even in Ty.-inoculated subjects one must be prepared for a certain number of non-agglutinating sera, what might be regarded as the normal negatives, so also in the case of A and B inoculation a certain number of sera will be met with which will not agglutinate A and B.

In the absence of any definite information as to the type of vaccine the men of this series had received, it might be well to examine what might be termed the positive side, and compare those sera which agglutinated each micro-organism, eliminating from the figures those sera which were negative.

When entering into a criticism upon the relative properties of sera which agglutinate Ty., A, and B, it must be remembered that although the cultures used in this investigation were Oxford Standard Cultures, these standards only hold good for repeated examinations with one specific micro-organism. The cultures were not standardised as against each other. A standard unit of Ty. agglutinin does not necessarily correspond with a standard unit of A or B agglutinin. The sera which form the subject of this paper were tested against standard cultures which had the average factors of 5·7 for Ty., 3·6 for A, and 3·0 for B. It should be remembered, therefore, that the course of the curves rather than their relative heights are compared.

A chart has been drawn up so as to compare the sera which agglutinated Ty., A, and B. All negative sera have been eliminated, and the percentages calculated upon the number of sera which agglutinated the three micro-organisms.

The following observations may be made:—1. During the 1–3 months period after inoculation the A agglutinins approximate much more closely to the Ty. agglutinins than do the B. The agglutinins for B are much weaker—viz., more weak titres (3–15) and less high ones, the highest number of units reached being 35–65. 2 During the 4–6 months period the Ty. curve is comparatively stationary, whereas those for A and B are both decidedly weaker, the curves being steeper. 3. During the 7–9 months all three curves show weakness, but the curve for A agglutinins has still some similarity to Ty. agglutinins as regards high titres; but a larger percentage of cases gave only 3–15 units. 4 During the 10–12 months period the Ty. agglutinins are holding their ground, whereas A and B are both falling away together, the difference being possibly slightly in favour of A agglutinins.

An examination of the curves would seem to indicate that the A agglutinins behave like those for Ty. The B response is weak all the time. In T.A.B. vaccine the dose of A is only half the strength of the Ty., and it would appear justifiable to conclude that if the same dose of A vaccine were given as is given for Ty. the resulting agglutinins would be the same and the immunity as estimated by agglutinins would be equally good.

But in the case of B agglutinins the response to vaccine, as at present used, is comparatively so weak that a considerably stronger vaccine would be necessary to produce an equally strong immunity. Consequently, one would be tempted to recommend a change of dosage in prophylactic T.A.B. inoculation—namely, to equalise the strength of A element with that of Ty. and to give twice the corresponding strength of B vaccine. The ratio then would be Ty.^{1}, A^1, B^2. This might suitably be given in three doses.

(1) ... Ty. 250 millions ... A 250 millions ... B 500 millions.
(2) ... Ty. 500 ,, ... A 500 ,, ... B 1000 ,,
(3) ... Ty. 1000 ,, ... A 1000 ,, ... B 2000 ,,

Dublin.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Morbid Anatomy and Histology of Rheumatoid Arthritis.

A MEETING of this society was held on Oct. 28th, Major A. F. VOELCKER, the President, being in the chair, when Dr. T. S. P. STRANGEWAYS read a paper on the Morbid Anatomy and Histology of Rheumatoid Arthritis, and exhibited numerous pictures on the epidiascope showing the inflammatory and fibrotic conditions around the joints.

Dr. STRANGEWAYS gave the following summary of a report with a detailed description of the changes found in joints of patients suffering from that form of chronic arthritis at present recognised clinically as rheumatoid arthritis. Most of the specimens which furnished the material for the report were obtained during post-mortem examination of over 2000 joints of patients suffering from one or other of the following forms of chronic arthritis—namely, rheumatoid arthritis, osteo-arthritis, chronic gout, or Charcot's disease. He was indebted to a large number of men in practice in Great Britain and Ireland for the clinical and pathological material from which this report was prepared, and wished to express his gratitude to them for allowing him to conduct the post-mortems necessary. The anatomical and microscopical specimens prepared to demonstrate the various changes in such joints were preserved at the Cambridge Research Hospital, where they were accessible for inspection to any interested. The report referred to was submitted to the Medical Research Committee, who made a generous grant in aid of the work from the funds at their disposal. The summary has been written in the form of categorical statements, which for the sake of reference have been numbered.

Changes found in Rheumatoid Arthritis.

1. The term rheumatoid arthritis, as at present used, includes several forms of arthritis which are clearly due to different causes, although clinically they may show several points of similarity.

2. The crippling and deformity associated with rheumatoid arthritis or what is taken as such is largely of muscular origin which may be (*a*) of the nature of an involuntary contraction brought about by pain referred to the joint of the crippled limb, (*b*) due to an involuntary muscular spasm caused by pain on movement of the damaged joint, (*c*) due to actual atrophy and shortening of some of the muscles connected with the diseased joint. This atrophy is usually associated with disuse and long-continued muscular spasm.

3. In other cases the deformity is due to changes in the joint itself such as: (*a*) distension of the capsule by an excess of synovial fluid, (*b*) dislocation of the bones of the articulation, (*c*) changes in the shape of the articular surfaces owing to formation of new bone or to erosion of the original.

4. Some cases in which clinically the joints appear to be damaged show very little morbid change on post-mortem examination, although the symptoms of arthritis with crippling deformity have been present for many years. Some of these cases seem to be of nervous origin, associated with pain which is referred to the joint.

5. Cases are observed in which the capsule of the joint has been distended for a long period by an excess of synovial fluid, accompanied by more or less deformity, but in which on post-mortem examination no marked changes are discovered. In some examples of this type the fluid ultimately diminishes. Fibrotic changes may then be present in the capsule and the articular cartilages may have undergone fibrillation or atrophy.

6. A considerable proportion of the joints show distinct inflammatory changes in the synovial membrane, in the capsule or in the bones of the articulation; in any case the articular cartilage may be involved. These inflammatory lesions may be present in one or all of the above-mentioned structures, and be either acute, subacute, or chronic.

7. In a few cases the processes are obviously of infective origin and are associated with marked inflammatory changes in the synovial membrane and the formation of thick fleshy villi and vascular adhesions. Microscopically, the inflamed tissues show large collections of inflammatory cells and new capillaries. Erosion of the articular cartilage and bones may also be present.

Nature of Inflammatory Process.

8. If changes are found in a joint affected with what is termed rheumatoid arthritis they are usually of an inflammatory nature, but their severity and extent vary considerably in different cases and in different joints from the same case. The changes may be present in a part only of the articulation.

9. The inflammatory process may originate either in the synovial membrane, in the capsule, or in the medulla of the superficial cancellous spaces of the epiphysis, or in all three of these structures.

10. The inflammatory process, if severe, is associated with proliferation of the connective tissue cells, the development of new blood-vessels, the accumulation of leucocytes, and sometimes with the extravasation of red blood corpuscles and the presence of fibrin. The inflammatory tissue may originate in the synovial membrane or in the capsule and invade the articular cartilage and bone, or lead to the formation of inflammatory adhesions in the joint cavity. This inflammatory tissue tends in the course of time to become organised and converted into fibrous tissue and may result in fibrous ankylosis either between the adjacent surfaces of the capsule or between the cartilage, or even between the bones of the articulation if the original cartilage has been destroyed.

11. In some cases the arthritis is of a subacute type from the onset, and the inflammatory changes, although often progressive, are not so marked. In this type the changes may originate in the synovial membrane, the capsule, or the superficial marrow spaces of the epiphysis, from either of which they may spread to the articular cartilage; the process leads to the formation of fibrosing tissue in the affected areas, and this when present in the capsule causes the latter to contract. The movements of the limb are in consequence restricted and the articular cavity decreased in size. Fibrous adhesions also develop in these joints, and in some cases fibrous, cartilaginous, or bony ankylosis.

12. The changes in the superficial marrow spaces lead to resorption or erosion of the osseous trabeculæ, which may be associated with the invasion and replacement of the articular cartilage by the inflammatory tissue.

13. Other joints show a slowly progressive inflammatory fibrosis of the capsule, often associated with degenerative changes in the cartilage and proliferative changes in some of the superficial marrow spaces. In these joints areas of cartilage may be invaded, either superficially from the capsule or from beneath by proliferating connective tissue cells and new vessels of the superficial marrow spaces.

14. The inflammatory reaction of the marrow of the superficial cancellous spaces of the epiphysis may be of an acute, subacute, or chronic type. In either type the connective tissue cells of the marrow proliferate and new blood-vessels form. In the acute cases the new connective tissue cells are of stellate form. In the chronic cases the connective tissue cells appear more fibroblastic, especially such as be near the edges of the bone trabeculæ, but in all cases these cells show a tendency to store up fat and become marrow cells as the inflammatory process subsides. In those cases where the superficial osseous trabeculæ are eroded and the zone of calcified cartilage invaded the connective tissue cells and vessels form a definitely organised fibrotic tissue, the cells of which do not show the same tendency to produce fat.

15. In no instance has it been possible to demonstrate periarticular changes of an inflammatory nature around the affected joints, and it is doubtful if there is such a condition as periarticular rheumatoid arthritis.

Changes in Cartilage.

16. The changes in the cartilage vary considerably in different joints from the same case, and even in the same joint.

17. The articular cartilage may show signs of atrophy, accompanied by modifications in the staining reaction of the matrix.

18. The articular cartilage may show proliferation of its cells, which results in the formation of cell groups usually surrounded by an unstained zone.

19. The cartilage may become definitely fibrillated, and with this change there is usually evidence of proliferation and the formation of groups of cartilage cells. The fibrillation begins, as a rule, on the free surface and may extend to the deepest parts of the articular cartilage.

20. The hyaline cartilage may become converted into a modified fibro-cartilage, but in such specimens there is usually evidence of some inflammatory process in the neighbourhood of the altered structure. This process seems to be due to proliferation of the cartilage cells, but in some specimens the connective tissue cells of the inflammatory tissue also appear to take part in the formation of fibro-cartilage.

21. Areas of the articular cartilage may become necrotic; this necrosis may be found where inflammatory reaction has taken place. The edges of the necrotic mass often show a beautiful replacement fibrosis, which may eventually lead to the complete removal of the necrotic tissue.

22. In some joints portions, or even the whole layer, of the articular cartilage may be infiltrated and replaced by a more

or less vascular inflammatory tissue, owing to the cartilage having been invaded by new blood-vessels and connective tissue cells. In certain specimens the cartilage cells proliferate and appear to take part in the formation of the new tissue which has replaced the cartilage. This replacement of cartilage may begin either on the free surface from an inflammatory process spreading from the synovial membrane or capsule, or in the deeper parts of the cartilage by the extension of an inflammatory process from the subadjacent marrow spaces.

Changes in Bone.

23. The articular bone may show atrophy, rarefaction, resorption, or erosion.

24. The superficial osseous trabeculæ underlying those portions of the articular cartilage in which advanced atrophy, fibrillation, or complete wearing away has taken place may show increase in size and density owing to formation of new bone, brought about by continued use of the limb notwithstanding the joint changes. The amount of the new bone formed appears to depend upon the reaction of the tissues to pressure, and this increases in proportion to the weight and friction on the affected area. In those instances where the cartilage is absent and the superficial bone exposed this process leads to polishing of the superficial surface of the sclerosed bone. Associated with this increased density of the osseous trabeculæ minute fractures are often seen; these are probably of traumatic origin. In the neighbourhood of these fractures there is generally callus formation, with a combined process of resorption and repair around the injured area. These changes are characteristic of osteo-arthritis, but are not common in rheumatoid arthritis.

25. In those instances in which the inflammatory changes are confined to the synovial membrane active changes are not observed in the bone marrow or osseous trabeculæ, but there is often atrophy of the osseous trabeculæ in the neighbourhood of the affected joint; this appears to be due to disuse.

26. When an inflammatory process attacks the articular cartilage or bone of a joint inflammatory changes do not, except in rare instances, involve the whole of the epiphysis, but are usually strictly confined to the quite superficial cancellous spaces and superficial osseous trabeculæ. As a rule these changes are not found over the whole of the articular surface, but only in isolated areas; they vary greatly in intensity and extent in different joints or in different parts of the same joint. The process may be a chronic, slowly progressive resorption of bone, accompanied by new formation of bone in the neighbourhood. In such areas very few or no multinucleated osteoclasts are observed. When the process is more active proliferative changes are found in the bone marrow, with congested blood-vessels, osteoclasts, and inflammatory cells. This process often leads to erosion of the articular cartilage and the underlying bone; with very rare exceptions the formation of new bone can be seen taking place in the affected area. In some cases the resorption of bone is more rapid than the new formation, in others formation of new bone is in excess.

Development of New Bone.

27. The development of new bone in a damaged joint may take place (*a*) in the articular cartilage, (*b*) in altered articular cartilage, (*c*) in the zone of calcified cartilage, (*d*) on the edge of pre-existing bone trabeculæ, (*e*) in inflammatory connective tissue in the cancellous spaces, (*f*) in fibrous adhesions.

28. The development of new bone in hyaline cartilage may be due to changes in the cartilage cells; these changes are usually preceded by vascularisation of the affected area and by a deposition of calcium salts in the surrounding matrix. This is followed by proliferative changes in the cartilage cells and the gradual development of new bone from the modified cartilage cells.

29. The development of new bone in altered hyaline cartilage—for example, fibro-cartilage—may occur through changes similar to those described in the hyaline.

30. The development of new bone is sometimes seen in areas of vascular inflammatory tissue which has invaded and replaced a portion of the articular cartilage. The new bone in this case may either be formed by cartilage cells, as above described, or from the connective tissue cells of the inflammatory tissue.

31. The development of new bone in the zone of calcified cartilage may be due to changes similar to those described in the hyaline.

32. In rheumatoid arthritis the development of new bone on the edges of pre-existing bone trabeculæ is usually accompanied by proliferative changes in the marrow, which lead to resorption of bone in the neighbourhood of the new formation. The two processes occur simultaneously, and appear to depend upon some irritant causing increased blood-supply, which brings about resorption, and to pressure on the affected area from use of the limb, which causes the development of new bone.

33. Where new bone develops in inflammatory tissue which has replaced the marrow and osseous trabeculæ it appears to be formed from connective tissue cells in this inflammatory tissue.

34. New bone in fibrous adhesions appears to be formed from the connective tissue cells of the fibrous tissue.

35. In all the above instances the development of new bone is associated with the formation of cancellous spaces and marrow tissue. The new marrow usually consists of adipose tissue. The formation of the cancellous spaces appears to be due to the development of new blood-vessels, to changes in the vascular supply, and to the development of stellate connective tissue cells in which fat accumulates.

Limitation of Movement.

36. Limitation of movement in a joint may be due to (*a*) muscular spasm, (*b*) shortening and atrophy of muscles and tendons, (*c*) fibrotic changes in the capsule leading to contraction, (*d*) alteration in shape of the articular surfaces, (*e*) ankylosis, which may be fibrous, cartilaginous, or osseous.

37. Where the limitation of movement in a joint is due to muscular spasm it can be overcome by deep anæsthesia, but it returns when the effect of the anæsthetic has passed off.

38. The passive movement of a joint in which shortening and contraction of the muscles and tendons is suspected should not be lightly undertaken, as it is often associated with fatty changes in all the tissues of the joint, and fracture of any or all the tissues round the joint may take place.

39. Fibrotic changes in the capsule associated with contraction may be so extreme that the joint cavity is completely obliterated and the joint surfaces lie in close contact with the fibrous capsule, moulded tightly around the articulation.

40. Fibrous ankylosis is due to adhesions formed by the organisation of inflammatory tissue, which may originate either in the synovial membrane, the capsule, or in the superficial marrow spaces. These adhesions may partly or completely occlude the joint cavity. They may consist of long processes of more or less vascular fibrous tissue, which thus allow limited movement to take place in the joint, or of dense contracted fibrous tissue which firmly unites the articular spaces of the two bones (fibrous ankylosis).

41. The articular cartilage may become ankylosed by the matrix of the two layers of the hyaline cartilage becoming fused into one continuous layer, or the two layers may unite and be transformed into a modified fibro-cartilage. The ankylosed cartilage may become necrotic, and is often invaded and replaced by an inflammatory fibrous tissue, or new bone may develop in the ankylosed cartilage and thus bring about osseous ankylosis.

42. Osseous ankylosis takes place by the development of new bone either in ankylosed cartilage or in the fibrous tissue which has already produced fibrous ankylosis.

43. Ankylosis may occur between the two zones of calcified cartilage, but this form of fusion shows a tendency to become replaced by one of true bone.

Villous Outgrowths.

44. Villous outgrowths are found in some joints. These may be due to (*a*) overgrowth of normal villi, (*b*) inflammatory changes in the synovial membranes or in the capsule.

45. Villous outgrowths in a joint may consist of (*a*) vascular fibrous tissues, (*b*) dense fibrous tissue, (*c*) fibrous tissue enclosing groups of fat cells; (*d*) inflammatory tissue with dilated capillaries and groups of inflammatory cells, (*e*) degenerated or necrotic tissues, (*f*) connective tissue showing vessels deeply congested owing to obstructed circulation.

46. Villous outgrowths may become detached by rupture of the fine pedicles and so form a loose body in the joint cavity. The detachment may be preceded by necrosis.

47. Microscopic villi formed of cartilage are occasionally found on the surface of altered articular cartilage. These may be formed of hyaline or fibro-cartilage.

48. No constant changes are found after death in the organs or tissues of patients who have suffered from rheumatoid arthritis.

Discussion.

Dr. A. P. BEDDARD, in discussing the treatment of the condition, said that all joint affections, with the exception of gout, were due to infection. In order to treat the condition we must first find out where the infection came from and then investigate its bacteriology. In his opinion, in about 90 per cent. of the cases the infection came from the teeth and gums. It was impossible to say what the state was of the deep tissues of the mouth after a superficial examination; the use of X rays was absolutely essential. The attitude of dentists was fundamental, for they usually denied that the gums were infected unless there was running

pus. We must have common ground between the medical and dental points of view, and there was an enormous field for the education of the two professions in this connexion. Of the other 10 per cent., the infection in a few possibly came from infected tonsils and adenoids. A few also were due to infection of the mucous membrane lining the female genital organs after pregnancy. Curetting an infected uterus was of no use and might lead to the dissemination through the body of a large dose of bacteria. He had seen an extensive outbreak of joint trouble after curetting. It might be needful to remove all the female genital organs if such an operation should prove absolutely necessary. Infection of the alimentary tract was rarely a primary state of things. There was usually a previous *Streptococcus longus* infection of the teeth and gums, or tonsils and adenoids. After the primary cause was removed the question arose as to how to deal with the secondary manifestations. As far as the alimentary tract was concerned, where there were no signs suggesting that the mucous membrane of the colon was infected (such as attacks of diarrhœa) this was not likely to be the cause of the chronic arthritis. Dieting and washing out the colon were not of much use. With regard to partial or complete colectomy, he said that however complete the operation was the infection was not cured, and the operation was an extremely dangerous one. The removal of colons in highly infected people led to formation of adhesions in about six months. Wherever there was an infected tube which could not be cured it was first necessary, by the use of X rays, to see if there was any mechanical difficulty. In this case, and if an operation was to be performed, it was essential to produce less mechanical difficulty than was already present—in other words, the less done the better. The obvious treatment for the joints was vaccination, in order to stir up the body to the point of combating the infection. Of the usual bacteria present, about 75 per cent. were *Streptococcus longus*, and these, together with the pneumococcus and gonococcus, accounted for about 99 per cent. All three organisms might be found. In order to find out which was the offending organism, it was necessary to make vaccines of each and see which, on injection, would produce a good reaction —i.e., pain in the joints. He had known a lady from whom many strains of streptococci were isolated, but in whom only those from the teeth caused joint pain. Vaccine treatment was a question of a year or years, and should be continued till no pain could be produced in any joints on injection. This only referred to inflammatory and not mechanical effects. Ionisation, baths, &c., were only useful to relieve pain. It was "up to" the medical profession to standardise the treatment at health resorts. Massage was useful in keeping up movements, but could do little good with very stiff joints. The real treatment was preventive. With regard to the surgical treatment of infected joints, we must remember that the lower limbs must carry the weight of the body. Forcible movement of still infected joints was a great mistake. To get a permanently mobile useful joint was a matter of years, and with hospital patients (who probably would not persist with treatment) it was better to give up all idea of freely movable joints and go in for fibrous ankylosis.

Dr. M. J. ROWLANDS said that he had been enabled to carry out an investigation of rheumatoid arthritis among soldiers at Netley. He did not agree that such a large percentage were due to *Streptococcus longus*. Infection was generally due to *B. coli*. The gonococcus was present in a large number of cases. He was convinced that the disease was a toxic disease—a trophic neurosis—and until we could find out where the infection attacked the nerve we could never promote cure. He was much opposed to spa treatment and had never known a case to be cured by such. Hyperæsthetic areas around acute joints were very noticeable, and the pin-prick or pulling of hairs could be used to show if the joint was or was not in an acute stage. A large number of paratyphoid patients returned from Salonika had developed rheumatoid arthritis.

Dr. F. DE HAVILLAND HALL said that patients had expressed relief after taking sulphur and guaiacum. Many were anæmic, and for these iron and arsenic, with or without strychnine, were needed. X ray examination of the mouth and the elimination of *B. coli* infection were most important.

Mr. V. WARREN LOW, Dr. G. DRUMMOND ROBINSON, and Dr. F. PARKES WEBER also spoke.

Reviews and Notices of Books.

Prothèse et Chirurgie: Cranio-maxillo-faciale. By J. LEBEDINSKY and M. VIRENQUE. With 154 plates, comprising 421 illustrations. Paris: Baillière et Fils. 1918. Pp. 398. £1 1*s*.

THIS volume embodies the clinical experience and teaching deduced from the treatment and plastic repair of wounds involving the jaws, face, and cranial vault at the Military Hospital of Le Mans. It approaches the dimensions of a standard work on this comparatively new branch of surgery. The authors have made a complete survey of the field, and their results show once again the great value of the prosthetist and surgeon working in mutual alliance. The compilation is the work of masters of their craft, for we must bear in mind that the injuries described were seldom encountered before the war, and the literature dealing with them was meagre and of slight clinical value. A salient feature in their scheme of treatment is the "osteo-periosteal graft." It may be described as the theme of the work. Employing the technique elaborated by Delagenière, the authors use it for the repair of all skeletal losses. The relative value of this type of graft, in contra-distinction to grafts of full thickness of bone or cartilage, is discussed at great length, the authors taking as their standpoint the theory that the periosteum preserves its vitality and acts as an osteogenetic focus. In support of this assertion they speak of a thin, viscid, slightly yellow secretion which is occasionally observed escaping from the wound after the insertion of these grafts. This they assume to be a true periosteal secretion. They also adduce as further evidence the fact that, in spite of the occasional exfoliation of the compact tissue of the graft, bony union has yet been obtained, although somewhat delayed. The microscopical evidences of the pathological processes occurring in the grafted area, relative to the absorption and deposition of new compact bone, are also discussed. It is asserted that the additional osteogenetic surface given by the periosteal layer is the main factor in retaining continuity of the graft, particularly in those cases presenting considerable loss of bone. Our experience of these grafts, although limited to their use in the treatment of pseudarthrosis of the mandible, with but slight loss of bone, supports the authors' high opinion of the osteo-periosteal graft. Their own results on the mandible are sufficiently encouraging. Out of 15 cases of pseudarthrosis treated by this method, some with very considerable loss of bone, 9 have been absolutely successful, 2 showed slight mobility only at the end of five months, 1 failed owing to the refusal of the patient to submit to immobilisation, while 3 are of recent date and hold out every prospect of a complete cure.

The results of the same method of grafting in the repair of cranial injuries, and for the restoration of facial contour, are equally satisfactory. In all cases the technique employed is the same. Laminæ of periosteum containing the subjacent layer of compact bone are lifted from the inner aspect of the shaft of the tibia by means of a chisel. The ends of the bony fragments to be grafted are cleaned and freshened. Retention pockets for the reception of the extremities of the graft are made by lifting the periosteum off the fragments by means of elevators. Into these retention pockets the extremities of the grafts are wedged. Depending on the area to be covered one or more grafts are used, overlapping each other in the cranial defects, whereas in the mandible they are placed in the following manner: one in relation to the freshened inner aspect of the fragments; the second external; while a third is laid in contact with the other two between the fragments. No foreign bodies whatever (with the occasional exception of catgut) are used to attach the grafts. The jaws are not immobilised until 12 hours after the operation in order to allow the patient to recover from the effects of the anæsthetic. Drainage is dependent on local conditions and the extent of the area grafted. Immobilisation is complete for two months; full union occurs in from three to five. The length of the waiting period before grafting should be attempted is fully discussed, and successful cases are cited where the grafts have been inserted in the mandible at periods of 3½ or 4 months after date of wound. These grafts are also used, in combination with those of cartilage or fat,

for the obtaining of contour in the plastic repair of facial deformity. Attempts have even been made to repair the walls of the frontal and maxillary sinuses.

Fractures of the maxillæ are classified at great length and praise is due for the way in which these difficult conditions have been handled. One cardinal factor is insisted upon in the treatment of all cases—i.e., the restoration of normal occlusion. Opinions differ with regard to the advisability of making the attempt where bony loss has been sustained, but it may well be that in the surgical treatment of these fractures lies the key to the authors' success. The following statistics are quoted: Out of a total of 280 cases under treatment only 3 with vicious union occurred; pseudarthrosis resulted in 23 others, these latter cases, however, had suffered extensive loss of bone. The pages abound with descriptive illustrations, casts and splints being portrayed in great variety, the latter showing a truly Gallic ingenuity. The construction of splints is based on two main principles—the use of traction by rubber ligature for the correction of displacement, and the adaptation of guides and trolleys, to hold the jaws in normal occlusion after reduction. For the most part the methods advised are simple and there is an agreeable absence of cumbersome appliances, but we disagree with the authors in their contention that surgical methods for the correction of displacement are contra-indicated, as excellent results have been obtained from their use in selected cases.

With regard to the surgical aspect of these fractures, one innovation is made on what is now considered established practice. In cases with comminution the principle is laid down that only those spicules of bone lying in semi-attachment to the main fragments should be retained, the mobile spicules—i.e., with feeble periosteal attachment—being regarded as incipient foreign bodies and their removal indicated. If left, these form an obstacle to the formation of good callus. The repairing elements are regarded as the fixed adherent spicules, the flaps of periosteum, and the bony extremities, the intervening spicules giving rise to pseudarthrosis by causing a condensing osteitis with resulting eburnation of the main fragments. Efficient drainage is insisted upon as a necessary principle of treatment during the evolution of callus. Trismus is dealt with at length and is regarded, with few exceptions, as due to a hypertonicity of the elevator muscles, occasioned by reflexes following injury in the masseteric region. The relative feebleness of the depressor muscles of the mandible predisposes to this condition, which is accentuated by the poor nutrition following the injury. All cases of muscular origin have been cured by the use of a dilator instrument invented by the authors, tension being obtained by powerful elastics, the average duration of treatment being two months. This dilator is also used as a basis for reduction preliminary to splinting.

Some disappointment may be felt in reading the section devoted to plastic work, inasmuch as it lacks the detail given to the treatment of the jaw injuries. Sliding flaps are preferred where possible, contour being subsequently obtained by the insertion of osteo-periosteal, cartilage, or fat grafts, either singly or combined. The lip plastics are performed over a prosthesis. Double epithelialised flaps are mentioned, but these are the exception, and some surprise may be felt that they are not more extensively used, especially when the facial sinuses are exposed. This objection particularly applies to the cases of rhinoplasty where the inner aspect of the flap is exposed in a septic cavity, with the risk of suppuration and contraction.

The chapter on rhinoplasty is deficient in that it deals only with injuries involving the middle third of the nose. In those cases where the nasal cavities have been exposed, owing to the destruction of the overlying tissues, the authors make use of glass tubes, taking their purchase from the frontal region and resting on the upper lip, for retaining the air passages patent and as a means of preventing the upward displacement of the alæ. We have already made our criticism of the single-flap method of repair which is used in these cases. No mention is made in the chapter on plastic surgery of skin-grafting, an invaluable adjunct in this work, particularly in the form of the "Esser" epithelial inlay, which method has no equal in the treatment of ectropion and as a means of creating sulci for the better retention of dentures. There is a valuable suggestion culled from Morestin's work with regard to the surgical treatment of facial paralysis. This consists in the suturing of little tongues from the masseter and temporal to the peribuccal and the orbicularis palpebrarum muscles respectively. Much of interest also lies in the chapter devoted to salivary fistulæ. The theory advanced is that many of these fistulæ heal spontaneously by the suppression of glandular function. Ligature of Stenson's duct and alternatively avulsion of the secretory nerve to the parotid gland, the auriculo-temporal, are recommended as the best methods of treatment in intractable cases.

Many other matters of detail are usefully dwelt upon, including injuries of the nerves and blood-vessels, and the management of wounds involving the soft tissues of the face. We have here simply outlined the salient features of the volume. We strongly recommend the study of the book as a whole to those engaged in prosthesis and plastic surgery.

Précis de Dermatologie. By J. DARIER. Médecin de l'Hôpital St. Louis. Paris: Masson et Cie. 1918. Pp. 864. 18 francs.

THE name of Darier on the title-page of a text-book on dermatology guarantees to the reader both efficiency and originality, and the hospital of St. Louis has for many years attracted students from all parts of the world. No other hospital has produced such a number of distinguished dermatologists; at no other hospital has the dermatologist such unrivalled opportunities for study.

The first edition of this "Précis de Dermatologie" was exhausted some years ago, but the heavy duties entailed by the war prevented Dr. Darier from undertaking the publication of a new edition until now. Twenty years of further experience as a teacher has enabled him to compile a text-book admirably adapted to the needs of the advanced student and the practitioner. Practical points are dwelt upon; diagnosis is carefully and systematically described under every malady; theory and disputed problems are avoided. In his preface Dr. Darier claims that he has brought his new edition completely up to date, in line with the progress of science, yet without overburdening the text. Reference throughout proves the justice of this claim, and on turning to sections such as those dealing with anaphylaxis, cutaneous diphtheria and leukæmia, and syphilis we find examples of the precision, order, and compression for which French authors are justly famed. Treatment is indicated at the end of each section; details, with prescriptions, are to be found at the end of the volume. The British practitioner will note with interest the thoroughness and the length of the treatment of syphilis. At the outset Dr. Darier advises a course of 4 to 7 injections of novarsenobenzol, at weekly intervals, in doses of 0·30 g. to 0·90 g. After a pause of a few weeks mercurial injections are begun. Grey oil is preferred, and is administered in courses of six injections every two or three months for two years, and the result is better if this method is followed also during the third and fourth years. In strong subjects the mercury may be given at the same time as the arsenobenzol. The significance and limits of the Wassermann reaction are discussed.

In every malady described we find evidence of the extensive knowledge acquired only after long years of experience and persevering study devoted to a special subject. We recommend the work to the British medical profession.

A Text-book for Midwives. By J. S. FAIRBAIRN, B.M.Oxon. Second edition. London: Oxford Press Warehouse. 1918. Pp. 350. 20*s*.

THE author of this work has for many years been a teacher of midwives and closely associated with all movements for their higher training. The book in its new edition is much more than a mere text-book: it is a comprehensive exposition of the subject of midwifery adapted to the difficulties and the growing responsibilities of the present-day midwife. The introductory chapters on physiology are illuminating in the sense that they will really help the midwife to understand the phenomena which she has such abundant opportunity of observing. While all the special sections should be carefully studied, the section dealing with the duties of the midwife will be found specially useful, and we note the addition of a new chapter on antenatal care. A welcome feature of the book to the practising midwife will be the chapter summarising the rules of the Central Midwives Board, wherein she will recognise the work of a friend who enters into her difficulties with understanding.

The midwife who masters Dr. Fairbairn's book will not only make herself efficient in her craft but will become a useful handmaid to medicine.

LIBRARY TABLE.

The Megalithic Culture of Indonesia. By W. J. PERRY, B.A. London: Longmans, Green and Co. Manchester: At the University Press. 1918. Pp. 198. 12*s.* 6*d.* net.—*The Passing of the Great Race; or, the Racial Basis of European History.* By MADISON GRANT, Chairman of the New York Zoological Society. London: G. Bell and Sons. 1917. Pp. 245. 8*s.* 6*d.* net.—The study of ethnology and of comparative psychology has received an impetus from the "general post" occasioned by the state of almost universal warfare, which is not likely to diminish with the return of peace. The administration of law and order among peoples whose habits of thought and mode of life differ fundamentally from our own requires a sympathetic insight into motives only to be attained by careful study of the past and the present. In Mr. Perry's book, one of the ethnological series of publications issued by the University of Manchester, an inquiry is made into the effects produced by the stone-using immigrants upon the less-advanced inhabitants of Indonesia—a term here used to include not only the East Indian Archipelago, but also Assam, Burmah, the Malay Peninsula, the Philippine Islands, and Formosa. These immigrants are credited with the introduction of terraced irrigation, of metal-working, and of rice-growing, as well as the foundation of lines of chiefs and of a warrior class. The author's investigations are part of a wider inquiry to be extended to other regions of the earth embracing the whole development of civilisation.—Mr. Grant's book deals with the racial history of Europe and examines the physical and psychological characteristics of its races rather than the domains of nationality and language. Racial traits dating back to the time of tribal man anterior to civilisation are discussed in relation to their influence on the present-day inhabitants. His statements are often piquant and likely to provoke discussion. A typical sentence runs: "We Americans must realise that the altruistic ideals which have controlled our social development during the past century and the maudlin sentimentalism that has made America 'an asylum for the oppressed' are sweeping the nation towards a racial abyss."

The Passing On of Life: a Talk about Ourselves. By Viscountess FALMOUTH. London: George Routledge and Sons, Ltd. 1918. 2*d.*—This is a tract on the reproduction of the human species, and is intended to prepare the minds of juvenile readers for the absorption of requisite knowledge on this subject. It is founded on the axiom that "Right Thinking Leads to Right Doing." The contemplation of flowers and butterflies and birds leads up the staircase of life to man, and the passing on of human life, when controlled by moral standards, is regarded as the highest function of the body. The first edition of this useful pamphlet was reviewed in our columns on Jan. 6th, 1917.

The Lau Islands (Fiji) and their Fairy Tales and Folklore. By T. R. ST. JOHNSTON, F.R.G.S., F.Z.S. London: The Times Book Club. Pp. 145. 5*s.* net.—Mr. T. R. St. Johnston, whose entire familiarity with the island groups of the Pacific is shown in every line of his writings, prefaces his book with a note from "Somewhere in France," for he is serving at the moment as a temporary Major in the Royal Army Medical Corps. The Lau Islands lie about midway between Fiji and Tonga, some 200 miles from either group, and the author discusses their importance from three separate points of view: utilitarian, as a valuable asset to the copra industry of Fiji; political, because of their geographical and historical relations with Fiji; and scientific, in offering abundant material for a study in comparative ethnology. It is to illustrate the third point that his recapitulation of the fairy tales of the Lau Islands and their folklore is mainly directed, but reference is made to Mr. Basil Thomson's well-known book, "The Fijians," which contains a concrete study of the customs of the natives. Mr. St. Johnston has limited himself, therefore, to legendary folklore and to the doings of the people of the Lau Islands, "whom I know best." How well he knows them can be judged by such chapters as the second one on South Sea Magic, the fourth, entitled "The Duel 'tween God and Ghost," his summary of the legends of the Exploring Islands, and his account of the "Shark God" and the Father of Serpents.

New Inventions.

A NEW EYE SPUD.

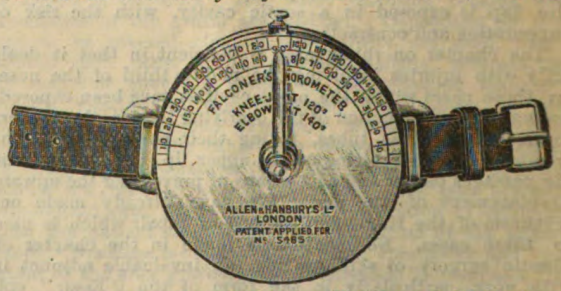
THOSE practitioners who receive many patients suffering by reason of the ingress of foreign bodies to the surface of the eye must have been struck with the inadequacy of the instruments in use for the removal of these foreign bodies, particularly of those which adhere to the surface of the cornea. There is but one instrument, the spud, a sort of maid-of-all-work, useful but lacking refinement and distinction. The spud of usual pattern is merely a narrow strip of metal thinned to a blunt edge, and since it is essentially a digging tool it is not good for the removal of the foreign body which is just stuck on to the surface of the cornea. The most dextrous use of the ordinary spud can scarcely avoid a corneal abrasion. For the removal of the ordinary superficial foreign body I have designed a spud (see Figure) calculated to "lift" the foreign body from the eye. On the usual metal handle is mounted a steel stem, this terminates in a small angled piece of steel. This end-piece is shaped like a plano-convex lens, it measures a couple of millimetres in diameter, is set at an angle of 45° to the line of the stem, and the surfaces are placed so that the plane looks towards the handle and the convexity away from it. The edge of the steel end-piece is ground as finely as the shape allows; it is so sharp that when pushed forwards on the hard surface of the finger-nail it will remove a fine shaving of horn. For the removal of a foreign body from the surface of the cornea the eye is anæsthetised in the usual way, the lids are held apart, and the globe is fixed with the finger-tips of one hand. Then the new spud is directed to the eye vertically to the corneal surface with the edge of the end-piece as close to the foreign body as possible, gentle pressure of the spud on the cornea will cause the convexity of the end-piece to depress the corneal epithelium below it, so that a gutter is formed beside the foreign body and the edge of the instrument lowered in relation to the foreign body. A forward movement of the instrument from this position will lift off the foreign body cleanly and without abrading the epithelium. This new spud is not a maid-of-all-work. It is not intended to be used for digging out foreign bodies. To use it for such a purpose is to ensure disappointment. It is a spud of the "first instance." It will lift off the new placed invader more neatly and expeditiously than any other form of spud.

The new instrument is made by Messrs. John Weiss and Son, 287, Oxford-street, London, W. 1.

Harley-street, W. N. BISHOP HARMAN, F.R.C.S.

AN "ARTHROMETER."

THE illustration depicts a new device for measuring the angles of movements of joints, which has been designed by Mr. Wilbraham Falconer, Superintendent of Mechanical Treatment in the Red Cross Clinic for the physical treatment of disabled officers. This "arthrometer" is simple in construction and easily adjusted to the limbs, and the



measurements are quickly taken. It is intended to be used with all joints and therein differs from the various forms of protractors and goniometers at present in use. If properly adjusted to the limb, the readings cannot be otherwise than accurate. It is manufactured by Messrs. Allen and Hanburys, Limited, 48, Wigmore-street, London, W. 1.

Devonshire-place, W. R. FORTESCUE FOX, M.D. Lond.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 9, 1918.

Phthisis in Factory and Workshop: The Ministry of Health Bill.

IN another column of this issue of THE LANCET we publish a striking article by Professor BENJAMIN MOORE on the conditions leading up to, or accompanying, the incidence of pulmonary phthisis in workshops and factories. The article is founded upon information which Professor MOORE has personally gathered, and in it he sets forth powerful arguments for the institution of an industrial health service. For the author has for some time been engaged in studying how far the rate of incidence of phthisis in different sections of the community varies with the strain of the conditions, with the hours of employment, and with the nature of the work. Observation during prolonged visits to workshops, statistical study of the operations of the National Health Insurance Act, and investigation of the returns of the Registrar-General, have been carried out and the results collated in the paper to illustrate the effects of urban types of employment in influencing the prevalence of phthisis.

We know that pulmonary phthisis actually kills more males than females, but Professor MOORE states—what many have not realised—that this greater death-rate among males applies only to the urban conditions of life, and is due to the modern conditions of factory and workshop life. The reverse holds good for the rural dwellers, in whom the death-rate among females remains higher than that of males in every age-group. In both town and country nearly twice as many girls as boys die of phthisis between the ages of 10 and 15. The important point is, that while until the twentieth year the mortality in both sexes from pulmonary phthisis is greater in rural districts than in urban districts, between the twentieth and thirtieth years the conditions in the towns become reversed. After the thirtieth year the disease preponderates greatly amongst urban males as compared with urban females; but no such disparity is observable between the death-rates of rural males and rural females, and in the towns the disparity is a recent occurrence not to be observed in the returns of 70 years ago. Professor MOORE'S statements are well supported by four charts selected to illustrate the contrasts in death-rate from pulmonary phthisis in accordance with occurrence in urban or rural conditions. The four charts are plotted to the same scale. The first compares rural areas with urban areas; the second shows the London area, where the curves well display the marked difference between the mortality of males and females; the third contrasts Lancashire and Westmorland; and the fourth Warwickshire and Dorset. It emerges from these charts as a general rule that in typical rural districts death-rates of males and females lie close together, whilst in urban districts the male death-rate is vastly the higher during the middle period of life. Professor MOORE'S reasons for the curves of the charts are so clearly set down that they require no analysis or simplification from us. We may add that he seems to us to be generally convincing, though the remarks on the printing trade are capable of misinterpretation. It is incorrect to say that machine managers are better organised than printers' assistants, although, as highly skilled men, they naturally earn more money per hour than their assistants. Secondly, Professor MOORE speaks of composing frames being set back to back, "so that the consumptive printer can spray the man working opposite to him and facing him at a distance of only two or three feet." But the workers at the frames cannot be less than five feet apart, while the upper cases are usually on a level with the man's eyes, standing erect, and the work is done with the head bent downwards.

We regard Professor MOORE'S paper, though dealing with only one disease and one section of the population, as very illustrative of the kind of work which has to be done in the near future, and for the proper doing of which a Ministry of Health is rightly demanded, so that widespread conditions of ill-health can be treated on some general plan by a central authority. It is being largely guessed that the recent changes at the Local Government Board have arisen from the desire to end a period of delay in the appearance of the Bill setting up this Ministry. The guess is as true as such general impressions frequently are, and the actual first reading of the Ministry of Health Bill will almost synchronise with the promotion of Mr. HAYES FISHER to a peerage and the appointment of Sir AUCKLAND GEDDES as President of the Local Government Board, retaining office also as Minister of National Service. The delay in the Bill has been unfortunate, although circumstances, we admit, have made the course of the Government very hard when so large a measure was in contemplation. The Bill to be introduced by Dr. ADDISON under the ten minutes' rule will set up two separate departments, one for England and Wales, and one for Scotland.

The Contributions to Red Cross.

BY a special effort recently made upon a day set aside for the purpose, and advertised throughout the country as "Our Day," a large sum of money, or what would once have seemed a large sum of money for such uses, was raised by the British Red Cross. Under the stimulus of such effort and advertisement many gave to the full extent of their power, and, so it is hoped, many contributions were won to this great cause which otherwise would have remained ungiven. It is well, however, that all should realise without distinc-

tion of class, and whether able to give little or much in comparison with their neighbours, that the claims of the Red Cross are not to be satisfied with a donation which may be substantial enough from the giver's point of view, or with a generosity which is only evoked by the appeal of a particular canvasser, or social occasion. The work of the Red Cross Society, in the performance of which thousands of men and women have toiled ceaselessly since the early days of August, 1914, is neither over nor nearly over.

The end is not even in sight, although the cessation of hostilities on all fronts may seem to be a matter of a few weeks, and although in the Eastern and Southern areas of war fighting has ceased with almost bewildering suddenness. This merely means that so far as Red Cross work is concerned the provision of material in certain directions will not have to be made with a view to future battles, and that the number of wounded men so far as those areas are concerned has become, or will be shortly, a matter of certainty and not of calculation or speculation. The cessation of hostilities has been achieved only in a limited portion of the field of war, whereas in others, on land and sea, bloody battles may yet precede the armistice, which we confidently expect will be the forerunner of final and lasting peace. No armistice, however, will bring to a conclusion the sufferings of the wounded which it finds lying on the field of battle or in the hospitals at home and abroad for which the Red Cross Society is responsible. The work remaining before the Society may diminish in volume by degrees, but the subscriptions which are necessary if its efficiency is to be maintained must be kept up to the end. The "clearing-up" processes will severely tax the energies and resources of the United Kingdom—and indeed of the whole world—and the organisation which we associate primarily with active warfare and its immediate results will be working at full speed when other energies are being discontinued. Wounded and sick men will remain dependent upon surgical and medical aid to restore them to comparative strength and well-being not for weeks or months but for years, and so far as the Red Cross Society may be responsible for their treatment, so long must its claims be a first call upon the generosity of all in the country.

The voluntary system, the custom of appealing to the liberality of individuals to supplement or to take the place of the efforts of the State where physical suffering or destitution is concerned, has given us the great hospitals and other charitable institutions of which the country has ever been justly proud, and it has given us the Red Cross Society. We need not dwell upon its previous achievements in our own recent war in South Africa or in succouring the wounded in the wars of foreign nations. At the beginning of the present terrific struggle it was soon realised that the military authorities had their hands too full of other matters to be able to undertake the care of the wounded without most strenuous assistance from everyone who might be able to help with hand, brain, or purse. That need for the coöperation of all has continued and will endure long after the last shot has been fired and the last wounded man has been borne to the dressing station, and that need we urge upon the public. When the immediate danger seems to have passed away for ever, let us not forget the seamen and soldiers who struck the last blows that repelled it.

Anoxæmia.

THE needs of the flying man and of the poison-gassed soldier have perforce stimulated the study of the physics of the circulation. The airman, whose lungs are sound, goes up into regions where the oxygen in the air is insufficient for his needs. The gassed soldier has his respiratory area so diminished that he does not obtain enough oxygen from the ordinary atmosphere. Both suffer from anoxæmia and require an addition of oxygen to the air which they breathe, on a scale which could not conceivably be supplied by the wasteful methods in vogue before the war. No. 10 of the reports of the Chemical Warfare Medical Committee, just issued by the Medical Research Committee, deals with the administration of oxygen in irritant gas poisoning and gives an admirable summary of the indications and methods. In acute poisoning by lung-irritant gases the danger to life, so far as present knowledge goes, is mainly due to interference with the oxygen-supply to the tissues. It is very important to understand how the imperfect oxygenation is produced and how oxygen administration prevents it. The ordinary types of irritant gas produce, after an interval of some hours, a condition in which the alveolar tissues become swollen and liquid exudes into the alveoli, with the result that the absorption of oxygen occurs much less readily than under normal circumstances. By adding oxygen to the air breathed we can easily increase by several times the diffusion pressure, which drives oxygen through the water-logged layer into the blood. The immediate improvement in colour, pulse-rate, and general condition testifies to the remedial effect of the inhalation. So far the matter is simple. But recent investigations at the Canadian Hospital at Taplow show that other factors have to be considered. It has been proved that deficient oxygenation of the blood may be due to imperfect ventilation of a part only of the lungs. HILL and TWORT, as well as ZUNTZ, came to the conclusion that perfectly healthy persons may exhibit some degree of anoxæmia during quiet breathing; and rapid and comparatively shallow breathing is frequently seen in the acute stages of irritant gas poisoning. Experience at Taplow has shown that the tendency to uneven distribution of air, with its consequent anoxæmia, is greatly increased in the recumbent position. There is, too, a large variation in the individual response of the respiratory centre to anoxæmia. In some Cheyne-Stokes breathing is produced with the greatest ease; in others consciousness is lost before the regulative machinery comes into action. The nervous regulation of breathing and the function of the bronchial muscular layer are factors as yet imponderable, for clinical evidence is still imperfect owing to the failure on the part of clinicians to recognise the early symptoms of anoxæmia or to realise its clinical significance. These deficiencies are now likely to be made up by the controlled administration of oxygen which the Haldane apparatus has made possible.

THE next session of the General Council of Medical Education and Registration will commence at 2 P.M. on Tuesday, Nov. 26th, Sir Donald MacAlister presiding.

Dr. H. H. Tooth, after four years of continued service with the Forces, two years of which have been spent abroad, has returned to his hospital duties and civilian practice.

Annotations.

"Ne quid nimis."

THE QUATERCENTENARY OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

IN view of the urgent claims of the present no concerted action has been taken by the Fellows of the Royal College of Physicians of London to celebrate the 400 years which have elapsed since Thomas Linacre founded the College in the year 1518. But at the conclusion of the Harveian oration, which we have printed in full, the President, Dr. Norman Moore, after congratulating the orator, gave a brief and learned address befitting the occasion. He recalled the early circumstances of the College and the names of the first six Fellows, handing over to the College Library as a gift from himself a book which belonged to John Chambre, the first Fellow named in the Charter, and physician to Henry VII. and VIII. This done, he received at the hands of Major Michael Foster a Latin letter (the text of which, as well as the official answer of the College, we print elsewhere) from 16 Fellows now serving with the Armies in France, extolling their College and recording "the new regiment of fevers which has descended upon the earth, as though set free from Pandora's box." The letter ends, as is traditional in the College, with a Greek message: "Rejoice; we win," to which Dr. Moore made the felicitous reply: "We do rejoice; let right prevail." The messenger was rewarded by the President with a denarius of Caligula, whose tower still remains in part at Boulogne, and a drachma struck at the place where Hippocrates practised medicine. At the conclusion of this ceremony the President handed the Moxon medal of the College to Dr. F. W. Mott.

THE INCUBATION PERIOD OF INFLUENZA.

THE incubation period of influenza is variously given in the text-books as from a few hours to four days, most frequently three to four days. The communication which we published last week by Major Michael Foster and Major H. Anstey Cookson on a small, localised epidemic is of interest in that the circumstances under which the first case of influenza was admitted into a surgical ward were such as to enable observations to be made upon the incubation period almost under the conditions of an exact experiment. Owing to the lack of beds in the medical wards a man suffering from an attack which clinically was of the nature of influenza was admitted into a surgical ward in which no case of medical illness had occurred for some days. Eight cases subsequently occurred in this ward, six of them in the beds immediately in the neighbourhood of the first patient and two on the opposite side of the ward. It seems possible that one of the latter cases may have been a fresh case introduced into the ward, though he may have been infected from the original patient. Although the nine cases showed somewhat different manifestations, there can be little doubt that they were all of an influenzal nature, and the diagnosis was established bacteriologically in two of them. The analysis of the onset of the cases with the aid of the diagram given in the paper seems to justify the conclusion arrived at by the authors—namely, that in all these cases the incubation period was about 48 hours, and that where the possibilities of accurate observation were greatest the incubation period approximated most closely to a 48-hour period. On the assumption that the cases were spread from bed to bed, and not all directly from the first patient, an assumption which seems reasonable to us, Major Foster and Major Cookson conclude that infection occurs only within a narrow radius of the patient. Their paper is a valuable piece of clinical research.

HEALTH AND EDUCATION.

THE state of the Holborn streets in early October, owing to neglect following a strike, may have recalled to the older inhabitants of London the condition of many thoroughfares 40 or 50 years ago, but it is only when contemplation is carried back to the condition of things in the early part of last century that there is realised the wonderful progress made in sanitation and public health since that time. Great, however, as this progress has been, it might have been still greater if the public had been more alive to the need for practically applying the knowledge which science has placed at their disposal. Ignorance rather than callousness has retarded the wider application of sanitary knowledge as that knowledge accumulated; the ignorance remains, and if public apathy could be overcome it would be difficult to place a limit on the benefit to life and health which would thereby result. After the war it will be necessary that everything possible should be done to conserve the health of the people, but the best results can only be obtained if the people themselves intelligently coöperate in the efforts made towards this end, and for this it is necessary that they should understand the broad principles on which public health legislation is founded. On a small scale the experience of various local centres and institutions has shown the educative value of simple charts and diagrams illustrating the dangers to life and health which surround us and the means by which they may be avoided; while the exhibits intended for popular education shown in the entrance hall of the South Kensington Natural History Museum admirably illustrate how important scientific facts may be imparted to the people in simple and comprehensible guise. There is no doubt that a public health exhibition under Government ægis illustrating the various ways in which science has been brought to bear on sanitation and public health, and embracing, as did the Health Exhibition held at South Kensington in 1884, health, food, dress, housing, and education, would result in a greater stimulus to the study of health matters on the part of the public. A real advance in public health knowledge, and a consequent wider interest in the legislation necessary for carrying out promptly and effectively pressing reforms, are the urgent needs of the immediate future. Such an exhibition as we have in mind, if international in scope, would have effects of incalculable range; for the Allies, who have been fighting side by side in the cause of established civilisation, as well as neutral countries, would be brought into close touch by the common object of placing that civilisation on the surest basis of prosperity—a firmly consolidated international health. For these reasons the holding of another exhibition on the lines of that held at South Kensington in the early "eighties," and popularly known as the "Healtheries," deserves the earnest consideration of the Government.

AN UNUSUAL TYPE OF EMPYEMA.

SOMETHING approaching almost an epidemic of empyema associated with pneumonia occurred in the area dealt with by the base hospital at Camp Upton, New York, during last winter and spring. The clinical characters of these cases indicated that they were of an altogether different type from that with which we are accustomed, whilst operative procedure upon them was attended by an unusually severe mortality. Obviously such cases demanded careful clinical study, and an admirable account of this condition is given by Major Harlow Brooks and Major Russell L. Cecil in the *Archives of Internal Medicine* (September, 1918). Eighty cases form the basis of this study. In most instances it was discovered that the causative agent, not only of the empyema but also of the pneumonia associated with it, was the so-called *Streptococcus hæmolyticus*. In this series of cases cultures were made from the sputum and the pleural exudate. The following résumé of the results obtained is given:—

1.	Pneumococcus in sputum and exudate ...	15 cases
2.	Streptococcus ,, ,, ,, ,, ...	40 ,,
3.	Mixed infections	10 ,,
4.	Sterile empyemas	15 ,,

The pneumococcal empyemas differed in no respect from those seen in civil practice. The streptococcal empyemas made up 49 cases: 9 were instances of a streptococcal pleural infection associated with a pneumococcal pneumonia, 5 were infections by *Streptococcus viridans*, which differed in no marked manner from the *Streptococcus hæmolyticus* cases.

The patient usually complains of cough, fever, and pain in the side. The onset is usually gradual. Sputum is scanty and viscid, rarely rusty. Fever runs an irregular course. The physical signs before the onset of empyema are often indefinite. The empyema itself develops surprisingly early, a positive diagnosis being possible in, on an average, 5·4 days after admission to hospital. Often it develops before a conclusive diagnosis of pneumonia can be made; these empyemas are, in fact, imposed on, and do not merely succeed, the active stages of pneumonia. A most constant and suggestive clinical sign is profuse sweating and marked exhaustion. Abdominal rigidity is strikingly absent. Skin tenderness (not hyperæsthesia) over the involved area is frequent and has, in part, aided the selection of a point for aspiration. Physical signs have been disappointing; even X rays cannot be absolutely depended upon. Percussion is of most value. It is curious to note that pneumothorax developed in six instances, due, it is suggested, to the rupture of minute pulmonary abscesses. The fluid removed by the needle is light yellow and cloudy; later in the disease it becomes purulent.

Though all the cases of empyema were associated with pneumonia, in many the pneumonic process had been very slight, and the empyema far outweighed the pneumonia in clinical importance. Most of them seem to develop from a broncho-pneumonia. The mortality in this group of 49 streptococcal empyemas is high—61 per cent. As regards treatment, whilst in the usual run of cases early operation is beneficial, in these streptococcal cases similar measures are much less effective. Early operation, in fact, seems definitely contra-indicated: "Those patients operated on early have, almost without exception, died, whilst those in whom the operation has been postponed until the pus has become thick and gelatinous ..... recovered." It is evident from this general account that a very special type of pulmonary-pleural infection has been recognised. A very similar outbreak, occurring during the last quarter of 1917 in a camp at Zachary Taylor, Kentucky, was described in THE LANCET of June 8th, 1918, where attention was also called to the high incidence of empyema at Aldershot. We think it probable that the same thing is occurring elsewhere.

WAR DAMAGE AND THE STATE.

A DEPUTATION from the Committee on War Damage was received recently by Mr. G. L. Wardle, M.P., Parliamentary Secretary to the Board of Trade, its object being to obtain compensation from the State for those who have suffered through air raids or bombardments. A memorial on the same subject presented to the Prime Minister some time ago met with a favourable reception, and the more recent deputation lost no time in making it clear that in its opinion Mr. Lloyd George had accepted the principle of national responsibility, and that the fact that no tangible result had followed upon his observations amounted to something very like breach of faith on the part of the Government. We gather from a printed report of what occurred that members of the deputation received by Mr. Wardle laid their arguments before him with some vehemence, and were not a little disappointed at finding that he could give no pledge beyond promising to acquaint the Government with their views, and asking for particulars showing the extent of the liability which they wished the Government to undertake. With some reasonableness it was pointed out to Mr. Wardle that the acceptance of the principle of State compensation for damage to person or property arising from air raids or bombardment should not be affected by an exact preliminary calculation of the sum of money involved, The cogency of some of the arguments put forward by the deputation must also be admitted, even though full weight be allowed to the obvious reply that the State provided an insurance scheme of which owners of property at any rate might have availed themselves. The points insisted upon by the deputation were, to speak generally, that the districts most affected by air raid and bombardment have been precisely those which, owing to the danger of air raids, of bombardment, and possibly of actual invasion, have been the worst sufferers financially throughout the war. This would, of course, include towns on the south-east and east coasts, whose usual visitors have filled to overflowing seaside places in the west and consequently out of the danger zone. The deputation claimed to be able to say, as representing 842 municipal authorities and a population of 32,000,000, that the country at large was willing to pay for the sufferings of those whose accident of domicile had rendered them most liable to attack. We can well believe that this is the case, and we desire to give our own support to the views expressed by the deputation and to the demand which it has laid before the Government. No doubt a vast number of owners of property insured against the risks of damage from air raids or bombardment; but universal insurance, including that of the homes of the poor and of their contents, could not reasonably have been expected, and no doubt nothing approaching universal insurance took place. Something, in short, must be allowed for the human weakness of those who are imprudent, forgetful, procrastinating, or financially unprosperous, before we consider the provision of insurance by the Government as a complete answer to any claims made upon it. Moreover, there is the question of personal injuries, and looking at the matter from the point of view of the medical profession we cannot help bringing forward such an example as this. Our readers can picture a medical man having a practice in an East Coast town, summoned from his home and possible underground shelter to attend those injured by

bombs, being himself wounded by an explosion and being informed later that his house had been bombed in his absence, his wife or members of family being also hurt. If he were found, quite imprudently we admit, to have failed to insure to the fullest extent, or to have allowed his insurance to lapse, we should certainly feel impelled to support the view, which no doubt he would hold, that the State ought at least to help him to bear his loss. It will be recognised that the case we have put forward is not wholly imaginary, and because of it, and others, we sympathise in the abstract with the views put forward by the Committee on War Damage.

EPIDEMIC POLIOMYELITIS.

IN this country, happily, we have had so far no severe or widespread epidemics of acute poliomyelitis, such, for example, as that which swept over the State of New York two years ago, and which, in a population of about 10½ millions, attacked no fewer than 13,164 persons, most of them under 5 years of age, of whom 3331, or about 25 per cent., died; and among those who recovered a considerable proportion were left paralysed for life. In England the manifestations of the disease, while not uncommon, have hitherto been on a comparatively small scale. The total number of cases notified in 1917 was 357, distributed widely over the country in small groups of cases. The largest outbreaks in recent years occurred in Devon and Cornwall in 1911, and were carefully investigated on behalf of the Local Government Board by Dr. R. J. Reece.[1] Three localised outbreaks of epidemic poliomyelitis reported to the Board during 1917 were made the subject of special inquiry by medical inspectors. The three reports have now been issued together, along with a prefatory note by Dr. R. J. Reece, Assistant Medical Officer to the Board.[2] The first report is by Dr. A. S. MacNalty and deals with an outbreak, comprising 42 cases and 3 deaths, in the Esher and the Dittons urban district and in the adjoining Epsom rural district, 33 attacks being referred to the former and 9 to the latter. Twenty of the cases suffered from definite paralysis, in 12 of whom, when last seen, the paralysis still persisted. The spread of the disease generally was from person to person. Dr. MacNalty in his report gives a diagram representing graphically the spread of the infection and the grouping of the cases. Mild or so-called "abortive" cases occurred side by side with paralytic cases in the same households; such mild cases when unrecognised probably played a not inconsiderable part in diffusing the infection. The first attacks were reported in mid-July and the outbreak lasted until the end of August. The second report is by Dr. H. A. Macewen and relates to the occurrence of 11 cases of acute poliomyelitis in the borough of Cambridge and in its vicinity during the autumn of 1917. In this instance also the malady appears to have been spread by personal infection. The origin of this local outbreak was difficult to trace, and no connexion between it and a previous occurrence of the disease could be discovered. There was only 1 death among the 11 cases. The third report is by Dr. J. P. Chandler, and is concerned with an investigation of three cases of acute anterior poliomyelitis which occurred among the boys at Cheltenham College during the month of October, 1917. The precise source of the infection was not definitely determined, but it is thought very probable that it was brought to the college by a returning schoolboy at the conclusion of the summer vacation. The first of the cases had a fatal termination, but the other two recovered. There were ten notifications of poliomyelitis in Cheltenham town during 1916, but apparently no connexion existed between these cases and those at the college in 1917. The publication of these three reports serves, among other things, the useful purpose of reminding medical men that poliomyelitis is liable to occur, sporadically or otherwise, in any part of the country, and that practitioners should be on their guard against overlooking mild, abortive, or anomalous cases which, if not properly dealt with at once, might diffuse the infection in the locality and give rise to a serious epidemic. Epidemic poliomyelitis is, as our readers are aware, one of the saddest of diseases, since the tender-aged victims who survive the attack are often left permanently crippled or deformed.

[1] THE LANCET, 1912, i., 450.

[2] Reports to the Local Government Board on Public Health and Medical Subjects (New Series, No. 120). Further Reports and Papers on Epidemic Poliomyelitis. H.M. Stationery Office. Pp. 27. Price 1s. net.

ULSTER AND THE MEDICAL NEEDS OF THE ARMY.

AT the first meeting of the Ulster Medical Society for the session 1918–19, held in the Belfast Medical Institute, when Dr. W. Donnan, as retiring President, introduced his successor, Dr. J. Colville, Dr. F. Goodbody made a strong appeal for doctors for the front owing to the great necessity for them during the present Allied offensive. The medical profession in Ireland is being strongly pressed for fully qualified practitioners with the Army, and the Queen's University of Belfast has definitely decided to hold a special medical degree examination at the end of November, so that there shall be no delay until the usual degree examinations in March of next year. But they have made certain clear conditions:—

1. Every candidate before being admitted must sign a document that in the case of men they will go to the front, and in the case of women that they will place their services at the disposal of the War Office.

2. Those candidates who pass must provide evidence before their degrees are conferred that they have "signed on" with the War Office, otherwise their degrees will be forfeited.

"The possibility of getting young medical men in Ireland has been rendered doubtful," says our Belfast correspondent, "because there is no guarantee that if a young doctor throws up his practice and goes to the front he will not on his return find his patients in the hands of others who will not be very keen to give them back." Our correspondent proceeds:

"The bureaucratic authorities in charge of the petrol-supply are cutting down the amounts of spirit to doctors, with the natural result that, in addition to the amounts being smaller and often much poorer, the mileage of the cars is being diminished. The consultants and those attending the military in hospitals and camps are finding that it is impossible to get through work with the diminished supply of such frequently poor petrol; while older men—who would be willing to do the extra work of younger doctors, so as to let the latter off to the Navy and Army—realise they could not, with their present petrol-supply, do the work. What makes it specially aggravating is that every day civil officers are using petrol, and ambulances are seen running about with, at times, some vegetables or clothes (washed or soiled), as the case might be, from one military hospital to another. The whole train service is so greatly restricted that it is of little use to doctors. Owing to the inadequate supply of doctors the Dublin corporation has demanded the release of several medical men who have been deported and interned."

TUBERCULOSIS IN FRANCE.

The Return of the Tuberculous Interné.

CIVILIAN prisoners are being repatriated from Germany through Switzerland in increasing numbers. One of our French correspondents writes that something like 1000–1300 are arriving daily at Evian, and of these about 1 per cent. are found to be tuberculous, their condition being a product of the insufficient food, defective hygiene, and harsh circumstances of captivity. To ensure sufficient and immediate care for these unfortunates the Minister of the Interior has set up machinery at Evian for weeding out the tuberculous patients on their arrival, with a view to classification and treatment appropriate to each several case. A rapid separation into three categories is made: (1) the grave forms, which are sent to special hospitals; (2) the suspects, who are reserved for careful examination; (3) those found unaffected, who are then allowed to continue their journey. The hospital of suspects includes 180 beds, and to it is attached a hostel for healthy children, where sufficient isolation is obtained without complete separation from their possibly infective parents. At the end of 10 days' observation the patient then recognised as non-tuberculous is allowed to proceed. Those found to be tuberculous are classified as follows: (1) advanced or rapid lesions, needing rest in bed; (2) old cicatrised lesions with good general condition; (3) cases presenting some active symptoms, but whose lesions are slight and closed; (4) cases with open lesions and therefore infective, but with a prospect of cure.

The men are generally alone, the women more often accompanied by children whose health is not always the same as that of the mother, who does not wish to be separated from them. Four possibilities have to be considered: (*a*) infective mother with infective child; (*b*) infective mother with non-infective child; (*c*) non-infective mother with non-infective child; (*d*) non-infective mother with infective child; the last a very rare category. Among the non-infective children it is necessary to define: (1) the healthy; (2) the anæmic, debilitated, and the subjects of tuberculous glands; (3) those with tubercle of bone or joint. To meet the needs of these various classes there has been established a hospital of 56 beds in the neighbourhood for grave cases, men and women, their children being placed in a neighbouring hostel. Curable tuberculous cases are sent into other establishments, the men to sanitary stations in the interior, where they join the discharged soldiers. Several establishments for women are available according to the gravity of their case. At the village of Monnetier-Mornex a hospital of 125 beds has been set up at 800 metres above sea-level, a house of 30 beds for infective women, a hostel with 45 beds for healthy children, and a house of 30 beds for infective children. The Hospital of Ste. Eugénie, near Lyons, with 140 beds set up by the American Red Cross, also receives tuberculous women. Children with tubercle of bone or glands are sent to marine hospitals. Finally, the departmental committees of assistance for the military cases of tubercle are setting their vast organisation of regional sanatoriums at the disposal of the returned civilian.

Propaganda Work in France.

At the recent annual meeting of the National Association for the Prevention of Consumption, held in London, an informing address was given by Professor Selskar M. Gunn, Associate Director of the Commission for the Prevention of Tuberculosis in France. His main theme was the need for popular education in tuberculosis, as illustrated by the work of the Commission in France. "No matter how thorough is the medical care of the population," Professor Gunn said, "provision for the sick and a campaign against tuberculosis cannot secure complete results until each individual has been taught the fundamental facts of correct and healthy living and follows the teachings. In the last analysis the prevention and the eventual elimination of tuberculosis are a matter of sane living, of following the most simple physiological laws of health, good food, adequate rest, proper exercise, and fresh air. At present these facts are the property of a limited number of persons in the community. It is essential, if tuberculosis is to be conquered, that the scientific knowledge of the few be given to all. Professor Gunn then described the adaptation of some of the plans found useful in the United States to the conditions in France. Five different methods have been employed: newspapers, exhibits, posters, pamphlets, and public meetings. 1. A series of articles prepared by the educational division of the Commission have been printed in 36 newspapers, explaining the origin of tuberculosis, the ways in which it can be cured, and the French newspapers are rapidly coming to realise their great opportunity of public health education. 2. The travelling exhibit emphasises the main facts about tuberculosis by means of wall charts. There are also models of a dispensary, an out-of-doors sleeping-porch, and a kinema with films. The exhibit, which is carried on a truck from town to town, is in charge of a directress and has a personnel of chauffeur, moving picture operator, two lecturers, and an advance agent. There are now three such exhibits in operation and within a few months the number will be increased to six. They have already traversed the departments of Eure-et-Loir, Loir-et-Cher, Indre-et-Loire, Cher, Allier, Ille-et-Vilaine, Finistère, Cotes-du-Nord et Loire-Inférieure. 3. Conferences preceding the exhibition have been held in communities of 3000 or more persons, the audiences in many instances numbering 50 per cent. of the population. Special sessions have been arranged for school children, who attend with their teachers, as well as conferences for mothers and meetings in factories. 4. Moving pictures on health subjects form an important part of the programme. Some of the films are scientific presentations of disease; others are animated cartoons on health. The meetings are thoroughly advertised; many posters are put on the walls and the local newspapers carry notices. 5. The Commission has prepared a large variety of brochures in order that the people attending its meetings may have something to take home and study at leisure. The booklets are illustrated by French artists, and a million and a half copies have already been distributed."

Professor Gunn has found that the French people are glad to know the facts about tuberculosis, and he has had the hearty help and coöperation of the préfets and maires, many of whom have acted as chairmen at the meetings arranged by the Commission.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

Meeting of Comitia.

AN ordinary Comitia of the Royal College of Physicians of London was held on Oct. 31st, Dr. NORMAN MOORE, the President, occupying the chair.

The following candidates having passed the required examination were admitted as Members of the College: Dr. J. C. Matthews, Dr. S. A. Moore, and Mr. H. J. Orr-Ewing.

Licences to practise physic were granted to 93 candidates who had conformed to the by-laws and regulations and had passed the required examinations.

Certain College officers and examiners gave their faith to the College.

The following communications were received:—

1. The Secretary of the Royal College of Surgeons, dated July 26th and Oct. 11th, reporting proceedings of the Council of that College on July 25th and Oct. 10th respectively.

Note.—A supplementary letter states that at the meeting of the Council on July 25th it was decided—

(*a*) "To omit the names of universities in Germany and Austria-Hungary from the list of hospitals and schools of medicine and surgery published in the College Calendar as the places from which certificates of the professional education of candidates for the Membership and Fellowship will be received by the College for the year commencing the 1st of August, 1918."

(*b*) "That the desirability of also omitting these universities from the published list of the Conjoint Examining Board should be brought under the consideration of the Committee of Management."

This was referred to the Committee of Management.

2. Dr. Guy Wood, dated Oct. 7th, asking that the Membership, which he resigned in 1900, may now be restored to him.—This was agreed to for the first time, on the proposition of the SENIOR CENSOR.

The SENIOR CENSOR proposed, and it was resolved, that the Licence of the College which was withdrawn from Mr. William Dutton Akers in January, 1912, be now restored to him.

A Latin letter was received from the Fellows of the College serving with the Army in France on the occasion of the quater-centenary of the College, as follows:—

EPISTOLA

a dilectissimis Sociis nostris in Gallia bellum gerentibus accepta.

χαίρομεν. Τὸ εὖ νικῶτω.

Collegio Regali Medicorum Londinensium quartum saeculum vitae suae feliciter conditum celebranti et quintum jam faustis auspiciis ineunti salutem plurimam dicunt et libentissime gratulantur Socii subsignati, Gesoriaci Bononiensium inter arma collocati. Longum est nomina percurrere tot virorum illustrium qui sine ulla intercapedine continenter honorem Collegii nostri sustulerunt, scientia artem medicinae altius provexerunt, feliciter hominum corpora morbis oppressa ad integram valetudinem revocare docuerunt. Sed quotum quidque invenimus Collegium cujus alumni literas quoque humaniores urbanitate tanta et lepore ornaverint, scientiam omnis generis tutius ingenio aedificaverint, rei publicae insignius profuerint?

Quarto jam anno belli consensu omnium furore teutonico incepti peracto, militantes videmus eheu! qualis nova febrium terris incubuerit cohors, velut e Pandorae pyxide liberata, quot morbos pediculi necnon muscae, quot vapores noxii attulerint, quanta denique strage nostrorum et totius gentis humanae hostis barbarus Marte illacrimabili maxime abusus sit debellandus. Sed sortes jamdudum faustae, florent arma amplusque florebunt, praevalebit tandem justitia. Quin etiam (cum licet denique) Pheidippidis verbis sine superbia usi, spe victoriae certa Collegium nostrum valedicentes jubemus *χαίρετε νικῶμεν.*

Gesoriaci Bononiensium, A.D. ix. Kal. Oct., MDCDXVIII.

W. P. HERRINGHAM, Major-General.	W. P. S. BRANSON, Major.	CHARLES J. MARTIN, Lieut.-Colonel.
W. PASTEUR, Colonel.	GORDON HOLMES, Lieut.-Colonel.	W. E. HUME, Colonel.
JOHN ROSE BRADFORD, Major-General.	T. R ELLIOTT, Colonel	HENRY MACCORMAC, Lieut.-Colonel.
J. HUGH THURSFIELD, Major.	MICHAEL FOSTER, Major.	A. M. H. GRAY, Lieut.-Colonel.
J. A. NIXON, Colonel.	CHARLES MILLER, Colonel.	S. W. CURL, Captain.
A. J. JEX-BLAKE, Major.		

The following answer was addressed to the Fellows of the College serving abroad:—

Accepimus, O Socii, litteras vestras jucundissimas, pro quibus libenter gratias agimus. Quod si graves Reipublicae vices, si clades nostrorum lacrimabilis, publicas nobis ferias interdicunt, si etiam convivia Moderator, ut ita dicamus, Cibarius denegat, licet tamen vobiscum paululum gaudere, licet Collegium nostrum, per quarta saecula traditum, mirari. Illud vero ex litteris vestris cognitum praecipue laudamus, quod vobis inter arma inter labores inter pericula collocatis non deest tamen erga Collegium pietas, neque litterarum humaniorum cultus. Adsit utinam fausta illa dies, quum ad patriam ad domos ad Collegium redeuntes pacem cum honore referetis. Valete!

Apud. Lond. Prid. Kal. Nov., MCMXVIII.

A committee was appointed to draw up a pronouncement on the subject of influenza, consisting of Dr. F. W. Andrewes, Sir Humphry D. Rolleston, Dr. H. R. Crawford, Sir John Broadbent, and Dr. H. French.

The resignation by Sir Frederick Taylor of the office of Representative of the College upon the Senate of the University of London was accepted with great regret.

The President and Dr. Henry Head were appointed representatives upon the Conjoint Board of Scientific Societies.

The REGISTRAR proposed for the second time the following temporary by-laws:—

1. That Dr. Sydney Walter Curl, being resident abroad, be admitted to the Fellowship *in absentiâ*, any by-law to the contrary notwithstanding.
2. That Dr. Harold Benjamin Day, being resident abroad, be admitted to the Fellowship *in absentiâ*, any by-law to the contrary notwithstanding.

These were accordingly resolved.

A report was received from the Committee of Management, dated Oct. 1st, as follows:—

The committee desire to recommend that the following University be added to the list of institutions whose graduates in Medicine are admissible to the Final Examination of the Examining Board in England under the conditions of Paragraph IV., Section III., of the Regulations—viz., the Emory University of Atlanta.

The committee also report that under the provisions of Paragraph VI., Part I., of the scheme for constituting the Examining Board in England, Dr. W. Hale White and Mr. W. F. Haslam retire by rotation from the committee.

Dr. W. Hale White was reappointed a member of the Committee of Management.

After some formal business the Comitia was dissolved.

THE King has sanctioned the formation of a new branch of the League of Mercy called the Wanderers' Branch. The first President is Colonel R. J. Blackham, now D.D.M.S. of an army corps in France, and the honorary secretary is Lieutenant-Colonel E. F. Falkner. Letters may be addressed to either officer at the Army and Navy Club, Pall Mall, S.W. 1.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions have been received up to Monday last, Nov. 4th:—

	£	s.	d.
Sir Rickman J. Godlee..	3	3	0
North of England Branch B.M.A (per Dr. J. Don, Hon. Sec.)—			
Dr. R. S. Hubbersty...	2	2	0
Dr. J. A. Hislop... ...	1	0	0
Dr. H. Carden Pearson	1	1	0
Dr. R. A. Welsh	1	1	0
Mrs. Ethel Bowman...	0	10	0
Dr. H. B. Hunter ...	0	10	0
Dr. W. Murray	1	1	0
Drs. W. A. and E. G. D. Benson	2	2	0
Dr. D. B. Cama	1	1	0
Dr. M. Maclean	1	1	0
Dr. D. Welsh	1	1	0
Dr. J. R. Burn	2	2	0
Dr. J. Hammond ...	1	1	0
Mr. E. Spencer Evans (monthly)	0	10	0
Sir A. Pearce Gould (monthly)	5	0	0

Monthly Subscriptions.

The following monthly subscriptions have been received for October:—

	£	s.	d.
Dr. Vincent Tighe... ...	0	10	0
Dr. G. Grey Turner ...	1	1	0
Dr. W. E. Good	0	10	0
Dr. W. Luffman	0	10	0
Dr. R. Legat	0	10	6
Dr. A. E. Naish	0	10	0
Dr. J. O. Musson	0	10	0
Dr. T. W. Goodbody ...	1	0	0
Sir T. Barlow	0	10	0
Surg. P. G. S. Davis, R.N....	0	10	0
Dr. A. B. Stevens	1	0	0
Lt. J. B. C. Brockwell, R.A.M.C.	0	10	0
Major E. R. Fothergill...	0	10	0
Dr. W. S. Hart	1	0	0
Dr. A. Graham	1	1	0
Dr. Hyla Greeves	0	10	0
Dr. H. Caiger	0	10	6
Dr. K. J. Dougall	0	10	0
Dr. A. W Forrest	1	0	0
Dr. T. L. Drapes	0	10	0
Capt. H. L. P. Hulbert, R.A.M.C.	1	0	0
Dr. E. C. Morland... ...	0	10	6
Dr. H. Whitehouse ...	0	10	0
Dr. A. Hawkyard	0	10	0
Dr. W. Stewart	0	10	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

Obituary.

JOHN WILLIAM SINCLAIR MEIKLEJOHN, M.D. EDIN., L.R.C.S. EDIN.,

DEPUTY INSPECTOR-GENERAL OF HOSPITALS AND FLEETS, R.N.

Deputy Inspector-General Meiklejohn, R.N., who died at his residence, 105, Holland-road, London, on Oct. 31st, was born at Latheron, Caithness, in 1829 and had therefore reached the ripe age of 89 years. After graduating in medicine at the University of Edinburgh in 1851 he entered the Royal Navy as assistant surgeon and was subsequently appointed to the *Illustrious*, a training ship at Portsmouth. Afterwards he became assistant surgeon to the screw steam sloop *Harrier*, which during the Crimean War took part in the operations in the Baltic. For his services Dr. Meiklejohn was awarded the Baltic medal.

In 1860 he obtained the licence of the Royal College of Surgeons of Edinburgh and became staff surgeon four years later. His subsequent service was in the Mediterranean, India, South America, and South Africa, and at various Home Stations. He was appointed fleet surgeon in 1875 and retired in October, 1884, with the rank of Deputy Inspector-General of Hospitals and Fleets.

Inspector-General Meiklejohn was a man of almost encyclopædic knowledge in many departments of natural science, especially in botany; he was a Fellow and at one time on the Council of the Linnæan Society. His extensive travels while in the Navy gave him opportunities of pursuing personal studies, but besides these interests he knew and read widely in Greek, Sanskrit, Latin, French, German, Italian, and Spanish literature and history. Architecture and archæology were other subjects he had studied closely: he was also an authority on Buddhism. For many years he was a member of the Council of the Ray Society and a Governor of the Royal Naval School at Eltham.

He married in 1875 Mary Elizabeth, daughter of Mr. William Reynolds, of Campden Hill-square, who died in 1912. By her he leaves three sons, Mr. R. S. Meiklejohn, C.B., of H.M. Treasury, Lieutenant-Colonel W. L. S. Meiklejohn, of the Indian Army, and Surgeon Lieutenant-Commander N. S. Meiklejohn, R.N.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. F. C. Harrison, R.A.M.C., attd. Duke of Wellington's Regiment, was a student at Sheffield University and at the Royal Dental Hospital, London, and took his medical qualification in 1915, having previously qualified in dentistry in 1913. Prior to joining the R.A.M.C. he was in practice in Sheffield.

Died.

Capt. N. J. Allan, R.A.M.C., received his medical education at Liverpool University and qualified in 1916. Before joining the R.A.M.C. he held appointments at the Liverpool Royal Infirmary and at the Liverpool Maternity Hospital.

Capt. C. M. G. Campbell, R.A.M.C.

Surg. Lieut.-Com. J. Hadwen, R.N., was a student at St. Bartholomew's Hospital, and qualified in 1907. Prior to joining the Navy in 1910 he was in practice at Gloucester.

Capt. W. L. Millar, R.A.M.C., qualified at Aberdeen in 1906, and prior to joining up was in practice at Forres, where he was honorary medical officer to the Leanchoil Hospital, and was also M.O. of Kinloss parish, and medical referee for several insurance companies.

Capt. T. R. Guilfoyle, Canadian A.M.C., qualified at the Western University, London, Ontario, in 1914, and prior to joining the Canadian Contingent held an appointment at Guelph General Hospital, Guelph, Ontario.

Wounded.

Capt. H. P. Whitworth, R.A.M.C., attd. Scottish Borderers.
Major W. B. Allen, V.C., M.C., R.A.M.C.
Capt. C. F. Hacker, M.C., R.A.M.C., attached Royal Scots.
Major J. B. Scott, M.C., R.A.M.C.
Capt. C. R. Young, M.C., R.A.M.C., attached Shrops. L.I.
Capt. A. F. Argue, Canadian A.M.C.
Capt. F. B. Day, Canadian A.M.C.
Capt. H. F. Brice-Smith, M.C., R.A.M.C., attd. Yorks. L.I.
Major J. S. Levis, M.C., R.A.M.C.
Capt. F. E. Sprawson, R.A.M.C.
Capt. N. H. Little, Canadian A.M.C.
Capt. J. R. Cameron, R.A.M.C., attached Royal Irish Rifles.
Major H. B. Graham, D.S.O., M.C., R.A.M.C.
Capt. C. H. T. Ilott, R.A.M.C., attd. Royal West Surrey Regt.
Capt. R. T. Raine, M.C., R.A.M.C., attd. East Yorks Regt.
Capt. C. H. Seville, R.A.M.C.
Capt. W. B. Wilson, R.A.M.C., attached Devon Regiment.
Capt. A. R. Campbell, Canadian A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Private R. H. Cuthbert, Royal Fusiliers, attached A.P.C., died in England of pneumonia, fourth son of the late Dr. W. H. Cuthbert, of Frinton, Essex.

Second Lieut. P. C. Weaver-Adams died as the result of a flying accident, younger son of Mr. E. Weaver-Adams, F.R.C.S., of Slough, Bucks.

Capt. C. A. Mallam, M.C., Royal Berkshire Regiment, died of wounds, son of the late Dr. G. B. Mallam, of South Hackney, London.

H. M. Thompson, A.I.D., died suddenly in England, second son of Surg.-Capt. M. Thompson, of Richmond, Surrey.

N. M. Haydon, O.T.C., died of pneumonia, youngest son of Dr. E. Haydon, of Newton Abbot, Devon.

Private W. H. Scott, Essex Regiment, formerly Lincs Regiment, killed in action, second son of the late Dr. I. Scott.

Lieut. C. W. Sheppard, R.E., formerly Oxford and Bucks Light Infantry, died of influenza and pneumonia, eldest son of Dr. W. J. Sheppard, of Putney, London.

Second Lieut. F. B. Bond, R.F.A., killed in action, only child of Dr. B. W. Bond, of Godalming, Surrey.

Gunner C. G. Kelly, R.F.A., killed in action, son of the late Dr. B. Kelly.

Colonel Champe C. McCulloch, jun., U.S.M.C., executive officer of the Board for Collecting and Preparing Material for a Medical and Surgical History of American Participation in the European War, has arrived in France. During his absence Lieut.-Colonel Casey A. Wood, U.S.M.C., will be in charge of this work in the Surgeon-General's office at Washington.

OBITUARY OF THE WAR.

GEORGE SELBY BROCK, M.B., CH.B. EDIN.,

CAPTAIN, INDIAN MEDICAL SERVICE.

News has been received by cable of the sudden death on Oct. 12th, from influenza, at Rawalpindi, of Captain G. Selby Brock, of the Indian Medical Service. Only son of Dr. George Brock, of Rome, he was born in the Orange Free State 32 years ago, and educated at Uppingham School and at the Universities of St. Andrews and Edinburgh, from which last he graduated in 1910, joining the Indian Medical Service in the following year. At the outbreak of the war he went to France with the first Indian contingent and served in Flanders, thus earning the 1914 Star. In the following year he returned to India to regimental duty at various stations, for the last two years at Kohat. Thence he was transferred to Rawalpindi in June of this year on his appointment as adjutant of the newly instituted "School of Instruction for Temporary I.M.S. Officers," which he had helped to organise there. Captain Brock was a fine athlete, having at Uppingham captained the School Fifteen, and while at Edinburgh won the Inter-University hurdling championship. He was also a good linguist, speaking French, German, and Italian, and shortly before his death was engaged on, and had nearly completed, the compilation of a manual on the Pushtu language and Afridi dialect. His personal qualities made him a general favourite, and his loss will be much felt, especially at the new "School of Instruction," to the success of which his attractive personality, his good influence with the young Indian officers, and his enthusiastic and excellent work were greatly contributing. He leaves a widow and two children.

GEOFFREY MOORE COWPER, M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain G. M. Cowper, who died of wounds on Oct. 3rd, was educated at Darlington Grammar School and Trinity College, Cambridge, going on to St. Bartholomew's Hospital, London, where in 1914 he took the Conjoint Diploma. He joined the R.A.M.C. on the outbreak of war, and after six months of duty as anæsthetist at a base hospital in England he went to Le Tréport with a hospital unit, where, in addition to his regular duties, he had charge of surgical huts and acted also as honorary secretary and treasurer of the officers' mess. Last year he became attached, first to a West Riding regiment (Duke of Wellington's), and later to a field ambulance. Finally, just before his death, he was transferred to a Dorset regiment, and it was while working at his regimental aid-post that a direct hit by enemy artillery inflicted wounds which shortly proved fatal. Captain Cowper's superior officers write of his whole-hearted devotion to the work in hand, whether professional or recreative, which made him a true comrade, while his considerateness endeared him to the patients and nursing staff. His loss is keenly felt by all his associates.

PERCIVAL THOMAS PRIESTLEY, M.B., CH.B. BIRM.,
MAJOR, ROYAL ARMY MEDICAL CORPS.

Major P. T. Priestley, who died at Salonika on Sept. 28th, was only child of the late Rev. Thomas Priestley, vicar of Albrighton. He was educated at St. Michael's College, Tenbury, Shrewsbury School, and Birmingham University, qualifying M.B., Ch.B. in 1913, and then holding resident appointments at the Birmingham General Hospital. He joined the Birmingham University O.T.C. on its formation and received later a commission in the Special Reserve of the Royal Army Medical Corps. He was sent to France on August 14th, 1914, and a year later to the Near East, where he served at Anzac until the evacuation and then at Imbros and Alexandria. After sick leave and a period of home service, during which he had charge of Lady Tennyson's Hospital at Freshwater, he was sent in June, 1917, to Salonika, where he died of influenza after a few days' illness. Major Priestley married in January, 1916, Ellen, daughter of Charles F. Underhill, of Burton-on-Trent.

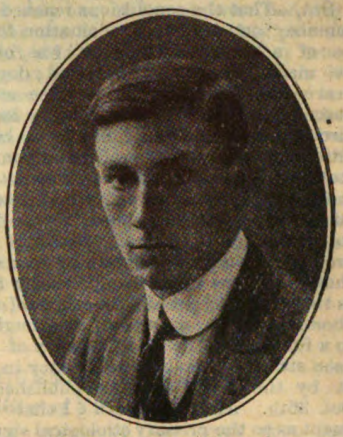
JAMES TOWERS KIRKLAND, M.B., CH.B. GLASG.,
MILITARY CROSS; CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. T. Kirkland, who was killed in action on Sept. 18th, at the age of 36 years, was youngest son of Archibald Kirkland, of Newmains. He was educated at Glasgow High School and Glasgow University, graduating there in 1909. At school he was known as a good footballer, playing for the High School Rugby team. After graduation he spent a year holding house appointments at the Royal Infirmary, Glasgow, and afterwards at the Maternity Hospital. From this time until the outbreak of war he was obtaining experience as locum tenens in private practice with the intention of specialising in gynæcology later. He obtained a commission in the R.A.M.C. in November, 1914, was awarded the Military Cross at the beginning of 1916 for services at the Battle of Loos, and was mentioned in Sir J. French's despatches. He had charge of one of the first clearing stations at Festubert. Excessive strain caused cardiac dilatation and general nervous prostration, on account of which he obtained his discharge from the R.A.M.C., but he determined to join up again and resumed his rank of captain, doing arduous and dangerous work with a field ambulance until he was killed at his post. One who knew Captain Kirkland well writes that the medical profession has lost a member who would have made a good name for himself.

Captain A. ALLAN PARKER, *M.C.*, C.A.M.C., who died of wounds on Oct. 12th at the age of 26 years, was a native of Mimico, Ontario. He graduated in medicine at the University of Toronto in 1914, sailed from Canada in May, 1916, and after arrival in England was posted to Etchinghill. He went to France in December, 1916, and was on the strength of No. 6 Canadian Field Ambulance, serving for short periods as M.O. with a battalion of the 1st Canadian H.A. and the 1st Canadian C.C.S. He was awarded the Military Cross in October, 1917.

ERNEST HOWARD GLENNY, M.R.C.S. ENG.,
LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant E. H. Glenny, who died at Basra on Oct. 9th, aged nearly 27 years, was youngest son of Edward H. Glenny, of Manor Park, London. He was educated at Redland Hill House, Clifton, and at the Leys School, Cambridge, and after passing the London Matriculation Examination he took a special course of business training at Kensington College, from there secured a post in the London School of Economics, and later served in the office of the Industrial Trust, Ltd. Deciding in 1913 to take up medicine, he entered St. Bartholomew's Hospital, London, gained the Willett Medal, and qualified M.R.C.S. and L.R.C.P. in 1917. After three months as house physician there he was called to join the R.A.M.C., and went straight from Blackpool to Mesopotamia, where he was appointed medical officer at No. 3 British General Hospital last March. There he remained until he was removed on Oct. 4th to the Officers' Hospital, Beit Naama, Basra, seriously ill with pleuro-pneumonia, from which he died five days later.



Captain L. E. ROBERTS, A.A.M.C., who was killed in action on August 29th, at the age of 33 years, was son of J. Albert Roberts, of Geelong, Victoria. After a successful career at the Geelong College he obtained a resident scholarship at Ormond College, Melbourne University, which he held during his University course. In athletics he took a keen interest, being a member of his school football and shooting teams. At the University he represented his College and University in football. Completing his medical course some months earlier than usual, he enlisted in August, 1917, spent some time at No. 1 Australian General Hospital, Rouen, and joined the 8th Australian Field Ambulance early in August last. He was fatally wounded by a shell while his battalion was in action near the River Somme, and died some hours later at the C.C.S. at Daours. Though with his division for only a short time, he had already shown himself a man of courage and ability, and his death is keenly felt by his associates.

Second Lieutenant JAMES STUART RICKETTS, R.F.A., who died on Oct. 5th in a French general hospital from wounds received in action on August 29th, was eldest son of the late Dr. T. F. Ricketts. Educated at Oundle, Lieutenant Ricketts passed into Woolwich with a view of joining the Royal Engineers. Prevented by illness from so doing, he decided to adopt his father's profession, and became a medical student at King's College. His health being restored, he volunteered for service in the Air Corps, but failing to pass the final health standard test, he took a cadet nominationship from his old school and obtained his commission early this year. In the short time which he spent on active service he won golden opinions from his superior officers.

THE HONOURS LIST.

The Albert Medal for gallantry in saving life at sea has been awarded to Surg.-Lieut. William Fryer Harvey, R.N.

On June 28th, 1918, two of H.M. torpedo-boat destroyers were in collision, and Surg.-Lieut. Harvey was sent on board the more seriously damaged destroyer in order to render assistance to the injured. On hearing that a stoker petty officer was pinned by the arm in a damaged compartment, Surg.-Lieut. Harvey immediately went down and amputated the arm, this being the only means of freeing the petty officer. The boiler-room at the time was flooded and full of fumes from the escaping oil. This alone constituted a great danger to anyone in the compartment, and Surg.-Lieut. Harvey collapsed from this cause after performing the operation and had to be hauled out of the compartment. Moreover, at any time the ship might have broken in two, and all hands were fallen in on deck, wearing lifebelts, at the time in order to be ready for this eventuality. Surg.-Lieut Harvey displayed the greatest gallantry and disregard of his personal safety in descending into the damaged compartment and continuing to work there amidst the oil fumes at a time when the ship was liable to sink.

Correspondence.

"Audi alteram partem."

INFLUENZA AND PREVENTIVE INOCULATION.

To the Editor of THE LANCET.

SIR,—That the conclusions reached at the War Office Conference "on preventive vaccination for influenza" could only be of a tentative character was obvious. Bricks cannot be made without straw, and dogmatic advice on the prevention and cure of a disease cannot be given in the absence of accurate data as to its causation. In these circumstances would it not have been wiser if the committee had made a more frank confession of our present state of ignorance on the subject under discussion, had indicated the lines along which observation and research could most profitably go, and, if it felt constrained to make some practical suggestion in the way of vaccine prophylaxis, might this not have been done in a manner which should lay less claim to specificity for the remedy offered? Is there not present a slight savour of "intensive cultivation" about the whole argument, as though military necessity led to a forcing of the pace? Many of your readers must have been struck by the lack of cogency in the conclusions arrived at by the committee, as published in THE LANCET of Oct. 26th. After stating in § 1 that "there was considerable doubt as to the primary etiological significance of the *Bacillus influenzæ* of Pfeiffer, and ..... the existence of some as yet undiscovered virus must be regarded as possible," they say, in § 2, that "the general question of the employment of a bacterial vaccine for the control *of the incidence* and severity of the epidemic was discussed, and it was unanimously agreed that inoculations with a *suitable* vaccine might be expected to be of value *in both directions.*" (The italics are mine throughout.) The committee then passes on to consider the selection of a "suitable" vaccine, and "it was agreed that the *Bacillus influenzæ*, the pneumococcus, and the streptococcus *only* should be employed" (§ 3). If it should turn out to be true that the primary cause of the present epidemic is some as yet undiscovered virus, the committee fails to make it clear in what way the use of a mixed vaccine of Pfeiffer's bacillus, pneumococcus, and streptococcus can affect *the incidence* of the disease. If it is merely the severity of the disease—as contributed to by secondary infections due to the above-named micro-organisms—that is likely to be influenced beneficially, might not the committee have said as much without losing caste? And might not the committee have confided in us why the veto expressed in the word "*only*" was decided upon?

So far we have at least got definite advice. But now follows a statement which, though calculated to act as a corrective to the empiricism underlying the practical conclusions, suggests that the committee has really very little faith in its own nostrum, at least as a preventive for the present epidemic; for the fulfilment of the conditions laid down as a desideratum in the preparation of the vaccine is likely to take so long a time that it will outlast (I trust) the present outbreak. The desideratum is "that a number of different strains and types of each organism should be utilised in the preparation of the vaccine, and that these strains should have recently been isolated from cases occurring during the present epidemic and should be submitted to strict tests as to race and type *prior to use.*" But despite this considerable qualification, involving highly expert and lengthy technique, the committee proceeds (§ 4) to give "the relative proportions of the different organisms and the dosage of the vaccine," as though all this work of differentiation of "strain" and "type" and "race" had been already done! The formula given does not seem, on the face of it, to be very different from that of a good many vaccine prophylactics for "catarrh," differing chiefly in the absence of *M. catarrhalis*. But this difference does not go far to save the result of the committee's deliberations from coming very near to *ridiculus mus*. In regard to the constitution of the formula, I should like to endorse emphatically the criticism appearing in Dr. John Matthews's letter in THE LANCET of Nov. 2nd as to the suggested dose of Pfeiffer's bacillus. Years ago, when it was very difficult to cultivate this bacillus, and we used fresh blood for the purpose, even then securing very little growth, it was found that small doses of a vaccine made up from such growth often gave smart "reactions." This fact led to the custom of employing a small dosage in general when using Pfeiffer's bacillus either for preventive or for curative vaccination. Whether the "bite" of these older vaccines was due to the admixed blood from the medium, or to "aggressins" or to some other property that seems common to vaccines from most micro-organisms when grown with difficulty, is not known. But it seems certain that vaccines prepared from cultures of Pfeiffer's bacillus grown in profusion upon Matthews's trypsin blood medium are much less innocuous than those prepared from cultures on ordinary blood media. And, although the committee does not expressly say this, it would appear essential that the bacillus should be cultivated upon Matthews's medium in order to obtain sufficient growth for the purpose of such a large quantity of vaccine as is here proposed for military use. During the past two years I have found, in the employment of such vaccine in a series of cases, that the appropriate dosage is quite ten times the size I was formerly in the habit of using.

I am, Sir, yours faithfully,

Harley-street, W., Nov. 3rd, 1918. THOMAS HORDER.

To the Editor of THE LANCET.

SIR,—As some time must elapse before the most suitable prophylactic and therapeutic doses of vaccine for influenza are agreed upon, a brief note upon the experiences of those who have used them should be of service.

Prophylaxis.—I agree with Dr. John Matthews (THE LANCET, Nov. 2nd) that the doses recommended at the War Office Conference are inadequate, and likely to imperil the value of a vaccine. Experience with other diseases teaches that in order to obtain lasting immunity large doses must be given. For typhoid, doses of 1000 million are used. In pneumonia, Sir A. E. Wright suggested a dose of 1000 million for prophylaxis and a dose of 500 million at the outset of a pneumonia attack. Lister in his South African studies went further and used three inoculations at seven days' intervals, each dose consisting of 6000 million cocci of each group against which immunity was desired. I do not know how many strains were used, but probably 18,000 to 24,000 million pneumococci were given in one dose. As compared with these a dose of 30 million *B. influenzæ* seems absurdly inadequate. The period of immunity is probably proportionate to the dose used. Whereas a dose of 1000 million may confer immunity lasting several months, the immunity from a dose of 30 million probably lasts but a few days. 100 million pneumococci and 40 million streptococci are advised as a first dose, but as these are composed of several different strains the actual immunising dose against a particular strain would be as little as 10 or 20 million.

My own plan has been to inject as a first dose 100 million pneumococci, 100 million streptococci, and 50 million *B. influenzæ*, and after seven days double these amounts. A certain number of cases have been injected with pneumococci and *B. influenzæ* only. Such doses probably confer immunity for a few weeks only, but there is no reason why a third or fourth dose, each twice the previous one, should not be injected at weekly intervals. About 200 cases have been injected and these were mainly chosen from contacts—doctors, nurses, relatives of patients. In no case was there a noticeable general reaction. There was no interruption of work, the persons injected followed their ordinary duties. So far I know of no case of influenza occurring in an inoculated person. There was no sign of increased susceptibility, although they were exposed to infection and cases of influenza occurred in non-inoculated persons living in contact with them.

Treatment.—Vaccines are recommended for subacute and chronic cases, but not for severe cases of secondary broncho-pneumonia. The doses recommended are 6 million *B. influenzæ* in subacute cases, and if used in broncho-pneumonia 1½ million. Again, I consider these doses inadequate. Cases of pneumonia and broncho-pneumonia have been treated by vaccines for years. In acute lobar pneumonia I give doses of 100 million pneumococci to an adult man as soon as possible after the onset of the disease. In broncho-pneumonia treatment cannot be given early, as the causal organism must be determined, and in any case smaller doses than the above are advisable. In a series of Friedländer's pneumonia I used doses of 30 to 50 million bacilli with good results. In mixed streptococcic and pneumonic broncho-pneumonias I have

used doses of 30 to 50 million of each organism. With influenza my present plan is to inject 50 million pneumococci, 50 million streptococci, and 30 million *B. influenzæ* as soon after the onset as possible. In no case in which the vaccine was given within 24 hours have lung complications afterwards developed. When broncho-pneumonia has developed before the patient is seen I give the same dose, repeating or even increasing every other day or sometimes daily, and have several striking charts showing the effect of the vaccine in bringing down the temperature and limiting the severity of the disease. I feel sure that similar results cannot be obtained by the use of doses of 1½ million *B. influenzæ*. I would urge the immediate treatment of influenza by giving vaccine in adequate doses within a few hours of the onset. Hesitation and delay allow the cases to get out of hand, and little can be done for the profound toxæmia which is present later.

The letters of Dr. Wm. Collier (THE LANCET, Oct. 26th) and Sir J. W. Moore (Nov. 2nd) on the clinical aspects are very interesting. In my cases epistaxis has been constant in children and young adults, less common in older patients. Albuminuria to some extent has been a constant sign. In the more severe cases there has been a definite nephritis. Bacteriological examination of catheter specimens of urine has usually shown streptococci with frequently *B. coli*. In women patients menstruation is brought on prematurely or there may be hæmorrhage midway between the periods. In the severe cases there is a characteristic facies, swollen and somewhat resembling that of measles without the marked rash of the latter, though a slight morbilliform rash is frequently seen. In one case there was an abundant crop of purpuric spots on the legs. In many ways this type of influenza seems to resemble, apart from the rash, the virulent attacks of measles seen in races that have had no previous experience of that disease. The frequent association of influenza with measles seen during the last two years is also interesting from this point of view. Lieutenant-Colonel Macdonald has recently described an epidemic of purulent bronchitis complicating measles occurring in New Zealand troops in which *B. influenzæ* was found in 72·5 per cent. of cases bacteriologically examined. A vaccine containing 300 million *B. influenzæ* was used with good results. In the spring of this year an outbreak of measles occurred in a large public school. One boy after a severe attack, followed by two days' normal temperature, developed acute suffocative bronchitis and died in 48 hours. *B. influenzæ* was the predominant organism in his sputum. Four other boys developed the same condition, but were promptly treated by a vaccine containing *B. influenzæ* made from the sputum of the fatal case, and recovered.

I am, Sir, yours faithfully,

Birmingham, Nov. 4th, 1918. W. H. WYNN.

To the Editor of THE LANCET.

SIR,—I am inclined to take the view that the primary infection in this epidemic is a streptococcus, for the following reasons:—

(1) *Bacteriological.*—Pfeiffer's bacillus is by no means always present, whereas streptococcus is present both in the mucus of the naso-pharynx and also in the sputum. I made up a vaccine on Oct. 17th from the mucus of the naso-pharynx of an influenza patient; the culture was practically a pure streptococcus, but as the pathologists maintained that the organism was unknown I did not use the vaccine clinically till last week. I now find that a dose of 2 million in an acute case is frequently followed by marked improvement in temperature and general well-being within 24 to 48 hours, but a dose of 4 million in milder cases is followed by a slight reaction, and I have discontinued this dose. I have found that an injection of 2 to 4 million seems to help clear up the recurring temperature at the end of an attack.

(2) *Clinical.*—This epidemic differs from Pfeiffer's bacillus epidemic in that old people seem to escape lightly and the severe nervous symptoms with depression do not follow the attack. The fibrinous bronchitis which is sometimes present is more likely due to a streptococcus than either to a pneumococcus or Pfeiffer's bacillus. I have seen a few cases of fibrinous exudate on children's tonsils, at first suggestive of diphtheria but more characteristic of streptococcus, for there is no real membrane. The pneumonia cases are not like the pneumococcus pneumonias; there is often lobular pneumonia (though I have had some lobar pneumonias) and the sputum is sometimes pure blood.

I have been interested to read what the conference at the War Office decided on Oct. 14th as to preventive inoculation, but I should be afraid of giving 40 million streptococci as a preventive dose during an epidemic in case the individual might be incubating the disease at the time. For example, in one house I gave a preventive inoculation of 4 million streptococcus vaccine to each of six people, one of whom had been nursing a case of influenza pneumonia a few days previously; she was the only one of the six who had any reaction; four hours after the inoculation she felt pain at the lower part of the left side of the chest, and her temperature rose to 100° F. next day, but was normal within 48 hours. The vaccine I have been using I sterilised by incubating for 24 hours with 0·5 per cent. carbolic, so that the dosage is necessarily a small one compared with the vaccine sterilised by heat, as recommended in THE LANCET of Oct. 26th. I notice in that article that a dose of 8 million streptococci is recommended by the War Office Conference in a subacute or chronic case; this would about correspond with my experience, allowing for the different method of sterilisation, although I am inclined to think that 8 million is rather too large a dose to begin with.

I am, Sir, yours faithfully,

Oxford, Nov. 5th, 1918. HENRY T. GILLETT.

THE INFLUENZA EPIDEMIC.

To the Editor of THE LANCET.

SIR,—In your leading article of last week upon the influenza epidemic you discussed the problem whether or not the present epidemic wave ought to have been expected or not. That is a question which I am not now concerned to debate. But I would point to the fact that the present prevailing wave of the epidemic actually *was* expected, whether for good reasons or bad.

On August 5th I sent you an abstract of the results of an organised inquiry which had been made in Germany into the bacteriology of the primary wave of the influenza pandemic which showed itself in the late spring, and invited you, if you thought fit to publish this, to mention that it had been put at your disposal in order to draw the attention of workers in this country to the German experience, and to say that the Medical Research Committee would be grateful if the results obtained in this country might be communicated, so that a similar collation of experience here might be made "with a view to the organisation of such coördinated work as may be found possible for the study of the secondary waves of the infection that are to be expected."

In your issue of August 10th you published this information, but without a statement either of its provenance or of its chief purpose. As a matter of history I would record that I cannot recall meeting any pathologist during last July whose attention had been drawn to the records of the pandemic of 1889–1890, and also to the work done in Europe upon the primary wave of the present pandemic, who did not as a result confidently expect a secondary wave, with probably more serious results, to show itself in this autumn or early winter. I am, Sir, yours faithfully,

WALTER M. FLETCHER.

15, Buckingham-street, Strand, W.C., Nov. 6th, 1918.

*** The letter accompanying the abstract sent to us on August 5th by Sir Walter Fletcher was unfortunately not understood by us.—ED. L.

To the Editor of THE LANCET.

SIR,—There are sentences in your leading article of Nov. 2nd which may, I think, create a false impression upon the minds of some readers. "The experience of all previous epidemics in London is that excessive mortality from influenza in any single epidemic does not continue beyond a period of about six weeks." You may, of course, be using the word "excessive" in some peculiar sense, but it is a fact that in 1891, while the total number of influenza deaths registered in the first quarter of the year for London was 24; during each of the 11 weeks beginning with that terminating on May 2nd at least 37 deaths from primary influenza were recorded, and in eight of these weeks the number was greater than 100, while in the succeeding winter epidemic 30 or more deaths were recorded in each of 12 weeks. "The occurrence of an epidemic of influenza followed by an even more severe epidemic of the same disease within three months is almost unknown." There is much virtue in the "almost."

The summer influenza of 1891 produced 50–60 cases in the Wolsingham division of the Weardale rural district, population 3169, during July; the secondary epidemic, beginning on Oct. 18th, gave rise to about 700 cases.[1] The two great London epidemics of that year were separated by an interval of little more than five months. "Summer epidemics are unusual." Yet even within the period of the Registrar-General's statistics to which you refer there was one considerable summer epidemic, while the outbreak of 1833 culminated between April 24th and May 21st, and the historically famous epidemic of 1782 reached its maximum in June.

Upon the general issue whether, after what happened this summer, an autumn recrudescence was to be expected, I doubt if your judgment will be affirmed by a majority of epidemiologists. The sequence of events in the period commencing with December, 1889, was as follows: There was first in the winter 1889–90 an explosive epidemic, possessing the typical features of a primary outbreak of influenza—viz., an approximately symmetrical distribution in time and close concentration around the maximum—features beautifully displayed in Leichtenstern's graph of the Munich epidemic drawn from notification records. The three secondary epidemics of 1891, 1891–2, and 1893–4, particularly the first, were of a different form—viz., less nearly symmetrical and giving a less lofty flattened curve, the interval between the rise and fall of the curve being much longer than in the primary outbreak.[2] Creighton was of opinion that this feature of recrudescence, the appearance of secondary waves of less prevalent but much more fatal disease, was unprecedented. His conclusion may be too absolute. The year 1676, for instance, had more deaths in London than 1675, which gave material for Sydenham's classical account of epidemic influenza. But even if we accept Creighton's view we shall naturally give much weight to the latest epidemic constitution, that of the "nineties." Nor shall we have any difficulty in interpreting the disparate epidemic forms, a short, sharp, symmetrical outburst suggesting a unitary process, a long drawn-out, skew curve implying the combined action of more than one cause group.

Now the summer epidemic of this year was an excellent example of the quasi-symmetrical type. Having had the opportunity of analysing the incidence upon a large body of men in this country, I can testify to its complete identity of form with that of the primary wave in 1889–90. This having occurred, we should naturally fear that the sequel might be worse than in 1890. If a primary epidemic by ill-luck develops in the summer, then a secondary epidemic having its first chance of appearing in the autumn and winter will, if it do occur, be particularly mortal. The reason is plain; the secondary epidemics of the "nineties" were fatal, partaking, as, perhaps, Sydenham would have put it, of the pneumonic constitution; in modern parlance there was much secondary pneumonia. The influence of season upon respiratory complications needs no discussion.

We might indeed have hoped that the precedent of 1890 would be followed and a year skipped, but we could not be sure that the 1891 example might not be adopted when we should be faced by a serious mortality. This is just what has happened. To have stated in August that it was bound to happen would have argued ignorance of the earlier history; to say that it was very likely to happen and to concert measures for systematically studying the course and alleviating the inconvenience, was plainly the correct procedure. Such a procedure was actually followed in at least two of the great Departments of State, with the result that we shall eventually possess much more accurate epidemiological studies of the recent than of any previous outbreaks. You have unwittingly done some injustice to the many able epidemiologists of this country in suggesting that what has happened either did take, or ought to have taken, them by surprise. The medical officer of health of the County of London in particular, who has been steadily drawing attention to the epidemiological importance of trailing epidemics of influenza since 1913, has just cause for complaint.—I am, Sir, yours faithfully,

MAJOR GREENWOOD,
Captain, R.A.M.C.(T.F.); Reader in Medical Statistics, Univ. London; Director of Medical Research Subsection, Ministry of Munitions Health and Welfare Section).

Nov. 3rd, 1918.

[1] See Parsons, "Further Report on Epidemic Influenza." C. 7051, 1893, p. 9.
[2] Parsons, op. cit., p. 11.

THE TREATMENT OF INFLUENZA.

WE have received a number of letters dealing with special points in the treatment of influenza.

Surgeon Lieutenant R. Murray Barrow, R.N. (H.M.S. *Canada*), suggests a form of treatment which he has found successful in a recent case which was developing rusty sputum and other signs of pneumonia. Five grains of sodium salicylate dissolved in 8 c.cm. of sterile water were injected into the basilic vein, followed by 1/16 gr. of strychnine hypodermically, the injections being repeated at six-hourly intervals. The relief of pain was immediate, the sputum lost its rusty colour, and the cough practically disappeared within 12 hours.

Dr. Walter Kidd writes: "No doubt the use of permanganate of potash in a saline solution for gargling and sniffing, as recommended by the Local Government Board, is an excellent local disinfectant for lessening the risk of influenza. But is there any respect in which it is not inferior to the use of iodine inhalation for this purpose? The use of tincture of iodine in hot water is, on the one hand, much easier for the majority of persons, including children, and the one process of inhaling this moist vapour reaches effectually both the nasal passages and the pharynx, and on the other its germicidal power is, I believe, considerably greater than that of permanganate of potash."

Dr. R. W. Allen states that the vehicle he uses for the intravenous injection of garlic oil is pure ether. In uncomplicated cases he gives an initial daily dose of ½–1 minim of the oil, and suggests the trial of ½-minim doses twice or thrice daily in cases complicated with pneumonia. He has had no such complicated cases, however, since using the remedy. Severe paroxysms of coughing may follow the injection, due, Dr. Allen believes, to the ether. A draught of cold water gives relief.

Mr. Walter Allingham, M.R.C.S., writes that having proved the antiseptic properties of garlic in his treatment of wounded soldiers he decided to try a non-official preparation known as tri-methenal allylic carbide compound in the treatment of influenza. Since adopting this preparation in 80 consecutive cases, with the exception of two he has had no serious complications; in no case has the temperature remained up over 48 hours, and in many instances a normal temperature has been regained in 24 hours, patients feeling easy and wanting food. Of the two exceptions one was a case of pulmonary tuberculosis and the other had severe gastric symptoms. Before adopting the preparation high temperatures persisted in most cases for 5–6 days, complicated by severe bronchial catarrh and in some instances pneumonia.

Major Geo. Stoker, R.A.M.C., recommends the treatment of pneumonia by the continuous inhalation of oxygen from a gas-bag with a soft rubber nose-piece passing up into one nostril.

INFLUENZA, OR A NEW DISEASE.

To the Editor of THE LANCET.

SIR,—In the interesting leading article in THE LANCET of Oct. 26th summarising the Memorandum of the Local Government Board it is suggested that the present epidemic is similar to the previous pandemic of 1889–92, and also to the pandemics of 1803, 1833, and 1837–38. It may be that the clinical features observed in the epidemics of past years are similar to those seen in the present epidemic, but it is equally certain that many of the cases now seen present clinical features which are quite distinct from the cases of so-called "influenza" or "influenza colds" which we are accustomed to see every year. There are probably various febrile and catarrhal conditions which are, for lack of definite knowledge of their true nature, grouped under the term "influenza." But if this term is accepted for the present epidemic, it is well to be clear about the clinical features seen in many of the cases.

Whilst attached to the Military Hospital, Aylesbury, in the winter of 1915–16 we received a number of cases from Halton Camp which presented well-defined clinical features. The patients were admitted with fever ranging from 102° to 104° F., bronchitis, and toxæmic symptoms. There was in some cases blood-stained sputum, which on microscopic examination showed streptococci as the predominating organism. The cases were frequently fatal, and post mortem the signs were those of a septic capillary bronchitis. Pfeiffer's bacillus was not found in any of these cases, neither in the sputum nor post mortem in the lungs. I was struck by the frequency of these cases occurring in particular huts, and it was remarked that new recruits arriving in these huts were more vulnerable to the disease. I sent in a report on the subject to the War Office describing these cases, with certain recommendations regarding prophylaxis, and it doubtless

received the attention it merited. It did not occur to myself or any of my brother M.O.'s that these cases were "influenza," and the medical officers of Halton Camp did not send them in as "influenza." For want of a better term we labelled them *septic bronchitis*, but there was no doubt in my mind that we had to deal with a definite clinical entity, probably caused by a specific micro-organism or an organism whose virulence had been greatly increased by "*passage*."

I have recently had under my care several cases having clinical features almost identical with the cases I had previously seen at Aylesbury. The following are the clinical features :—

Onset: Sudden, with fever temperature 103–105°, shivering or rigor, pains in the back and limbs. Course: Temperature keeps up for several days, with delirium at night. Cough: Irritable cough with frothy sputum, occasionally blood stained. Frequent symptoms are pharyngitis, dryness of the mouth and throat, and pain in swallowing. I have not noted the slowness of the pulse referred to by Dr. Wm. Collier in THE LANCET of Oct. 26th, but the other symptoms he describes are similar to those seen in my own cases. The milder cases show a fall of temperature in four or five days, the chest symptoms disappear; the more severe cases show great prostration and toxæmic symptoms, with dry tongue, and last a fortnight or more. It is amongst these that the fatal cases are seen. Several members of one household may be attacked; especially does infection extend to persons sleeping in the same room.

In my report to the War Office I laid special stress on overcrowding and the danger of a number of men sleeping in one hut.

Besides this type of case other forms are seen in the present epidemic resembling the ordinary influenzal colds, and cases where patients have got up too soon after an "influenza cold" and have developed pneumonia. But these are quite distinct from those first described, which might be called until their etiology is cleared up "*epidemic septic bronchitis*." What is the nature of these cases? Are they due to Pfeiffer's bacillus or what is the infective agent? Until this is known we shall not be on firm ground regarding treatment.

I am, Sir, yours faithfully,

Wimpole-street, W., Oct. 28th, 1918. J. LANDMAN, M.D.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Wm. Collier's letter in THE LANCET of Oct. 26th under the above heading, judging by the history, symptoms, and physical signs, it would appear that cases of pneumonia now occurring are of two varieties: (1) that occurring during an attack of influenza and following the usual course in such cases; (2) the variety consisting of an almost instantaneous onset in a person previously well as a rule. This latter variety presents the peculiarities mentioned in Dr. Collier's letter, and, in addition, in the cases I have seen, a tendency to looseness of the bowel and very early expectoration of frothy, bright red sputum. This appears to be a different disease.

The last two cases I have seen will serve as an illustration. One man on being asked how long he had been ill replied: "I was knocked endways this morning at 2 A.M., suddenly." The other said: "I hadn't been out of my hammock five minutes when I suddenly collapsed." The tone in which they replied conveyed quite clearly to my mind that they were more than considerably disgusted and surprised at the sudden ruthlessness of the onset of their troubles. Before the day had closed (the first day of their illness) they were both expectorating bright-red sputum, and subsequently showed the symptoms and signs mentioned in Dr. Collier's letter, and, in addition, albuminuria and prolonged delirium.

I am, Sir, yours faithfully,

Eston, Yorkshire, Oct. 31st, 1918. H. B. HILL, M.R.C.P.

PS.—The bacteriological report, dated Nov. 6th, states: "Streptococci, a Gram-positive coccus and diphtheroid bacilli present. No tubercle, no pneumococci, no influenza."

THE "MYSTERIOUS DISEASE" IN AUSTRALIA, 1917.

To the Editor of THE LANCET.

SIR,—It may be of interest to report at the present moment that (as I learn from a personal communication just received) Dr. Breinl is able to confirm, from recent observations, the view expressed by him in the *Medical Journal of Australia*, March 23rd, 1918, that the virus of this disease is identical with that of poliomyelitis. Dr. Breinl's conclusions are based upon pathological and experimental research, and some of his slides will, I hope, shortly arrive in this country. The "mysterious disease" was, clinically, a polio-encephalitis, marked by convulsions and tremors rather than by lethargy; epidemiologically, it appeared first in the spring, affecting children principally; later, adults were implicated. Pathologically, neuronophagia was present, though not abundantly; hæmorrhagic foci were noticed.

Happily, Dr. Breinl's experimental achievements would seem to preclude the possibility of the variations, from "standardised" encephalitis lethargica and from "standardised" poliomyelitis alike, being considered to justify yet another new name, and a new notification entity. Otherwise we might now be hearing of Encephalitis convulsiva, *var.* Australiatica (1917).—I am, Sir, yours faithfully,

Harley-street, W., Oct. 29th, 1918. F. G. CROOKSHANK.

INFLUENZA AND THE DIFFERENTIAL DIAGNOSIS OF SANDFLY FEVER.

To the Editor of THE LANCET.

SIR,—My attention has been called to an annotation in THE LANCET of Sept. 14th, entitled "Sandfly Fever or Influenza." I note that, according to Professor G Sampietro, writing in the *Annali d'Igiene*, there is a belief prevalent in Italy that the epidemic which began in the second half of last May, and was prevalent in Spain, and thence spread over Europe, is identical with the so-called three-day fever or sandfly fever, otherwise known as phlebotomus fever.

I think I may claim to have seen in the Island of Lemnos more than 500 cases of each of these diseases, and feel quite confident in asserting, as the result of my experience of their etiology and clinical course, that such condition constitutes a separate, distinct, and definite clinical entity. The clinical picture as described in THE LANCET of the epidemic in question coincides with my experience, but I notice that no mention is made of a very constant symptom which I have come to regard as quite pathognomonic of the disease—namely, a decided tremor of the tongue which is invariably present during at least some period of its course. No cases of this disease were met with last year, but, on the other hand, I had opportunities of studying many hundreds of cases of phlebotomus fever.

When the first cases of the so-called influenza occurred this year they were at first thought to be cases of phlebotomus (sandfly) fever, but it was soon seen that the symptoms, although having a superficial resemblance, were very different from what we had been accustomed to in the previous year. The most prominent signs and symptoms of each disease may be tabulated thus :—

Phlebotomus Fever.	*"Spanish" Influenza.*
1. Headache, invariably of frontal type with severe pain behind the eyes, especially on movement.	1. Headache, generally frontal, but variable. Post-orbital pain present, but not such a constant or prominent feature.
2. Almost invariable suffusion of conjunctivæ and appearance as of "the morning after."	2. Suffusion of conjunctivæ not often present.
3. A quite distinctive and invariable *white* fur on the tongue, which is *not* tremulous except possibly from other causes.	3. A brown or dirty grey fur on the tongue, which is practically always tremulous at some time during the course of the disease.
4. *Temperature:* Always high at the outset—generally 102°–105° F. Patient nearly always exhibits marks of sandfly bites.	4. *Temperature:* Rarely over 103° and generally about 101°–102° at the outset and often lower. May never exhibit signs of bites.
5. *Pulse:* Invariably slow in proportion to the temperature and rarely more than 100 even with the highest temperature.	5. *Pulse:* Also slow, but not in such marked degree as in phlebotomus fever.
6. *Temper:* Very irritable, especially during convalescence.	6. *Temper:* Not specially irritable.
7. *Appetite:* Almost complete anorexia is characteristic.	7. *Appetite:* Very poor, but not lost.
8. *Pains:* In back and lower limbs.	8. *Pains:* All over, but especially in small of back.

To sum up: Phlebtomus fever can be diagnosed at sight, especially in districts where the phlebotomus fly is known to abound, by the two or three most prominent symptoms—viz., blear-eyed appearance of the patient, flushed face, *white* fur on the tongue, and slow pulse with high temperature. No tremor of the tongue. It may be noted that with only three or four exceptions all cases of phlebotomus fever have occurred in men living ashore, the exceptions being in men who were borne in ships anchored close to the beach and undoubtedly infected by sandflies blown off from the beach.

which is known to be possible as sandflies have been found on board these ships though not on others further removed from the shore. Very numerous cases of "Spanish" influenza (in one large ship over 600 cases) have occurred in ships anchored far away from the beach and not accessible to sandflies, though subject to infection by those previously infected or already sickening for the disease known as Spanish influenza.

Phlebotomus fever is, in my experience, decidedly not an infectious disease in the ordinary sense—but only through the agency of sandflies. "Spanish" influenza is, in my experience, certainly an infectious disease, and the spread of infected can be diminished to a very large extent by careful antiseptic treatment of the mouth and naso-pharynx of those already infected, or likely to be infected during the course of an epidemic such as we have recently experienced.

I am, Sir, yours faithfully,

W. BASTIAN,
Surgeon Commander, R.N.

Oct. 12th, 1918.

RICKETS AND HOUSE INFECTION.

To the Editor of THE LANCET.

SIR,—In the Report recently published by the Medical Research Committee "of an inquiry into the social and economic factors in the causation of rickets" it is stated that while we are still ignorant of the cause of rickets, the evidence at our disposal gives little support to the idea that rickets is due to dietetic error. Rather the report lays emphasis upon the connexion of the disease with the factors of overcrowding, want of air and sunshine, and lack of exercise. To me it seems that not sufficient attention has been paid to the manner in which these prejudicial influences act, whether directly upon the nutrition of the child, or indirectly by lowering his immunity against infection, and so multiplying the incidence of transient pyrexial processes of all sorts. It is the object of this letter to suggest that this latter factor, which finds no place in this careful and elaborate report, is of too great importance to be excluded from such a discussion.

No one who comes much in contact with the children of the poor can be in doubt as to the frequency of catarrhal infections of the respiratory tract. Of many of these children in the first year of life it may be said that no single month passes without one or more bouts of pyrexia from this cause accompanied by severe loss of weight and a great diminution of vigour and activity. Crowded together, overfed or unsuitably fed, shut off from sun and air, the children fall a ready prey to such infections, and react with symptoms the severity of which is immeasurably greater than in the sturdy child whose hygiene is not at fault.

The effect upon the child of repeated catarrhal infections.—The loss of weight in such cases may be both great and rapid. Not infrequently within a day or two it may amount to as much as 1/10 of the body weight, a loss which can only be accounted for by an increased excretion of salts and water from the body. The prejudicial effect of such fluctuations upon the cells composing the different tissues of the body may be seen in various ways. For example, in the healthy child the physiological stimulus of the erupting tooth is by no means sufficient to provoke an inflammatory reaction in the surrounding cells of the gum, and the cutting of the tooth proceeds without symptoms of discomfort. If, however, the vitality of these cells is lowered by coincident catarrhal infection of the bowel or of the bronchi, the erupting tooth may be surrounded by a painful areola of inflamed gum. As the mothers tell us, such a child "cuts his teeth with bronchitis or with diarrhœa." In reality it is the coincident bronchitis or enteritis which has increased the vulnerability of the cells composing the gum.

We see the same excessive local reaction in children suffering from catarrhal infections in the little fissures which appear at the corners of the mouth from contact with the tongue, which the French call *perlèche*, or in the painful irritation in the skin of the prepuce where it comes in contact with the urine, or in the napkin dermatitis produced by contact with stools not in themselves highly or unusually irritating. In all such cases the extent of the local reaction is in a sense an index of the diminished vitality and increased vulnerability of the cellular elements of the part. With recovery from the infection and with renewed growth and vigour of the child we can confidently predict a rapid improvement in the local disturbance.

It is not only in these superficial and visible parts of the body that it is possible to detect a rapid deterioration in the vitality of the constituent cells as a consequence of a persistent infective process elsewhere. In structures more deeply situated we can also note the ill-effect. In the muscles we find a rapid wasting and loss of tone. A child of two years, who suffered from a severe nasal catarrh sufficient to cause moderate pyrexia for four days, was unable thereafter to climb a little steep grassy bank, which before had presented no difficulties to him, until the end of the fourth week after his illness. With repeated catarrhal infections the want of tone and flabbiness of the muscles become persistent.

The vaso-motor system also provides evidence. Excessive perspiration, coldness and blueness of the extremities, and undue pallor of the skin persist long after repeated or continued pyrexial infection. The appearance of pallor is due to this vaso-motor instability rather than to a true anæmia. The children flush readily during crying or upon exertion, but without this stimulus the skin of the face is apt to be pale and bloodless.

The prejudicial effects upon the nervous system are shown by the tendency to convulsions, laryngismus, tetany, and so forth, as well as by the loss of coördination in movement or the exhaustion shown in the immobility of the child. Some of these children, exhausted by repeated catarrhal infections, will remain motionless and set in any unnatural posture in which we have placed them for many minutes at a time, a condition which recalls the katatonia of dementia præcox.

In the various ductless glands we find, also, a diminished activity. A long-continued succession of pyrexial infections is apt to leave a child infantile in body and mind, so that sometimes the suggestion of hypothyroidism is apt to occur to us.

The enamel organ of the teeth provides a good example of the ill-effect of pyrexial disorders. Let the child pass through the first two years of life free from repeated catarrhal infection, and it will cut teeth covered everywhere with flawless enamel. But if the activity of the enamel organ is from time to time inhibited by acute infective processes the teeth, when they come, will bear upon them the marks of the vicissitudes through which they have passed in the shape of the so-called circular caries.

Lastly, one may instance the well-known transverse ridges on the nails, following devitalisation of the matrix of the nail by pyrexial processes—markings which are very frequently seen in young children.

The effect of catarrhal infection upon ossification.—If it be granted that the effect of repeated pyrexial infection upon cutaneous, muscular, and nervous tissues is as described, it would be strange if skeletal tissues were to be excluded. The activity of the osteoblasts also is inhibited by repeated pyrexial illness. The close association of catarrhal processes of all sorts with the rickety state has not, of course, escaped attention, but it has been usual to represent the tendency to catarrhs as the result of rickets, and thus to deprive it of etiological significance. As the present report reminds us, we owe the earliest accurate description of rickets to Glisson. Nor is it surprising that in this disease of domestication, this perversion of growth due to want of sun and air, lack of exercise, and faulty feeding, it should be the changes in the rigid skeleton which should first catch the eye of the early observer. The prominence first conceded by Glisson to the skeletal changes has been maintained by all subsequent writers.

That the environmental faults incriminated may directly and of themselves produce sufficient interference with nutrition to provoke all the symptoms of defective cellular activity both in the bones and in other tissues I do not deny. It is even likely that any one such fault, if it be sufficiently concentrated, may at times and in experiments upon animals be itself capable of producing rickets. In general, however, I believe that these factors act as predisposing causes by lowering the immunity against infection, and that it is in consequence of the infection that the rickety process develops.

The age incidence of rickets.—To this view of the importance of infection of the child in the production of rickets an objection may be made that the incidence of catarrhal

infections extends all through childhood, while rickets is common only within certain well-defined age limits. In childhood, however, we recognise certain well-marked stages of development. In the first few months of life it is the digestive function which is so hypertrophied that it attracts all attention to itself, so that infections of all sorts, as, for instance, the common infectious cold which sometimes passes through a whole household, are apt to take on themselves the appearance of primary alimentary disorders. Later locomotion and the increased activity of the bone-forming elements which takes place under the stimulus of walking become in turn prominent. How great is the change in the skeleton which the assumption of the upright posture and the stimulus of walking produce. The legs, which up to that time have been active, if somewhat inefficient, prehensile organs, become modified into organs of support. The pelvis and the chest undergo a rapid expansion, the abdomen relatively recedes, and the curves of the spine are altered. If, however, as a result of repeated or persistent infection the motor activities of brain, nerve, and muscle are inhibited, this moulding of the skeleton is delayed and in bad cases prevented. This period of high functional activity and the period of the increased liability to rickets correspond. Within this age limit a high proportion of infected children develops some signs of rickets. That many escape is to be expected. Similarly, the syphilitic toxin, which in general shows the same affinity for the epiphyses, is often content to leave the bony system unaffected.

Calcium metabolism in rickets.—That pyrexial disturbances in infancy and childhood are accompanied by profound alterations in the retention and excretion of salts is shown by the great and sudden fluctuations in the body weight. In certain children convulsions and tetany, accompanied often by œdema of the extremities, are almost invariable accompaniments of a pyrexial attack, and it is significant that a very large proportion of children with tetany are also rickety.

Experiments upon calcium metabolism in rickets have given very contradictory results. In most cases the research period has been as short as three or four days, and it is clear that in a disorder of such long duration as rickets little information of value can be obtained from the mere presence or absence of a negative calcium balance in that short period. I know of no work which has been undertaken to estimate the calcium balance of rickety children suffering from pyrexia. On the general question, however, of the calcium metabolism during pyrexia, it would appear that excretion may be increased.

Rival views of the origin of rickets.—There is at the present time some tendency for a sharp difference of opinion to arise as to the cause of rickets. There are those who hold that the disorder is a "diet deficiency" disease; there are others who will have none of this view, and regard it as a disease of "domestication or urbanisation." Dr. Leonard Findlay has shown the ill-effect of confinement and lack of exercise in puppies. Dr. Eric Pritchard has emphasised the evils of over-feeding. The cause has even been found in hypothyroidism, and the thyroid as well as other ductless glands have been implicated. If rickets be no more than the temporary inhibition of osteoblastic activity during infective processes of all sorts, upsetting the balance which maintains in health between osteoblast and osteoclast, if the softening of the bones is comparable to the accompanying amyotonia, to the devitalisation of the skin and mucous membranes, to the irritation and exhaustion of nervous tissue, and to the diminished activity of ductless glands, then we can accept all of these rival claims as playing a part in lowering the immunity of the child against infection. The child who is fed upon an excess of carbohydrate food, the child who is kept away from fresh air and sun and who has no opportunity for free movement, and who is in close contact with infected persons is prone to frequent if transient infection. In our study of such a disorder as rickets we must not omit to keep the child himself in the foreground. We must attempt to isolate and weigh the effects even of such *imponderabilia* as the common and frequently repeated household cold. An analysis of the symptoms ordinarily attributed to rickets such as is presented in the report by Dr. Findlay is historically interesting, and a survey of the social and economic factors such as Miss Ferguson contributes is of the very highest practical utility. It is, however, the reaction of the child to the evils which she discloses which demands closer study. If from such a study we are able to shift our ground a little and regard as the factor of chief etiological significance not the refusal of the osteoid tissue to undergo ossification, but the lowering of immunity and the repetition of catarrhal infections of the respiratory and alimentary tracts, then we shall have less reason to dispute as to the importance of rival "causes of rickets." For all will then be recognised as important and we shall have an explanation in keeping with the coincident changes in other tissues of the body, changes which are clearly the result and not the cause of the state of infection. I am, Sir, yours faithfully,

Devonshire-place, W., Nov. 2nd, 1918. H. CHARLES CAMERON.

ACCESSORY FOOD FACTORS IN INFANT FEEDING.

To the Editor of THE LANCET.

SIR,—In his extremely interesting contribution to THE LANCET of Oct. 12th on the subject of infant feeding Dr. J. C. Drummond refers to the use of Marylebone cream in combination with separated dried milk as a food for babies, and states that he would expect to find that children fed on such a mixture would show diminished resistance to disease in spite of apparent normal development. As I have had some five or six years' experience of feeding infants at my centre in accordance with this method, my experience may not be without interest.

I have not had much experience with the use of ordinary Marylebone cream (made with linseed oil) in combination with dried separated milk, because after a short trial I gave it up for the very reasons predicted by Dr. Drummond, but I have had some experience of "modified" Marylebone cream, used with separated milk, and the results have been excellent. "Modified" Marylebone cream is made from soya-bean oil; cotton-seed oil and suet in such proportions that the resulting combination contains approximately the same percentage of the neutral fats, olein palmatin, and stearin as butter fat contains. I thoroughly endorse Dr. Drummond's view that the real criterion of good nutrition is resistance to disease. Judged on this ground, I find that infants fed on dried separated milk modified to the standard of breast-milk with sugar and Marylebone cream of the above variety compare not unfavourably with artificially fed infants reared on other dietaries, in spite of the fact they are drawn from the poorest class of infants attending at the consultations. I may add, however, that these infants, in common with all other hand-fed infants attending at my centre, are invariably provided with three other accessory food elements—namely, with the "water-soluble C" element by giving fruit-juice or turnip-juice, with the "water-soluble B" element by giving daily 1 oz. of meat and vegetable broth, and with lecithin bodies by giving daily either a small quantity of the yelk of egg or a few grains of glycerophosphate of calcium, which seems to answer the same purpose in lending stability to the nerve cell.

I have been using dried milks of all kinds during the last ten years for infant feeding, at first without the addition of these accessory factors and for the last five years in combination with them; the results are, in my opinion, astonishingly better when the accessory factors are added.

I am, Sir, yours faithfully,

Harley-street, W., Nov. 1st, 1918. ERIC PRITCHARD.

NASAL DISINFECTION.

To the Editor of THE LANCET.

SIR,—There is a large group of infectious diseases in which the infective organisms live and apparently multiply in the naso-pharynx and the accessory sinuses. Typical instances of these diseases are scarlet fever, diphtheria, and cerebro-spinal fever. The organisms are found sometimes in patients who have suffered from the disease, sometimes in healthy carriers. They often persist for a long time, are difficult to destroy, and are a frequent cause of spread of infection, especially when a nasal discharge occurs. My own experience has been almost entirely in connexion with scarlet fever and diphtheria as treated in hospital, and in these diseases the difficulty of getting rid of infection is notorious. Antiseptics, applied by spraying, syringing, inhalation, or otherwise, have all failed, and it almost

seemed as if the best that could be done was to put the patient under the healthiest possible conditions and rely on fresh air and ordinary hygienic measures, in the hope that in time the organisms would die out. Usually they did so, but sometimes the naso-pharynx seemed to act as an incubator and the organisms continued to multiply, while sometimes, after almost disappearing, they seemed to take on a new lease of life, possibly under the influence of some morbid condition of the mucous membrane.

The main difficulty in treatment is that the naso-pharynx and its accessory sinuses form such an intricate series of chambers that it is impossible to cleanse them from the outside; and to obtain complete success every part must be reached. This being the case, it occurred to me that the correct line of treatment would be to imitate the natural method and try to wash out all the passages from the inside by causing increased secretion; and some years ago I began to employ menthol inhalation. A solution of menthol ℥i. in ℥viii. of spirit, with a few drops of eucalyptus oil, was used, one or two drachms of this being added to a pint of very hot water in a jug. The patient held his head, covered by a towel, over this mixture for some minutes and sniffed vigorously, inhaling the somewhat irritating vapour, and so causing a free discharge from the nose. The procedure was repeated from three to six times daily. It is not particularly pleasant, but children usually submit to it readily enough if coaxed. It is essential to success that there should be a free discharge of mucus, and this may be assisted by blowing the nose.

The results of this simple method of treatment, if properly tried and persevered with, are, in my opinion, very satisfactory and superior to other methods for getting rid of organisms. They are most easily studied in the case of nasal diphtheria, as here the organisms are distinctive and readily recognised. In this disease I have repeatedly seen the menthol treatment cause a disappearance of the bacilli in old-standing cases. Not infrequently it happens that before disappearing the bacilli alter in character. They lose their beading, become shorter, and assume the characters of the Hofmann type. A drawback to the treatment is that if the patient is a young child he must be carefully looked after during the inhalation, otherwise he might scald himself, and it might be feasible to make use of an inhaling room similar to that employed in the Army for the administration of antiseptics to carriers of the meningococcus.

As regards the prophylactic value of the treatment I have no experience, but it is not unreasonable to expect benefit from a treatment which tends to produce bacteriological cleanliness of the nasal passages. During a time of epidemic prevalence of such diseases as influenza or after definite exposure to infection it might be of service to supplement the ordinary toilet of the teeth and mouth with a menthol toilet of the nose. Numerous organisms are inhaled through the nose and many remain for some time lodged on the surface of the mucous membrane. It is quite possible that disease might be prevented by washing away these organisms before they have time to cause mischief. Gargling, too, may be useful, especially in the case of mouth-breathers. But, surely, if breathing is carried on in the proper way through the nose and if organisms are entering with the inspired air it is a little illogical to employ a gargle for the throat, while the cleansing of the nose is ignored.

I am, Sir, yours faithfully,

F. J. WOOLLACOTT, M.D. Oxon., D.P.H.

Hampden-street, N.W., Oct. 26th, 1918.

THE BENEFITS OF "NASAL DRILL."

To the Editor of THE LANCET.

SIR,—I wish to give my rather belated support to Dr. Isabel Ormiston's article in your issue of August 24th describing a new method in the treatment and prevention of adenoids. Dr. William Ewart and Dr. Leonard Williams have in subsequent letters indicated wider aspects of this simple and physiological "nasal drill." The unnatural structural changes which would follow from a damming-back of nasal and pharyngeal secretion seem to be the explanatory groundwork of vegetations, polypi, atrophic change, and tonsillar hypertrophy. When the function of mucous glands is in abeyance, and to this are added deviations and spurs of the nasal septum due to trauma or other causes, it is not difficult to understand why the turbinal bones should become diseased, why the complicated processes of the ethmoid should tend to sepsis, why the entrance to the antrum should become occluded, and why atrophic rhinitis and disease of the nasal septum should arise. If we superadd to all this an unsuitable environment and a social custom which decrees that the nose shall be blown in a quiet and decorous fashion, we can comprehend the chief amongst the causes of diseases of the nose and naso-pharynx.

I have had the privilege of watching patients treated by Mrs. E. Hancock's novel but natural method, and have noticed particularly the prompt disappearance of those symptoms which appear latest in cases of nasal and naso-pharyngeal catarrhal obstruction. When the treatment is continued and the drainage of mucus from the nose and naso-pharynx continues for weeks, the improvement in general health and psychical well-being becomes gradually apparent.

Following the simple technique described in Dr. Ormiston's letter, I experimented for two months while at a base hospital in France and cite the two following cases:—

M. A., aged 31 years, had chronic atrophic rhinitis of about six months' duration. The case was a favourable one, as it was in an early stage. Examination showed that the nasal septum was perforated from side to side, apparently by trauma—a small nail thrust into the nose in childhood. The nasal cavity was over-ventilated, the nostrils were widened, the mucosa being dry and atrophic. Crusts had formed over certain areas and there was some ozæna. Patient admitted that he used his handkerchief rarely and always ineffectively and that he had not sneezed for a long time. Treatment over several weeks restored temporarily the sneezing habit and induced a copious flow of mucus. The ozæna disappeared early, the crusts gradually disintegrated, and the nasal mucosa became moister and healthier. After three months' interrupted treatment the crusts had completely disappeared and the general health of the patient was much improved.

In this instance there was at first slight conjunctivitis of the eyes, an icteric tinge of the sclerotic, and a considerable error of refraction. The conjunctivitis and the icterus disappeared, and the patient stated that his eyes were distinctly benefited by the restoration of nasal function. He is now, after two years, permanently free from any signs of atrophic rhinitis. The error of refraction, of course, remains unaffected.

F. B., aged 23 years, had two small polypi visible as stalked processes between the middle and inferior turbinal bones of the left side. Adenoid vegetations were also present. Headaches, "stuffiness," retention of discharge and overflow of mucus into the pharynx, broken sleep, and a "constant cold" were the complaints of the patient. An enormous amount of mucus was drained from the nose and naso-pharynx by treatment at intervals over a period of six weeks. The polypi gradually decreased in size until they had disappeared. Headaches, "stuffiness," and sleeplessness were abolished after a week.

It is very gratifying to know that "nasal drill" has become an accomplished fact in at least one children's school in London and that Mrs. Hancock's method is growing in popularity.

I am, Sir, yours faithfully,

A. L. MCLEAN, M.D.,

Oct. 23rd, 1918. Captain, A.A.M.C.

NOTIFICATION OF INDIGENOUS MALARIA.

To the Editor of THE LANCET.

SIR,—I may be an optimist, but judging by previous experience I think it is extremely unlikely that malaria will cause much trouble in England when the war ceases. Practically everybody who spends any time in the tropics gets malaria some time or other, and for very many years we have had thousands of men coming back to live either in barracks or else in fairly crowded civil habitations all over the British Isles. Anopheline mosquitoes can be found in many places, and yet cases of indigenous malaria have apparently been extremely rare, and I have never heard of more than one case reported in the same place and year.

Recently a case occurred in my Division in France, but here the line from May to the end of August was in the midst of water channels where thousands of mosquitoes were being bred. I did not think it worth while to recommend any preventive measures, and this was justified, as no further cases occurred. For any serious spread of this disease a large number of infected men and mosquitoes is required, and probably also a continuous spell of really hot weather such as is extremely rare in England. Although malaria is well known to recur in some cases for several years, in the vast majority recurrences are comparatively rare after a few months' residence in a temperate climate; and it may be remembered that when Ross was carrying out his researches his infected birds lost their parasites when he moved from the plains to the more genial climate of the hills.

Should cases of indigenous malaria ever become more prevalent I think they should be notified, as medical men

without tropical experience are naturally not inclined to take the disease into consideration when a diagnosis is being made; and proper treatment is likely to be delayed, especially as the parasite may not be found on first examination. On getting fever some years ago in India—chiefly out of curiosity to get a correct diagnosis—I determined not to take quinine until I had found the parasite; and this I did not succeed in doing until the third onset had occurred. Similarly, I remember seeing an "interesting" case of pyrexia in an Indian hospital in which malaria was excluded as parasites had not been found on first examination. Pyrexia had lasted several days, but when I suggested re-examination of the blood numerous parasites were found, and all signs and symptoms cleared up at once on administration of quinine.—I am, Sirs, yours faithfully,

N. FAICHNIE,
Lieut.-Col. (temp. Col.), A.D.M.S., "X" Division.
B.E.F., France, Oct. 22nd, 1918.

ADDITIONAL FUEL IN CHILDBIRTH.

To the Editor of THE LANCET.

SIR,—I beg to enclose herewith a copy of a letter received from the Controller of Coal Mines, to which I hope you will be able to give publicity.—I am, Sir, yours faithfully,

J. HALFORD,
Secretary, National League for Health, Maternity and Child Welfare, including the National League for Physical Education and Improvement.
4, Tavistock-square, London, W.C. 1, Oct. 29th, 1918.

[ENCLOSURE.]

Board of Trade, Coal Mines Department: Household Fuel and Lighting Branch.

Holborn Viaduct Hotel, London, E.C. 1, Oct. 11th, 1918.
Subject—Additional Allowance under the Household Fuel and Lighting Order, 1918.

DEAR MADAM,—Replying to your letter of the 9th October, I am directed to say that a claim could certainly be submitted for an additional allowance on the ground of illness in the case of childbirth, and would be allowed for a reasonable period thereafter. The maximum quantity of fuel that may be granted on such a claim is five tons, but it is felt that the decision as to the actual quantity that would be granted must depend on the circumstances of the particular case.

I am, yours faithfully,
W. H. GAUNT,
For the Controller of Coal Mines.
Miss Halford, Secretary, 4, Tavistock-square, W.C. 1.

A CASE OF ABSENCE OF SENSATION.

To the Editor of THE LANCET.

SIR,—I was greatly interested in Captain E. D. Roberts's paper in your issue of Oct. 19th on a case of absence of all sensation, and in your annotation on the same subject in the same issue. Since the subject of this paper left Aldershot Military Isolation Hospital he has been in two of our Canadian hospitals, and is still an inmate, and I have had an opportunity of studying his case. In the main Captain Roberts's very clear description of the condition of the patient still holds good, but there are several changes both in the history of the case as given by the man himself and in his present condition, and these changes in themselves throw a certain amount of light on the diagnosis.

The patient was admitted to our hospitals under a diagnosis of I.C.T. (inflammation connective tissues), and his forearms show many scars and scabs where he himself or interested friends have burnt the skin with lighted cigarettes in order to test his sense of pain. Contrary to what Captain Roberts found, the man assures me that he was quite well until he had yellow fever at the age of 17 (i.e., 20 years ago), and that he has been in the present state ever since. Captain Roberts laid some stress on the fact that the patient could swim well, but he tells me that he never could swim a stroke and always "sank like a stone" when he tried to do so; so evidently he tells a different tale at different times. The senses of pain, touch, heat and cold, taste and smell, appear to be quite absent everywhere, but, strange to say, the man is very fond of smoking. He told me that this morning he ate a very bad egg for breakfast and "did not mind"; he seemed, indeed, very proud of the fact.

As regards absence of muscular sense, I have some doubt. If the patient be blindfolded and laid flat on his back on the ground and then be told to rise he does not move, and says that he cannot do so unless he can see, but when he is passively raised into a vertical position he stands steadily, and if given a push maintains his equilibrium, which suggests the presence of muscular sense. We could not get him to walk blindfolded. Again, as regards the sense of weight. If a light object, such as an empty match-box, be placed in one extended hand, and a heavier one, such as an empty glass ink-pot, in the other, the patient says that he cannot feel them there, let alone say which is the heavier. If now either object be pressed downwards to the extent of many pounds pressure, he can be felt to resist violently, which suggests a conscious or subconscious knowledge of the increased weight with consequent resistance, and yet he says that he does not know which is the heavier. He does not seem to have the sense of position of his limbs. When the eyes are closed and when the arms or legs are placed in elevated positions they now at once fall, and there is no suggestion of catalepsy. When told to keep his eyes closed there is constant blepharo-spasm, which is suggestive.

This man has been a show case at many hospitals in America and France for many years, and has apparently become quite fixed in his ideas. From the fact that the senses of touch, smell, and taste are absent, as well as those of pain and heat and cold, we can probably rule out syringomyelia. The anæsthesia is not dissociated. In syringomyelia the senses of pain and of heat and cold are usually the only ones involved, and, moreover, generally this is over only certain areas. In this case the whole body is implicated. Again, in syringomyelia there is usually some spasticity of the legs, with trophic disturbances of the skin, muscles, or joints, and not infrequently some muscular atrophy. All these are absent here.

To my mind the case is one of pure hysteria. It is, nevertheless, of great interest on account of its profound nature and long duration, and Captain Roberts did well to put it on record. The patient tells me that he has had two brothers killed already in the French Army, but I fancy that the chances of his being of much good as a soldier are small. He is too interesting a case!

I am, Sir, yours faithfully,
R. D. RUDOLF,
Colonel, Consulting Physician, Canadian Forces in England.
Oct. 24th, 1918.

MEDICAL RECONSTRUCTION.

To the Editor of THE LANCET.

SIR,—On two points of Sir W. Watson Cheyne's letter in THE LANCET of Oct. 12th I feel constrained to trouble you. He writes about those civilians whose practices have disappeared during service in the Army. Surely a number of those practices have disappeared because of, not in spite of, the services of their neighbours and should therefore be capable of replacement. I have in mind particularly the case of the elderly (territorial and temporary commissioned) officers with families who have had to give up all practice on account of the war, and whose practices have "disappeared." Is it not "up to" the profession to see that they are reinstated completely? Can no pressure be brought to bear upon the persons who have filched their means of livelihood to restore it either in money or kind? I know this cannot be done by means of the law, but is there no other means of bringing these people to book, or do the B.M.A. shirk the work because it is unpleasant?

Would it not be better to raise a fund to set these men on their feet again without any question of repayment rather than to insult them by offering to lend them money (a bank can do that) in order that they may themselves repair the injury caused by the Hun and their fellow practitioners?

This matter does not affect me personally, either as "robber" or "robbed"; but I do feel that for the honour of our profession something should be done, and done quickly, and any fund raised (not for loans but for restitution) will receive my mite at once.

I am, Sir, yours faithfully,
R.A.M.C. (T.C.)
Oct. 12th, 1918.

To the Editor of THE LANCET.

SIR,—There is a considerable amount of correspondence at present on the future of the medical profession. Some eminent men have given their ideas as to what should be its future. It does not appear to have occurred to any of the members of the profession at home that there is a considerable number of doctors now serving in the Navy and Army, or that these men will one day, if they survive, return to civil life. Many of them left their practices at the beginning of the war. These practices have been absorbed by those that remained. It is natural that those who have been making a great deal of money during the war, and hope to continue to do so, should desire that the present conditions of medical practice should continue, and that a State

Medical Service should not come into being. Under such a scheme they stand to lose money.

But what about the men who have lost all owing to their patriotism, and have nothing to return to? Some of us will have been away for five or six years. I have served in several theatres of war, and have not met a medical officer who is not in favour of a State service.

Surely the opinion of the more patriotic part of the profession and their interests are deserving of some consideration? The best are abroad and likely to remain there for some time to come. When they return there should be Government billets ready for them, and they should not have to compete with the men who have taken their practices from them.—I am, Sir, yours faithfully,

Sept. 25th, 1918. LIEUTENANT-COLONEL, R.A.M.C. (T.F.)

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeon-Lieutenants: J. H. E. Ewen, C. C. R. Downing, G. Millar, F. P. N. Parsons, W. L. Berry.

ARMY MEDICAL SERVICE.

Col. J. M. F. Shine is placed on retired pay.

Lieut.-Col. (temp. Col.) G. W. Tate, from R.A.M.C., to be Colonel.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. G. M. Goldsmith to be acting Colonel whilst employed as Assistant Director of Medical Services of a Division.

Temp. Major A. M. Leake, V.C., relinquishes the acting rank of Lieutenant-Colonel on re-posting.

Majors to be acting Lieutenant-Colonels: R. W. D. Leslie (whilst employed as Assistant Director of Medical Services), A. H. McN. Mitchell (whilst in command of a Medical Unit).

Temp. Major A. F. Hurst to be acting Lieutenant-Colonel whilst specially employed.

Capt. (temp. Major) R. Hemphill to be acting Lieutenant-Colonel whilst in command of a Field Ambulance.

Temp. Capt. F. G. W. Deane to be acting Lieutenant-Colonel whilst specially employed.

Temporary Captains to be acting Majors whilst specially employed: A. Dingwall-Fordyce, C. H. Fennell, R. Milne, W. N. Parker, N. C. Lake, W. S. McGowan, D. I. Anderson, T. Russell.

A. E. Morison to be temporary Major whilst employed at Sunderland War Hospital.

Temp. Capt. D. P. Hanington, Canadian Army Medical Corps, to be acting Major while employed as Registrar, Canadian General Hospital.

The undermentioned relinquish the acting rank of Major on re-posting: Capts. G. O. Chambers, J. Y. Moore; Temp. Capts. A. K. Cosgrove, H. H. White, C. C. Court, D. I. Anderson.

To be acting Majors: Capts. H. G. Trayer, J. R. Lloyd, R. E. Gibson, C. R. Dudgeon; Temp. Capts. J. L. A. Grout, J. Jack, C. F. Knight, A. W. Dennis, R. Warren, F. Henderson, A. M. Crawford, W. Anderson.

Lieutenants (temporary Captains) to be Captains: R. D. Davy, R. L. Ritchie, R. B. Myles, E. S. Cuthbert.

F. M. Murray and H. C. Smyth (late temporary Captains) are granted the honorary rank of Captain.

Temporary Lieutenants to be temporary Captains: W. Fletcher-Barrett, W. B. Dove, W. V. Naish, B. R. Vickers, J. A. C. Smith.

Temp. Lieuts. H. J. Starling and J. R. Hewetson to be temporary Captains.

Temp. Hon. Lieut. S. R. Meaker to be temporary honorary Captain.

Officers relinquishing their commissions: Temp. Hon. Maj. W. P. S. Branson, on ceasing to be employed with No. 1 Red Cross (Duchess of Westminster's) Hospital; Temp. Capts. E. S. Hall, J. H. Wilks, W. Lumley, B. Lyons, J. G. Milne, R. G. Abercrombie, T. E. Mulvaney, A. N. Collier (on account of ill-health), S. J. McC. Bradshaw, J. Brown, A. W. Brodribb, F. W. Stone, C. L. McDonagh, C. T. Galbraith, E. C. Arnold, W. F. Moore; Temp. Hon. Capts. (on ceasing to serve with No. 22 General Hospital) E. D. Busby, G. W. Cottis; Temp. Lieuts. L. G. Allan, B. Blackwood, G. E. J. Greene, P. Liston; Temp. Hon. Lieuts. (on ceasing to be employed with No. 22 General Hospital) W. M. Findley, J. E. Bloomer.

GENERAL RESERVE OF OFFICERS.

Major H. S. Peeke relinquishes the acting rank of Lieutenant-Colonel on ceasing duty with No. 1 British Red Cross (Duchess of Westminster's) Hospital.

SPECIAL RESERVE OF OFFICERS.

Capts. H. M. Williams and A. J. Clark relinquish the acting rank of Major on re-posting.

Capt. G. K. Aubrey, from temporary retired pay, relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

Captains to be acting Majors: R. Mackinnon, J. A. Ryle, P. J. Gaffikin.

Lieutenants to be Captains: W. L. Yell, J. B. D. Galbraith, I. M. Robertson, T. R. Wilson, J. P. White, J. Macleod, A. Riddell, J. J. A. Scott, F. J. Harvey, D. J. Valentine, S. H. de G. Pritchard, F. W. A. Watt, W. M. Jones, A. G. F. McArthur, S. W. Page, L. K. Ledger, M. Edwards, A. McL. Pickup, O. C. Carter, W. U. Longford, M. J. Hilton, C. S. Baxter, W. S. Stansfield.

To be Lieutenants: J. Lipsey (from Glasgow University Contingent, O.T.C.), L. J. Schwartz (from University of Manchester Contingent, O.T.C.), M. Melvin (from Edinburgh University Contingent, O.T.C.), T. McS. Wilson, W. M. Savery (from University of London Contingent, O.T.C.).

TERRITORIAL FORCE.

To be acting Colonels while employed as Assistant Directors of Medical Services: Lieut.-Cols. C. T. Green, E. V. Gostling, A. M. McIntosh, C. H. Howkins, H. Collinson, J. Mackinnon, F. Kelly, W. R. Matthews, E. C. Montgomery-Smith, E. A. Wraith, R. Pickard, and J. Clay; Majors T. Kay, D. Rorie, H. Richardson, and C. H. Lindsay.

To be acting Lieutenant-Colonels while specially employed: Majors A. C. Goodwin, A. W. Moore, A. E. Kidd, J. Wood, R. Coffey, J. W. Bird, J. Gray, F. Whalley, T. Donovan, H. T. Samuel, J. Evans, T. P. Puddicombe, A. P. Swanson, and E. B. Bird (Brevet Lieut.-Col.); Capts. A. T. Falwasser, G. T. Willan, H. G. G. Mackenzie, J. Barkley, J. Bruce, J. Young, T. A. Green, and C. W. Eames.

To be acting Majors while specially employed: Capts. J. W. McIntosh, T. G. Buchanan, H. G. Magroth, R. Waterhouse, R. Phillips, J. Turtle, J. D. Fiddes, J. F. MacIntosh, T. H. Peyton, W. D. Sturrock, O. H. Williams, E. Knight, E. L. Rowse, W. C. Macaulay, A. C. F. Turner, A. A. Hingston, H. B. Sproat, H. J. Dunbar, G. P. D. Hawker, R. Eager, H. C. Adams, F. E. Stokes, J. W. Kemp, H. W. Bayly, A. Leggat, L. P. Harris, S. F. St.J. Steadman, J. Chalmers, S. English, E. L. D. Dewdney, E. W. Matthews, H. F. W. Boeddicker, R. O. Sibley, J. H. Wood, W. F. Corfield, A. S. M. Macgregor, R. Proudfoot, A. B. Sloan.

Lieut.-Col. E. J. Lawless, from T.F. Res., to be Lieutenant-Colonel.

Lieut.-Col. E. M. Callender, from General Hospital, to be Lieutenant-Colonel.

Lieut.-Cols. J. B. Butler, W. J. Jones, A. R. Meggy, and F. W. Hearn are retired, having attained the age limit, with permission to retain their rank and to wear the prescribed uniform.

Lieut.-Col. P. Mitchell is restored to the establishment.

Major (Brevet Lieut.-Col.) (temp. Lieut.-Col.) J. Smart relinquishes his temporary rank on ceasing to command a General Hospital.

Major (acting Lieut.-Col.) R. T. Hughes and Capts. (acting Majors) R. Proudfoot and F. R. Humphreys relinquish their acting rank on ceasing to be specially employed.

Major R. Griffith, Capt. (acting Major) W. D. Sturrock, and Capt. P. Moxey to be acting Lieutenant-Colonels whilst commanding a Field Ambulance.

Capt. (acting Major) R. S. Taylor, D.S.O., is granted precedence in his acting rank.

Capt. A. McGillivray to be Major.

Capt. J. B. Adams is seconded for service overseas.

Capt. (temp. Major) D. W. E. Jones is seconded whilst holding a temporary commission in the Army Medical Service.

Major (temp. Lieut.-Col.) J. M. G. Bremner relinquishes his temporary rank on ceasing to command a Field Ambulance.

Capt. (acting Lieut.-Col.) D. H. Weir to be Major and to retain acting rank of Lieutenant-Colonel.

Capt. T. Porter relinquishes his commission on account of ill-health and is granted the honorary rank of Captain.

Temporary Captains to be Captains: W. Fitzpatrick, J. Muir, W. H. Broad, R. R. Macnicol, G. Moore, C. E. Whitehead, J. H. Jones, F. Ward, J. S. Hudson, H. M. S. Turner, C. S Young, H. G. L. Allford, E. A. C. Fazan, C. C. Lavington, J. A. Mathers, A. G. Hendley, H. W. Bayly, R. Verel, H. Wade, A. Mowat, R. W. C. Macdonald, L. Colledge, G. H. Hunt, A. W. Nuthall, H. C. Adams, and J. Cook.

General List.—Capts. A. G. Hebblethwaite and O. W. D. Steel to be acting Lieutenant-Colonels whilst commanding a Field Ambulance.

Captains to be acting Majors whilst specially employed: H. R. Dive, P. S. Martin, T. W. H. Downes, B. Hughes, R. W. Swayne.

Lieut.-Col. E. B. Dowsett to be Assistant Director of Medical Services and to be acting Colonel whilst so employed.

Temp. Capt. (acting Major) G. E. St. C. Stockwell to be Major (temporary).

Capt. W. B. Marshall to be acting Major whilst specially employed, and to remain seconded.

Major C. A. Leedham-Green relinquishes his commission on account of ill-health, and is granted the honorary rank of Major.

Capt. G. White relinquishes his commission on account of ill-health, and is granted the honorary rank of Captain.

Lieuts. R. McKenzie and A. G. Yates to be Captains.

J. G. Seppelt and R. F. White to be Lieutenants.

TERRITORIAL FORCE RESERVE.

Capt. A. Burgess, from R.A.M.C., to be Captain.

ROYAL AIR FORCE.

Medical Branch.—Capt. H. A. Treadgold to be acting Major whilst employed as Major.

Capt. A. H. Todd to be acting Major whilst specially employed.

Granted temporary commissions as Captains: W. Lessey (late Capt. R.A.M.C.), G. Fehrsen, W. Lumley (late Capt., R.A.M.C.).

Granted temporary commissions as Lieutenants: R. H. Burns, M. Hyman, N. C. Cooper, S. R. E. Davies, J. Gorsky, K. D. F. Waters.

Dental Branch.—Granted temporary commissions as Lieutenants: R. S. H. Drabble, P. J. Proud, L. S. Kettlewell, G. J. Roberts.

INDIAN MEDICAL SERVICE.

The King has approved the promotion of the following officers:—Colonel to be Major-General: W. H. B. Robinson. Lieutenants to be Captains: J. B. de W. Molony, H. G. Alexander, O. Wilson, J. J. Liston, K. R. Batra, B. H. Singh, P. D. Chopra, O. R. Unger, I. D. Grant, M. M. Khan, S. N. Mukerji, H. E. Murray, A. N. Bose, J. Dow, A. S. Fry, J. G. J. Green, W. P. Hogg, R. L. Vance, J. H. G. White, H. M. Collins, G. B. Hanna, A. H. Brown, C. H. Heppenstall, E. Cotter, U. J. Bourke, D. R. Thomas, C. C. Mecredy, C. W. W. Baxter.

To be acting Lieutenant-Colonels while commanding Indian Cavalry Field Ambulances: Majors W. H. Cazaly, J. J. Urwin, E. C. Hodgson.

The King has approved the retirement of the following officers: Lieut.-Col. G. W. Jenney, in consequence of ill-health due to field service. Lieut.-Col. G. B. Irvine, C.B., in consequence of ill-health due to field service, and is granted the honorary rank of Colonel.

The services of Temp. Lieut. Gokal Prasad Tiwari are dispensed with in consequence of medical unfitness.

YEOVIL AND DISTRICT HOSPITAL.—£1954 have been received by the Mayor of Yeovil's Fund towards the cost of providing a new building for the Yeovil Hospital.

Medical News.

THE INFLUENZA EPIDEMIC.

A CIRCULAR notice has been sent by the Local Government Board to all sanitary authorities, calling their attention to the recent Memorandum issued by the Board on "Epidemic Catarrhs and Influenza," and pointing out the necessity of securing nursing assistance and hospital provision. The notice encloses a circular letter from Sir Arthur Newsholme to the medical officers of health, asking that systematic inquiries, to be embodied in a special report, should be made in accordance with a given schedule into the incidence of influenza in all localities.

The Principal Medical Officer of the Local Government Board also asks that statements should be added to these reports dealing with any administrative action taken by the sanitary authorities, any distribution of precautionary advice or closure of public entertainments or schools, any provision made for hospital or domiciliary treatment of patients, for bacteriological examination, or prophylaxis by vaccines.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination, held from Oct. 8th to 23rd, the following candidates were approved in the undermentioned subjects, but are not eligible for diplomas:—

Medicine.—Margarita Sargood Barfield, Royal Free; C. W. Bennett, St. Bart.'s; E. P. Brockman, Cambridge and St. Thomas's; C. H. Bubb, Guy's; Gladys Mary Cooksey, Birmingham; A. Innes Cox, Middlesex; J. C. Davies, St. Bart.'s; J. C. Dixey, Oxford and St. Bart.'s; T. H. Dobrashian, Univ. Coll.; A. A. Forty, Guy's; R. S. Foss, St. Thomas's; E. J. Gaffney, Guy's; F. A. Georger, Buffalo Univ.; A. C. Halliwell, Cambridge and St. Thomas's; W. H. Haupt, George Washington Univ.; A. M. Kazim, Univ. Coll.; W. Lambert, Middlesex; F. W. Lemarchant, St. Bart.'s; D. Livingston, Durham; L. Lyne, Guy's; A. V. R. Menon, Madras Med. Coll.; D. O'Donovan, Cork and Univ. Coll.; J. L. C. O'Flyn, St. George's; A. G. Ord, Guy's; D. R. Owen, Liverpool; W. Reikan, Manchester; R. W. Revell, Univ. Coll.; J. C. Russell, Cambridge and London; Mary Sylvia Stocks, St. Mary's; C. M. Strong, Manitoba Univ.; W. S. Sykes, Cambridge and St. Bart.'s; R. W. Warrick, Guy's; Mary Howarth Wild, Liverpool; R. B. H. Wyatt, Oxford and St. George's; H. B. Yates, St. George's; and F. Young, Guy's.

Midwifery.—A. F. Abbassi, Edinburgh; R. G. Addenbrooke, Birmingham; S. T. Barrett, Cambridge and Guy's; Grace Mary Beaven, St. George's; C. W. Bennett, St. Bart.'s; E. J. Bilcliffe, St. George's; Hilda Crichton Bowser, Royal Free; J. V. C. Braithwaite, Guy's; E. E. Carter, St. Thomas's; R. H. Clarke, Cambridge and St. Bart.'s; H. S. Cohen, London; H. N. W. Collins, King's Coll.; Gladys Mary Cooksey, Birmingham; Ursula Beatrice Cox, Royal Free and St. Mary's; E. A. L. Crichlow and R. G. Dansie, King's Coll.; F. P. de Caux, St. Bart.'s; C. Dunscombe, Cambridge and St. Bart.'s; D. N. Dutt, Univ. Coll.; Sylvia Victoria Elman, St. Mary's; T. G. Evans, St. Bart.'s; J. Freilich, Univ. Coll.; F. J. Good, London; C. Griffith-Jones, St. Bart.'s; H. W. Hardy, Charing Cross; W. G. Hay and G. O. Hume, Guy's; A. Ismail, St. Thomas's; F. W. Kemp, Charing Cross; Muriel Mercer Kenworthy, Liverpool and Royal Free; H. W. Kerfoot, McGill Univ.; C. A. Kirton, Univ. Coll.; P. B. Kittel, Cambridge and St. Bart.'s; P. Lloyd-Williams, St. Thomas's; N. J. Macdonald, Cambridge and St. Bart.'s; W. K. McKay, Guy's; C. F. McLean, Cambridge and St. Thomas's; Kathleen Harding Matthews, St. Mary's; Margaret Ombler Meek, Charing Cross; J. S. Moore, St. Thomas's; G. E. Morgan, Oxford and London; A. G. Ord, Guy's; Sigrid Letitia Sharpe Pearson and Norah Dorothy Pinkerton, Royal Free; A. M. Ramzy, St. Thomas's; Eleanor Margaret Reece, Royal Free; R. W. Revell, Univ. Coll.; A. H. Richards, St. Mary's; S. Rose and A. E. Sawday, Guy's; E. L. Sergeant, London; Sonia Straschun, St. Mary's; W. S. Sykes, Cambridge and St. Bart.'s; E. Tagoe, Cambridge and Univ. Coll.; C. J. Thomas, St. Thomas's; W. G. Tilleke, Cambridge and Univ. Coll.; A. H. Turton, Birmingham; H. W. C. Vines, Cambridge and St. Bart.'s; K. T. K. Wallington, Univ. Coll.; A. E. Ward, St. Thomas's; A. D. Weeden, Middlesex; Effie Adela Wharton, St. George's; E. C. Whitehall-Cooke, St. Thomas's; R. B. H. Wyatt, Oxford and St. George's; and H. B. Yates, St. George's.

Surgery.—A. R. Aufranc, Middlesex; P. Banbury, St. Thomas's; E. P. Brockman, Cambridge and St. Thomas's; J. H. Crosskey, Birmingham; L. Duble, Louvain and St. George's; F. A. Evans, Manchester; G. W. T. H. Fleming, Durham; L. E. Frazer, A. C. Halliwell, and A. T. Hawley, Cambridge and St. Thomas's; C. T. Helsham, Guy's; A. R. Hill, Middlesex; T. L. Hilller, Cambridge and St. Thomas's; F. G. Hobson, Oxford and St. Thomas's; C. H. S. Horwitz, Guy's; C. O. Hudson, Sheffield; G. L. Levin, Univ. Coll.; T. C. McKenzie, Birmingham; A. V. R. Menon, Madras Med. Coll.; G. T. Mody, Bombay and Bristol; D. R. Owen, Liverpool; F. L. Pickett, Cambridge and Manchester; Dorothy Priestley Priestley, Leeds; J. C. R. Richardson, London; F. G. Spear, Cambridge and St. Thomas's; S. R. Tattersall, St. Thomas's; H. W. C. Vines, Cambridge and St. Bart.'s; and D. E. Wijewardene, Cambridge and St. Thomas's.

CENTRAL MIDWIVES BOARD FOR IRELAND.—The Central Midwives Board for Ireland held its second meeting at the offices of the Local Government Board, Custom House, Dublin, on Oct. 31st, when the chairman, Dr. E. Coey Bigger, proposed the following vote of condolence:—

"We, the members of the Central Midwives Board for Ireland, assembled at this, our second, meeting desire to tender to Mrs. McCarron, and all the members of her family, our sincere sympathy with them in the untimely and tragic death of Alderman McCarron. His colleagues on this Board wish to place on record their expression of their grief at the passing from their midst of one who had earned the esteem of everyone with whom he had come in contact."

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A clinical meeting of this society was held on Nov. 1st at the West London Hospital, when the following cases were shown:—Major McAdam Eccles: 1. Arterio-venous Aneurysm in a private of 23, a German bullet passing through the right popliteal space. After being a prisoner in Germany for 15 months he became interned in Switzerland, where the late Professor Theodor Kocher operated, removing the sac, the operation lasting about five hours. A well-marked bruit is still audible; a considerable enlargement of the right calf with some venous congestion is present. 2. Fibro-sarcoma of thigh in a girl of 19, who first noticed a lump in outer side of the *left* thigh four years ago. This gradually increased in size, when a portion was removed for microscopical investigation in March, 1918. Radical operation was refused, a large local operation being performed in July, 1918. There is now local recurrence and a secondary nodule in the *right* axillary border. The patient appeared in extremely good health, with fresh colour and not losing flesh. 3. "A Foot-Hand." This extremely rare condition shows a deformity of the left hand which appears somewhat like a foot; five "toes," a "great toe," and four smaller "toes" projecting from the end of a blunted upper limb. Radiograms showed perfect development of the bones of the forearm and carpus on the deformed side, the carpal bones in the distal row being fused.—Dr. Arthur Saunders: Arthritis under Phylacogen Treatment, showing considerable improvement in the metacarpal joints affected.—Mr. H. Tyrrell Gray: 1. Gigantism of Right Index and Middle Finger in a boy of 4. 2. Congenital Dislocation of both Hip-joints.—Dr. Rickard Lloyd: Ulcerated Leg Healed by Old-fashioned Methods within 20 days.—Mr. Bishop Harman: 1. Three Cases of Detached Retina. 2. Post-polar Cataract.

NATIONAL ASSOCIATION FOR THE PREVENTION OF INFANT MORTALITY.—Three lectures on the Feeding of Children will be given by Dr. Eric Pritchard at Dr. Williams's Library, Gordon-square, London, W.C., on Nov. 12th, 15th, and 26th, at 5.30 P.M. The fee is 2s. 6d. for the three lectures. Tickets from Miss Halford, secretary, at 4, Tavistock-square, London, W.C.1.

URBAN VITAL STATISTICS.

(Week ended Nov. 2nd, 1918.)

English and Welsh Towns.—In the 95 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had increased from 11·4 to 30·9 in the five preceding weeks, further rose to 43·0 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 55·5, or 21·0 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 8·8 in Carlisle, 11·0 in Stockton-on-Tees, and 12·2 in Warrington, to 75·2 in West Ham, 79·2 in East Ham, 79·5 in Oxford, 79·6 in Hull, 83·3 in Sheffield, and 88·6 in Leicester. The principal epidemic diseases caused 233 deaths, which corresponded to an annual rate of 0·7 per 1000, and included 80 from infantile diarrhœa, 54 from diphtheria, 34 from whooping-cough, 30 from scarlet fever, 29 from measles, and 6 from enteric fever. The deaths from influenza numbered 7412, against 1895 and 4482 in the two preceding weeks, and included 2458 in London, 468 in Sheffield, 269 in Leicester, 240 in West Ham, 220 in Hull, 194 in Leeds, 190 in Bristol, 170 in Liverpool, and 145 in Stoke-on-Trent. The 4285 deaths in London were the highest recorded in any week and were 524 in excess of the previous highest number registered during the influenza epidemic of 1892; of the 2458 deaths from influenza no fewer than 1369 related to persons aged 15-45 years, while in previous epidemics the highest mortality occurred at the more advanced ages. The 1201 cases of scarlet fever and 1166 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 50 and 34 below the respective numbers remaining at the end of the previous week. The causes of 87 deaths in the 96 towns were uncertified, of which 12 were registered in London, 10 each in Leicester and Liverpool, and 7 in Birmingham.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 10·6 to 29·4 in the seven preceding weeks, further rose to 30·5 per 1000. Of the 1407 deaths from all causes, 66 were classified to influenza, which was also stated as a contributory cause in 499 deaths classified to other diseases; in the previous week these numbers were 57 and 457 respectively. The 570 deaths in Glasgow corresponded to an annual rate of 26·7 per 1000, and included 9 from diphtheria, 7 from whooping-cough, 2 from scarlet fever, and 1 each from enteric fever and infantile diarrhœa. The 226 deaths in Edinburgh were equal to a rate of 35·4 per 1000, and included 2 from diphtheria and 1 each from enteric fever, scarlet fever, whooping-cough, and infantile diarrhœa.

Irish Towns.—The 501 deaths in Dublin corresponded to an annual rate of 65·5, or 18·2 per 1000 above that recorded in the previous week, and included 250 from influenza, 2 from whooping-cough, and 1 from infantile diarrhœa. The 132 deaths in Belfast were equal to a rate of 17·5 per 1000, and included 2 from scarlet fever and 1 each from enteric fever and infantile diarrhœa.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Armistices with Austria and Turkey.

STATEMENTS made in the House of Commons concerning the armistices with Turkey and Austria, and the conditions under which those countries surrender, have been received with the utmost satisfaction. These events and the military and economic exhaustion of Germany point to the early collapse of the enemy on the Western front and to the acceptance of the Allies' terms. Preparations are meantime being made for a General Election at a very early date.

The New President of the Local Government Board.

Sir AUCKLAND GEDDES has succeeded Mr. HAYES FISHER as President of the Local Government Board, and he will continue also his duties as Minister of National Service. The main function of the Ministry of National Service being to obtain men for the Army, its importance diminishes as peace draws near. In that case Sir AUCKLAND GEDDES will have an increasing amount of time to devote to his new office, where important work awaits him. The housing problem has to be seriously tackled. It is also considered highly probable that one of the tasks to which Sir AUCKLAND GEDDES will set his hand is the advancement of the scheme for a Ministry of Health. A medical man, he has already proved his capacity as an administrator.

Ministries of Health Bill.

Dr. ADDISON, the Minister of Reconstruction, is responsible for the introduction of a Bill in the House of Commons "to establish a Ministry of Health and a Board of Health to exercise in England and Wales and in Scotland respectively powers with respect to health and local government and for purposes connected therewith." The measure will be printed, and contains the proposals of the Government on this important subject. At this stage of the session, of course, it will be impossible to carry any new legislation through except by general consent.

The Midwives Bill.

The House of Lords has passed the Midwives Bill.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 30TH.

Influenza at the Crystal Palace.

ANSWERING Mr. CHANCELLOR, Dr. MACNAMARA (Secretary to the Admiralty) said: There have been 120 deaths among men at the Crystal Palace during the last six months—117 from pneumonia following influenza, 1 from cerebro-spinal meningitis, 1 from cerebral abscess, and 1 from Addison's disease. The average number of men stationed at the Crystal Palace is roughly about 5600. During the course of six months the number of men passing through the Crystal Palace would be much greater than that. The main, practically indeed the only, mortality during that period has been from an epidemic of influenza, which, I regret to say, affected over 1000 men. Of the 117 men who, unhappily, died from pneumonia following influenza, none were inoculated against influenza or pneumonia. Prior to the outbreak of influenza at the Crystal Palace the average daily sick-rate had been slightly less than 3 per cent. Though the building was not originally intended as a living place, it has been satisfactorily modified subsequently to its being taken over at the beginning of the war, and the health reports prior to the present outbreak of influenza do not point to any serious objection to its continuing to be used for the purpose for which it was acquired. A very recent sanitary inspection of the building has been made, as a result of which certain minor defects in ventilation are being remedied.

Influenza in Belfast Prison.

Replying to Mr. BYRNE, who asked for particulars regarding the epidemic of influenza in Belfast Prison, Mr. SAMUELS (Attorney-General for Ireland) said: Dr. MacCormack, the medical member of the Prisons Board, specially visited Belfast Prison in reference to the influenza epidemic. He reports that there are now under medical treatment for influenza 111 prisoners committed under the Defence of the Realm Regulations and 14 officers of the prison. There is no foundation for the allegation that the food is insufficient or of poor quality, or that the medical or nursing arrangements are unsatisfactory. Special treatment and diet are afforded to each patient, and the medical officer to the prison has authority to engage additional medical assistance and trained nursing staff and to order any extra articles of food or medicines that may be deemed necessary. The prison medical officer has already called to his assistance Dr. Tweedie, of Belfast, and Professor H. L. McKisack, M.D., as consultant. There is no reason to think that the prisoners are not receiving all proper care and medical treatment.

THURSDAY, OCT. 31ST.

Influenza in Belfast Prison.

IN answer to Mr. KING, who asked for information concerning the influenza epidemic in Belfast Prison, Mr. SAMUELS said: The most recent information is as follows:—The number of cases of influenza that have occurred is 118. Of these nine patients have been removed to extern hospitals on the recommendation of the medical officer of the prison. The large majority of the remaining cases are suffering from a mild type of the disease and satisfactory treatment for them is available in the prison. Medicines and special dietary have been prescribed where necessary in individual cases, and where special nursing is required the patient is removed to an extern hospital. The medical officer has already secured the assistance of two other medical men as well as of Professor McKisack, M.D., consultant, and there is no reason to think that the cases are not receiving all proper attention.

Venereal Disease and Regulation 40 D.

Mr. LEES SMITH asked the Home Secretary how many resolutions he had now received demanding the withdrawal of Regulation 40 D of the Defence of the Realm Act.—Sir G. CAVE answered: About 600 such resolutions have been received at the Home Office.

Mr. W. ANDERSON asked whether the right honourable gentleman was aware that Regulation 40 D of the Defence of the Realm Act had been condemned by the most representative conferences of women; whether his attention had been called to medical opinion; that the regulation had been discredited as a public health measure; and that the presence of infection could not be proved or disproved by examination; whether he was aware of the number of women against whom no charge could be established, who had nevertheless been arrested, imprisoned, and remanded for examination under this regulation; and whether the Government was now prepared to take steps to annul this regulation.—Sir G. CAVE said in reply: The question, which is one of extreme difficulty, is being considered by a strong committee upon which both sexes are represented, and the Government must await the result of their deliberations before taking action.

Mr. H. SAMUEL: Can my right honourable friend say when the report will appear?—Sir G. CAVE: I should think certainly next month. I hope so.

Training Limbless Men in Ireland.

In reply to Mr. MACCAW, Sir A. GRIFFITH-BOSCAWEN (Parliamentary Secretary to the Ministry of Pensions) said: Several schemes of training suitable for limbless men are in operation in the north of Ireland.

Major NEWMAN: Are there any similar institutions in the south of Ireland?—Sir A. GRIFFITH-BOSCAWEN: Yes; there are certain training schemes in the south of Ireland.

Medical Service of the Air Force.

Sir WATSON CHEYNE asked the Under Secretary to the Air Ministry whether the principles laid down in the Medical Advisory Committee's Report, 1917, were now being carried into practice and what progress had been made.—Major BAIRD: A reorganisation of the medical arrangements of the Royal Air Force is now being considered in connexion with the appointment of a successor to the medical administrator.

Mr. JOYNSON-HICKS: Does that mean that the Medical Administrative Committee which was established in consequence of my honourable friend's report has been done away with?—Major BAIRD: The committee under the new arrangement will not be administrative, but will carry out advisory functions.

Sir WATSON CHEYNE asked whether the medical administrator of the Air Service had resigned and, if so, why; and what arrangements were being made in regard to a successor?—Major BAIRD: The resignation of the medical administrator originated in a difference of opinion between himself and the Medical Administrative Committee in regard to their respective spheres of responsibility. The appointment of his successor will be made public at an early date.

Mr. JOYNSON-HICKS: Has this appointment been offered to any officer at present?—Major BAIRD: The appointment is under consideration and an announcement will be made.

Sir WATSON CHEYNE asked whether the Medical Administrative Committee had been dissolved and, if so, why.—Major BAIRD wrote in reply: Under a reorganisation of the medical arrangements of the Royal Air Force now under consideration the administrative functions of the Medical Administrative Committee will cease, and it will become purely advisory.

MONDAY, NOV. 4TH.

Discharged Tuberculous Soldiers.

In reply to Lord H. CAVENDISH-BENTINCK, Sir E. CORNWALL (who replied on behalf of the representative of the Ministry of Pensions) said: A scheme for the domiciliary visiting of discharged men suffering from tuberculosis has been under consideration by my department during the last six months and has now been settled in conjunction with the Local

Government Board and the National Health Insurance Commission. Sanction for the necessary expenditure was received on May 17th last, but no part of the expenditure has yet been incurred, nor, I understand, have any appointments been made. The Local Government Board will very shortly issue the necessary instructions to the local authorities concerned. I would add that the present scheme is an extension of the arrangements for visiting and after-care which are already being carried out by local authorities in many areas.

Artificial Limbs.

Answering General CROFT, who asked a question bearing on artificial limbs for soldiers, Sir E. CORNWALL said: Artificial limbs very seldom need renewal owing to the shrinking of the stump, new buckets only being necessary, but it is clearly more satisfactory to supply a second limb when shrinkage of the stump has taken place and in the interval to supply a provisional limb in case of emergency.

Treatment of Shell Shock.

Mr. WING asked the Under Secretary for War whether he would give the names and situation of the institutions provided by the War Office for the care and treatment of uncertifiable soldiers who had been mentally unhinged in consequence of the severity of the strain through which they had passed; how many purely mental cases were segregated in each institution; what was their occupation; how many had been discharged recovered during the present year; and in how many instances were these institutions run by lunacy staffs and presided over by mental specialists connected with lunacy organisations.—Mr. MACPHERSON replied: I presume my honourable friend is referring in the first part of his question to men suffering from shell shock and neurasthenia. No purely mental cases are segregated in any institution. The occupations of the men whilst in hospital are mainly agriculture and farm work. There are also indoor occupations, such as carpentry, and also recreation and amusement. It would take a considerable time and involve a large amount of labour to ascertain the number who have been discharged as recovered, and I hope my honourable friend will not press for this information. None of the institutions are run by lunacy staffs, but in three of them the administrator is a mental specialist. The following is the list of institutions referred to:—Maudsley Neurological Clearing Hospital, Denmark Hill, S.E.; Springfield War Hospital, Upper Tooting, S.W.; Red Cross Military Hospital, Maghull; Abram Peel War Hospital, Bradford; Ewell (County of London) War Hospital, Epsom; 1st Southern General Hospital (Monyhull Neurological Section), Birmingham; Glen Lomond War Hospital, Fife; Dunblane War Hospital, Perthshire; Seale Hayne Neurological Hospital, Newton Abbot, South Devon; Gateshead War Hospital, Stannington, Newcastle-on-Tyne; Neurological Section, 4th Southern General Hospital, Plymouth; Neurological Section, 2nd Western General Hospital, Brinnington, Stockport; East Preston Military Hospital, near Worthing; Neurological Section, King George V. Hospital, Dublin; and Ashhurst War Hospital, Littlemore, Oxford.

Medical Administrator of Air Force.

Major TERRELL asked the Under Secretary to the Air Ministry whether the Air Council or the Secretary of State had offered or proposed to offer the appointment of Medical Administrator of the Medical Air Services of the Air Force to an officer of the R.A.M.C. on the terms that he would, in the administration of the Air Force Medical Service, carry out the principles recommended by the Watson Cheyne Advisory Committee; whether such officer had accepted or refused to accept the appointment on such terms, and if such officer had refused to accept such appointment on such terms, what action did the Secretary of State or the Air Force Council intend to take in the matter, and would the Secretary of State assure the House that whoever was appointed would be required to carry out the said principles in the administration of the Air Force Medical Service.—Major BAIRD replied: The post of Medical Administrator has been offered to Colonel Fell, R.A.M.C. One of the conditions of the offer is that he will be guided by the principles laid down in the report of the Watson Cheyne Committee, subject to certain amendments as regards principles of administration.

Major TERRELL: Has he accepted or refused these terms?—Major BAIRD: Colonel Fell is at present engaged in visiting the stations of the R.A.F. We shall get his answer when he returns.

TUESDAY, NOV. 5TH.

Medical Research Committee and Influenza.

Mr. ROWNTREE asked the representative of the National Insurance Commissioners whether the Medical Research Committee of the National Insurance Commissioners had for some time past been undertaking important research work in connexion with influenza; whether the results of the research had been made public; and, if so, whether a full use was being made of the knowledge they had acquired.—Sir E. CORNWALL answered: Yes, Sir, the Medical Research Committee have been continuously engaged since the beginning of the first wave of the epidemic last spring upon special efforts in regard to the etiology and the prevention of influenza and its complications. They have collected and periodically published expert reports of observations from all quarters, and have organised special researches in regard to it. These efforts have been more restricted than would otherwise have been the case owing to the urgent needs of the Army for pathological and other investigations into numerous kinds of diseases and wound problems, in which the Committee have also been heavily engaged from the outbreak of the war until now. The Committee's activities in all these fields are fully set out in the annual reports to me, which are presented to Parliament and have a wide distribution amongst experts and the profession, for whom, of course, they are from their nature mainly useful. Their fourth report, which is now before me, will be published in a few days. In reply to the second part of the question I may say that in the first week of August the Committee sent to the medical newspapers for the information of the medical and health authorities a résumé of various important communications on the subject of influenza, including an indication of the likelihood of the onset of secondary waves of the epidemic in the autumn, which their inquiries led them to expect would be more severe in character than the primary wave of last spring. For that reason the Committee on that date publicly invited observations from experts at various centres with a view to the further organisation of coördinated work in the study of those secondary waves. The severity of the present epidemic now shows that that anticipation on the part of the Committee, which can be read in the *British Medical Journal* of August 10th, was all too fully correct, and that the Committee did its duty in giving the warning beforehand to the expert authorities. As regards the actual epidemic itself, the Committee have been continuously collecting expert information likely to be useful to the health authorities and the medical profession as to its nature and progress in Europe from the chief foreign sources, including much important work done during these months in Germany and Austria. This the Committee have periodically published in English, combined with the results of British observations in their monthly medical supplements, of which several thousand copies are regularly distributed amongst professional experts and put on sale, early copies being sent to the Medical Department of the Local Government Board and other Government departments concerned. My honourable friend should see especially the September, October, and November issues, of which I am sending him copies. As regards the practical side of the problem I should state that the Committee were strongly represented at the important conference of bacteriologists held at the War Office some weeks ago on the possibilities of utilising vaccines for the prevention or treatment of the prevailing forms of influenza amongst the troops, under the chairmanship of Sir William Leishman, Adviser in Pathology to the Army Medical Department, and also a member of the Medical Research Committee. The outcome of that discussion was issued to the medical press by Sir William Leishman, and it also appeared in the pamphlet issued by the Local Government Board on the subject. In addition to this the Committee's bacteriological department have been giving aid to the War Office in the steps which have been taken to prepare and provide protective vaccines against the dangerous complications of secondary infections amongst the troops, and the Committee's secretary concurrently made suggestions to the medical officer of the Local Government Board for analogous steps to be taken by that Board for the benefit of the civil population. In this connexion, and in reply to the third paragraph of the question, I must remind my honourable friend that it is not the duty of the Medical Research Committee to carry out the actual treatment or prevention of this disease, which is the province of the public health authorities, local and central, but to obtain new knowledge and valuable information in regard to it by special researches and otherwise, and to have this readily available to those health authorities for them to put to its proper practical uses for the benefit of the civil population. The earlier paragraphs of this reply will have shown, I hope, that the Committee have carried out their proper functions in this respect with considerable effectiveness, especially in view of the difficulties occasioned by the constant loss of trained researchers claimed for military service.

WEDNESDAY, NOV. 6TH.

Medical Women in Military Hospitals.

Sir P. MAGNUS asked the Under Secretary for War whether, having regard to the fact that women doctors serving in military hospitals discharged similar duties and received the same pay as men doctors, and were entitled to wear the Royal Army Medical Corps badge, he would take steps to

rectify the anomaly of their being refused even honorary commissions or to wear badges of rank which would be helpful to them in maintaining discipline; and whether he could arrange that they obtained equivalent relief from income-tax as was granted to men doctors under the service rate.—Mr. MACPHERSON replied: I have been into this question very thoroughly, and I find that it is legally impossible to grant commissions in the Army to women. Legislation would be necessary. I should be glad to consider the granting of marks of distinction among themselves.

Sir P. MAGNUS: Has the right honourable gentleman any hope of being able to introduce the necessary legislation this session? Would the marks of distinction which he proposes be such as to enable these medical women to maintain the necessary discipline in order to carry out the work which they have to do?—Mr. MACPHERSON: As to legislation I will consult the Chancellor of the Exchequer. In regard to marks of distinction I am strongly opposed to the utilisation of the present Army marks of distinction. I would prefer marks of distinction to take the form of those which are given to administrators and directors of certain Women's Corps.

Mr. CURRIE: Will the right honourable gentleman answer the last part of the question as to relief from income?—Mr. MACPHERSON: I think I have already informed my honourable friend privately that that is purely a question for the Treasury.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, Nov. 14th.—Papers:—Mr. A. Mallock: Sounds produced by Drops falling on Water.—Mr. G. H. Hardy and Mr. S. Ramanujan: On the Coefficients in the Expansions of Certain Modular Functions.—Hon. R. J. Strutt: The Light scattered by Gases—its Polarisation and Intensity.—Dr. F. Horton and Ann C. Davies: An Investigation of the Ionizing Power of the Positive Ions from a Glowing Tantalum Filament in Helium (communicated by Mr. C. T. R. Wilson).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.
Wednesday, Nov. 13th.
GENERAL MEETING OF FELLOWS: at 4.30 P.M.
Presentation of the Diploma of Honorary Fellowship to Sir Alfred Keogh, G.C.B. (late Director-General of the Army Medical Service).
Discussion:
On "Influenza, with particular reference to the Epidemiology, Pathology, Clinical Aspects, and Complications," to be opened by Sir Arthur Newsholme, K.C.B., M.D.

MEETINGS OF SECTIONS.
Thursday, Nov. 14th.
NEUROLOGY (Hon. Secretaries—C. M. Hinds Howell, E. G. Fearnsides): at 8.30 P.M.
Presidential Address:
Dr. Henry Head, F.R.S.: Some Principles of Neurology.
Friday, Nov. 15th.
OTOLOGY (Hon. Secretaries—J. F. O'Malley, H. Buckland Jones): at 5 P.M.
Cases will be shown by—
Mr. Stuart-Low, Mr. Hunter Tod, Mr. Mollison, Dr. Dan McKenzie, and others.
ELECTRO-THERAPEUTICS
CLINICAL
MEDICINE
SURGERY: at 8.30 P.M.
On the invitation of the Section of Electro-Therapeutics a Joint Meeting of the above Sections will be held when a paper will be read by—
Dr. E. I. Spriggs on "The Radiography of the Vermiform Appendix" (illustrated by a number of lantern slides and drawings by Mr. Marxer).

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.
MONDAY, Nov. 11th.—8.30 P.M., Discussion on Reconstruction and the Practice of Medicine (introduced by Col. H. J. Waring, R.A.M.C.T.)

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.
FRIDAY, Nov. 15th.—5.30 P.M., Paper:—Lt.-Col. A. Balfour, C.B., C.M.G.: Sanitary and Insanitary Makeshifts in the Eastern War Areas.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of Post-Graduate Course were given in issue of Nov. 2nd.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.

THE THROAT HOSPITAL, Golden-square, W.
MONDAY, Nov. 11th.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
TUESDAY, Nov. 12th.—4 P.M., Dr. J. L. Bunch: Itching Skin Diseases and their Treatment.
WEDNESDAY.—5 P.M., Dr. W. Griffith: Skin Diseases in the Army.
THURSDAY.—5 P.M., Chesterfield Lecture:—Dr. M. Dockrell: The Diagnosis and Treatment of the late Eruptions of Syphilis.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.
Course of Lectures on Public Health Problems under War and After-war Conditions (each Lecture will be followed by a Discussion):—
WEDNESDAY, Nov. 13th.—4 P.M., Lecture VI.:—Miss Jane Walker, M.D.: The Tuberculous Soldier.

NATIONAL ASSOCIATION FOR THE PREVENTION OF INFANT MORTALITY, at Dr. William's Library, Gordon-square, W.C.
Three Lectures on the Feeding of Children:—
TUESDAY, Nov. 12th.—5.30 P.M., Lecture I.:—Dr. E. Pritchard: Some General Principles.
FRIDAY.—5.30 P.M., Lecture II.:—Dr. E. Pritchard: The Quality of the Food.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BROWN, R. DODS, M.D., has been appointed Medical Superintendent of the Aberdeen Royal Asylum.
COLEMAN, C. J., M.D. Cantab., Certifying Surgeon under the Factory and Workshop Acts for the Lincoln District of the county of Lincoln.
FORTESCUE-BRICKDALE, J. M., M.D. Oxf., Physician to the Bristol Royal Infirmary.
MARSDEN, W. H., L.R.C.P. & S. Edin., L.F.P.S. Glasg., Acting Medical Officer for the Bleadon District (Axbridge).
NEILD, NEWMAN, M.B. Vict., Physician to the Bristol General Hospital.
NIXON, J. H., M.D. Lond., Medical Officer for the Lacock District (Chippenham).

Vacancies.

For further information refer to the advertisement columns.
Birkenhead Borough Hospital.—Jun. H.S. £170.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Chester Royal Infirmary.—H.S. £200.
Devonport, Royal Albert Hospital.—Res. H.S. £200.
Dorchester, Dorset County Council Education Committee.—School Dentist. £350.
Essex County.—M.O.H. £1000.
Glamorgan County Asylum, Bridgend.—Temp. Asst. M.O. £6 6s. p.wk.
Glasgow, Lightburn Joint Hospital, Shettleston.—Res. Phys. Sup. £300.
Guy's Hospital, S.E.—Female Clin. Asst. 1 guinea per attendance.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. £100.
Leeds City Infectious Diseases Hospital, Seacroft.—Asst. M.O. £300.
London Temperance Hospital, Hampstead-road, N.W.—Medical Registrar. 40 guineas.
Manchester County Asylum, Prestwich.—Locum Tenens. £7 7s. p.wk.
Manchester Education Committee.—Two Temp. Asst. M.O's. £400.
Norwich, Norfolk and Norwich Hospital.—H.P. and H.S. £400 each.
Perth, James Murray's Royal Asylum.—Phys.-Superintendent. £800.
Reading, Royal Berkshire Hospital.—H.P. £250.
Roll of Honour Hospital for Children, 688, Harrow-road, W.—Female Asst. P.
Royal Free Hospital, Gray's Inn-road, W.C.—Female H.S.
Salford Union Infirmary.—Third Res. Asst. M.O. £300.
Sheffield, East End Branch of the Children's Hospital.—H.S. £150.
Sheffield Royal Infirmary.—Two H.S.'s. £150.
Stoke-on-Trent County Borough.—Temp. Tuberc. Officer. £350.
Wallasey, Victoria Central Hospital.—Hon. Oph. S.
Wolverhampton and Staffordshire General Hospital.—H.S. £200. Also Sen. Student.
York City.—Temp. Tuberc. Officer. £500.
York City Asylum, Fulford.—Temp. Asst. M.O. £350.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Llanfair Caereinion, Montgomery, and at Ballyfeard, co. Cork.

Births, Marriages, and Deaths.

BIRTHS.

MANSFIELD.—On Oct. 30th, at Sevenoaks, the wife of Lieutenant P. A. Mansfield, R.A.M.C., of a son.
NICHOLSON.—On Nov. 2nd, at Blockley, the wife of Major C. Nicholson, R.A.M.C., of a daughter.

DEATHS.

DOWNIE.—On Oct. 29th, at a British general hospital abroad, of influenzal pneumonia, James Maitland Downie, B.A. Cantab., M.R.C.S. Eng., Captain, R.A.M.C., in his 26th year.
MEIKLEJOHN.—On Oct. 31st, at Holland-road, W., John William Sinclair Meiklejohn, M.D., Deputy Inspector-General of Hospitals and Fleets, R.N., aged 89.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

COMMITTEE OF ORGANISATION, VITH INTERNATIONAL DENTAL CONGRESS, 19, Hanover-square, London.
Transactions of the VIth International Dental Congress. 30s. net.

CRANTON, HEATH, London.
On the Brain. By T. S. Dowse, M.D. 5s.

MARLBOROUGH AND Co., London.
Italian Self-taught, Grammar with Key (Thimm's System). 2nd ed. By G. Dalla Vecchia and A. C. Panagulli. 5s. 6d.

MURRAY, JOHN, London.
Junior Course of Practical Zoology. By the late A. Milnes Marshall, M.D., and C. H. Hurst, Ph.D. Edited and Revised by F. W. Gamble, D.Sc. 12s.

SIMPKIN AND MARSHALL, London. JOHN WRIGHT, Bristol.
On the Nature of Things. By Hugh Woods, M.D.

SIMPKIN, MARSHALL, AND Co., London. WARREN AND Co., Winchester.
New Army Cookery Book. By MRS. W. A. Featherstone, Q.M.A.A.C. 1s. 3d.

THE BUILDER, LTD., 4, Catherine-street, London, W.C. 2.
Fuel Economy in Cooking Apparatus. By A. H. Barker, B.Sc. 1s. 6d.

UNIVERSITY PRESS, Oxford.
Trench Fever. Report of Commission, Medical Research Committee, American Red Cross. By Major R. P. Strong, M.R.C.

YEAR BOOK PUBLISHER, Chicago.
Practical Medicine Series. Vol. IV. Pediatrics, by J. A. Abt, M.D., and A. L. Levinson, M.D. Orthopedic Surgery, by E. W. Ryerson, M.D. $1.40.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. Ayres, Liverpool; Dr. R. W. Allen, Lond.; Association for Moral and Social Hygiene, Lond., Sec. of; Mr. R. J. Albery, Lond.; Australian Medical Force, D.M.S. of, Lond.; Dr. S. H. Appleford, Hoddesdon.

B.—Messrs. A. E. Braid and Co., Lond.; Dr. B. Baskett, Rayleigh; "Barrister"; Board of Trade, Lond.; Surg.-Com. W. Bastian, R.N.; Messrs. Butterworth and Co., Calcutta; Messrs. J. Bale, Sons, and Danielsson, Lond.; Mr. J. L. Balderston, Lond.; Dr. W. H. Bishop, Wylam-on-Tyne; Capt. W. G. Ball, R.A.M.C.(T.); British Fruit Evaporation Co., Lond.; Mr. G. S. Bigg, Lond; Mr. P. Bousfield, Lond.; Bread and Food Reform League, Lond.

C.—Dr. H. C. Cameron, Lond.; Mr. R. A. G. Chambers, Burnley; Dr. F. G. Crookshank, Lond.; Clerical, Medical, and General Life Assurance Society, Lond.; Col. S. L. Cummins, C.M.G., A.M.S.; Dr. E. S. Chesser, Lond.

D.—Mr. R. I. da Costa; Dr. H. Dally, Lond.; Messrs. Duncan, Flockhart, and Co., Edinburgh; Dr. H. H. Dale, Lond.

F.—Capt. J. G. Forbes, R.A.M.C.; Factories, Chief Inspector of, Lond.; Mrs. G. Finch, Rickmansworth; Mr. C. E. S. Flemming, Bradford-on-Avon; Hon. Surg.-Lt.-Com. P. Fildes, R.N.V.R.

G.—Guest Hospital, Dudley; Mr. H. Gardiner, Lond.; General Medical Council, Lond., Acting Registrar of; Dr. H. J. Gauvain, Alton; Dr. H. T. Gillett, Oxford.

H.—Dr. J. Haddon, Denholm; Mrs. E. Hancock, Lond.; Major W. E. Home, R.A.M.C.

J.—Lt.-Col. S. P. James.

K.—Dr. W. Kidd, Cheltenham.

L.—Dr. S. C. Lawrence, Lond.; Dr. C. E. Lea; Local Government Board, Lond.; Dr. R. B. Low, Lond.; Local Government Board for Ireland, Dublin; Prof. H. Littlejohn, Edinburgh.

M.—Mr. J. B. Macalpine, Manchester; Lt.-Col. J. N. MacLeod, G.M.G., C.I.E.; Dr. J. C. McKerrow, Lond.; Mr. F. T. Mullett, Cambridge; Mr. J. McLaggan, Torphins.

N.—National Association for the Prevention of Consumption, Lond.; Capt. T. P. Noble, R.A.M.C.

P.—Dr. W. T. G. Pugh, Carshalton; Miss M. E. Pearson, Lond.; Dr. H. A. Powell, Lond.; Mrs. G. W. Pocock, Portlahead.

R.—Royal Institution, Lond.; Dr. Rivers, Worsboro' Dale; Royal Free Hospital, Lond., Sec. of; Dr. W. M. Richards; Royal College of Surgeons of England, President and Council of; Miss J. Ross, Glasgow; Royal Society, Lond.; Dr. R. R. Rentoul, Liverpool.

S.—Dr. A. Savill, Lond.; Societat de Biologia de Barcelona; Dr. E. I. Spriggs, Banff; *The Sphere*, Lond., Editor of; Society of Tropical Medicine and Hygiene; Mr. J. T. Segrue, Lond.; Surg.-Lieut.; Mr. W. A. Sands, New York; The Stratford Company, Boston; Mr. W. J. Stevenson, Lond.; Dr. R. V. Solly, Exeter; Capt. V. E. Sorapure, R.A.M.C.; Sir Walter M. Fletcher, K.B.E., Lond.

T.—Mr. B. C. Tillett, Lond.; Lt.-Col. C. N. Thornton, S.A.M.C.; Dr. J. Tatham, Oxted; Mr. F. Triefus, Lond.; Tasmania, Agent-General for, Lond.

U.—United Water Softeners, Ltd., Lond.

V.—Capt. A. B. Vine, R.A.M.C.

W.—Dr. L. B. Weatherly, Bournemouth; Dr. C. H. Whiteford, Plymouth; Dr. T. Wilson, Birmingham; Dr. W. H. Wynn, Birmingham.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2.

A WILTSHIRE CENTENARIAN.—Major J. Awdry, V.D., of The Paddock, Chippenham, recently celebrated the 100th anniversary of his birthday.

LITERARY INTELLIGENCE.—Dr. Ernest Muir, of the Mission Hospital, Kalna, has written a book with the object of placing within the reach of the medical practitioner in small towns and villages in India a guide to the diagnosis and treatment of kala-azar, which in some parts of India is very prevalent. Sir Leonard Rogers has furnished a foreword to the work.—Messrs. Cassell and Co. announce the forthcoming appearance of a sixth edition of Luff and Candy's "Manual of Chemistry," revised and enlarged by Mr. Candy.

Notes, Short Comments, and Answers to Correspondents.

THE MENACE OF VENEREAL DISEASE.

THE fourth lecture on "Public Health Problems under War and After War Conditions," dealing with the prevention and abortive treatment of venereal disease, was delivered at the Royal Institute of Public Health on Oct. 30th by Lieutenant-Colonel L. W. Harrison, D.S.O. Sir George H. Makins, President of the Royal College of Surgeons of England, who presided, introduced the lecturer by stating that the present war might be followed by a huge increase in venereal disease throughout the country, and unless it was combated the result to the nation would be disastrous. Two classes of women, amateur and professional, said Lieutenant-Colonel Harrison, infected our soldiers, and, generally speaking, two-thirds of the cases of venereal disease dealt with among soldiers was due to infection by the amateurs. After the war the burden of combating the disease would fall chiefly on the civilian community. More had been done in the matter of education in this connexion by a few devoted workers in the four years of the war than during the past 400 years, but ignorance was still appalling, and it was necessary that the public should know how to protect itself against the disease. Syphilis comprised only about one-quarter of venereal disease, and although we had admirable remedies against it the long periods of treatment under which the patient must be under observation made treatment costly. The successful management of gonorrhœa was immensely more difficult than that of syphilis, though, unfortunately, a large number of doctors still looked upon it as a light matter. It was one of the most difficult tasks in medicine to clear the genital passage from the gonococcus. From a medical point of view the prevention of venereal disease was as easy as cure was difficult. With regard to soldiers, experiences at Aldershot had shown that the admission-rate for venereal diseases could be materially lowered by providing healthy distractions. In 1885 the ratio per 1000 per annum of admissions for venereal disease was very high, but it gradually decreased until the period of the South African War, when there was a relapse. From then onward to 1913 a decrease was again shown. This the lecturer considered to be due to the fact that Aldershot had been made a model home for the soldier, who need not leave barracks in order to find amusements and recreation of congenial kinds. From this he argued that something more might be done in providing healthy distractions for civilian working men. If workmen's clubs were made something better than pot-houses, and places provided where men could be really comfortable in their leisure hours, it would not only tend to reduce the spread of venereal disease, but increase efficiency, and in terms of pounds, shillings, and pence would be profitable. With regard to segregation of women, the proper inspection of women on a large scale was impracticable. The best plan for dealing with prostitutes was to act on the assumption that all were diseased and teach them how to avoid infecting the men. But if we could make the prostitute safe, there remained still the perfectly hopeless class of amateurs to deal with. The greatest hope lay in breaking the chain at the male end by prophylactic treatment, but disinfection must be carried out soon after connexion. He advocated the appointment of subsidiary centres for treatment after instruction at the central clinics, but whatever arrangements were made for the treatment of venereal diseases it was necessary to have the coöperation of the public, and it was the duty of the medical profession to secure that coöperation by education.

Colonel Walker testified to the excellent results of prophylactic treatment on the American soldier in France.

Sir Thomas Barlow said that the moral side and medical side of the question were not incompatible, and so long as we could use prophylactic measures, not as an encouragement to men to expose themselves, but as a means of helping them after they had gone astray, it was the imperative duty of the medical profession to do so.

Sir George Makins contended that the question of continence was no more than abstention from alcohol or anything else, and we ought not to make it easier for people to be incontinent.

The lecturer, in reply to questions, did not consider that prophylactic treatment encouraged sexuality. We were dealing with an implacable foe, and it was no more unchristian to use the methods indicated than to fight on Sunday or use a gas against another implacable foe. Colonel Harrison also said that teetotalers formed a large proportion of venereal patients, and in one hospital 34 per cent. of venereal cases up to date proved to be total abstainers. He could not explain the circumstance, but thought it might be due to the fact that the abstainers

were bored by the distractions provided for them. Colonel Walker agreed that many teetotalers were infected; he could not explain the matter, but admitted, on the other hand, that alcohol and the prostitute went hand-in-hand.

THE ROYAL EARLSWOOD INSTITUTION FOR MENTAL DEFECTIVES.

WE have recently received the seventy-first annual report of this institution, formerly known as the Earlswood Asylum. In a spirit of war economy the report for 1917 is severely curtailed, and we regret the absence of the statement contributed by the medical superintendent (Dr. C. Caldecott), which has usually formed an interesting supplement to the report of the board of management. It is unsatisfactory to learn from the latter that this old-established charity has suffered from a falling-off of annual subscriptions owing to war conditions, which have also led to a serious increase of expenditure in food, clothing, and establishment charges. Consequently the board have had to resort to bankers' loans amounting to £15,000. Payments (both large and small) received for patients furnished during 1917, apart from charitable contributions, over £22,000, a sum which would meet about half of the year's total expenditure. It appears from two paragraphs concluding the report that the general health of the patients had been well maintained in spite of dietary difficulties and a mild epidemic of measles extending to 144 cases. An unusual number of patients of advanced years and lengthened residence had died during 1917.

Appended statistical tables furnish some items of medical interest. During 1917, 43 cases were admitted or readmitted, 34 were discharged, and 39 had died. The average number resident had been 478—318 males, 160 females—and calculated on this number the percentage of deaths for 1917 amounted to 8·15, a ratio greatly in excess of previous records of mortality during the 70 years' existence of the institution. A table showing the certified causes of death attributes 17 of the 39 deaths to tuberculous affections and 3 to epilepsy; and we gather that amongst the deaths recorded were those of 3 sexagenarians and of 3 septuagenarians, the oldest being a man of 77. The comparatively large number of elderly cases has involved a higher death-rate.

A PIONEER OF INFANT WELFARE.

MUCH suffering has been mitigated by the benevolent work of Mr. Nathan Straus, of the New York Pasteurised Milk Laboratories, who has been a pioneer in the saving of infant life by distributing at his own expense pasteurised milk to the poor of New York City, while in other generous ways he has served the poor and homeless. His activities in ministering to distress in the Eastern sphere of war have prompted the Rev. Rabbi Roth, on the occasion of the Jewish New Year, to send through the American Consul-General in Cairo the following telegram, which has been acknowledged by Mr. Lansing, of the State Department, Washington:—

> For Nathan Straus.—In the name of thousands saved from starvation by your institution, I wish you and your family happy New Year and prosperous future. May God bless you.

Besides establishing a soup kitchen two years before the war, Mr. Straus has since started a Health Bureau and Pasteur Institute in Jerusalem, the activities of which institution extend throughout Palestine, and which has been used by the authorities to check the spread of cholera and other infectious diseases.

EASY CAR-STARTING IN COLD WEATHER.

Mr. J. F. Rey, M.R.C.S., writes from Bognor that, like many others who do not possess a heated garage, he has for years experienced great trouble in starting his car in frosty weather. He continues:—

> "Having reached the limit of my patience with the possession of a self-starter car, and determined not to misuse the accumulators, I sat down and devoted a quarter of an hour to thinking out the problem, and, to cut a long story short, proceeded to put my theory into practice. Triumphantly carrying out a kettleful of boiling water (about a pint), at first I cautiously poured the contents over the induction pipes, carburettor, and spraying chamber, putting previously a small tin cap over the hole on top of the float chamber. I was gratified that at the first turn of the handle, or the first push of the self-starter, the engine started as though on a hot summer's day. One need not be afraid of pouring boiling water over the induction apparatus, as these are all hollow tubes of metal and no harm can come to them, nor is there any fear of water getting into the carburettor with the engine at rest and a small plug or plate placed over the small hole of the float chamber. I am certain that this simple method will save motorists untold misery."

PAYING PATIENTS AND THE WEST OF ENGLAND EYE INFIRMARY, EXETER.

THE annual meeting of the subscribers to this institution was recently held. The medical report stated that 2724 patients had been treated during the past year. The daily average number of in-patients was 16. It was decided that patients who had small means and were willing to pay towards the cost of treatment should be charged a fee, the amount being arranged between the committee and the medical officer in charge of the case.

ANTENATAL CARE IN THE U.S.A.

THE birth-rate in the United States has not decreased to an appreciable degree so far during the war, while the work of saving babies is making progress. A measure likely to help much in reducing infant mortality from congenital causes has been recently introduced into the United States Senate by Senator Robinson, entitled "A Bill to Encourage Instruction in the Hygiene of Maternity and Infancy, and to Extend Proper Care for Maternity and Infancy; to Provide for Coöperation with the States in the Promotion of Such Instruction and Care in Rural Districts; to Appropriate Money and Regulate its Expenditure, and for Other Purposes." This Bill provides for subsidising the States up to a sum of $10,000 a year each, with the provision of an additional subsidy, provided the State raises an equal amount of money to be used for the employment of rural nurses for antenatal instruction and maternity aid.

PREVALENT DISEASES IN DOMESTIC ANIMALS.

THE annual report of the Chief Veterinary Officer for the year 1917, which has just been issued (H.M. Stationery Office, price 2*d*.), deals with four diseases affecting horses and cattle which have been of special importance during the year. 10,261 suspected outbreaks of swine fever were reported, but only 2104, or a little more than one-fifth, of the outbreaks confirmed. Evidently pig diseases are still very imperfectly understood, and there is a tendency among breeders to class all affections of the pig as swine fever. An American practitioner recently stated that 40 per cent. of the average veterinary practice in Iowa was swine practice and he made a particularly strong plea for practitioners to get away from the belief prevalent some years ago that a sick hog necessarily had cholera.

Results are compared in the serum and non-serum outbreaks. Roughly, about 23 per cent. more pigs were freed from swine fever by the serum method than without it. This represents a good saving, and is encouraging. Where pigs are ripe and not breeding stock it is useful to slaughter and salve the pigs exposed to infection. From observations made it appears that large numbers of affected pigs were killed for food, and no doubt little harm and much economy were effected by the procedure. There were 25 outbreaks of glanders, a decrease of 19 as compared with 1916—469 horses and 1 mule were on infected premises, and 63 animals, including the mule, were destroyed, being found infected clinically or by means of the test. By post-mortems in 58 cases the presence of glanders was confirmed. Cattle and pigs furnished the majority of the cases of anthrax, and 203 out of 343 cases on previously clean premises were ascribed to the use of imported feeding stuffs. In 26 cases the disease was found in carcasses that had reached slaughter-houses or knackers' premises—a rather disturbing fact. Eight human beings developed anthrax as a result of dealing with the carcasses.

The double dipping of sheep seems to have reduced the trouble from sheep-scab, but Scottish sheep still seem largely responsible for outbreaks of the disease in England. As was only to be expected under war conditions and present regulations, parasitic mange in horses has shown a greater tendency to spread. Our experience has been that it has increased in all animals, including the cat, pig, goat, and dog. The scarcity of nutritious food is a factor in the matter.

"BLOW-HARD," OR METHYLATED SPIRIT.

IN reference to an ex-soldier charged in the Belfast custody court on Oct. 26th with being drunk from taking methylated spirit, the resident magistrate, Mr. Garrett Nagle, said that 9 out of 10 cases of drunkenness brought before him were against people who had taken methylated spirit in the form called, "blow-hard." He said it was an extraordinary circumstance that while methylated spirit was so difficult to purchase for domestic purposes men seemed to get drunk on it without any difficulty. The usual way the methylated spirit is taken is to mix a wineglassful with a pint of porter, and this mixture is really the "blow-hard," and is a cheap intoxicant.

The Laboratory of the Royal College of Physicians, Edinburgh, is preparing the mixed vaccine of *B. influenzæ*, *pneumococcus* and streptococcus recommended by the War Office conference. The supply can be obtained through Messrs. Duncan, Flockhart, and Co., 104, Holyrood-road, Edinburgh.

AT a recent meeting of the governors of the Royal Devon and Exeter Hospital, Exeter, Sir E. Chaning Wills, the President, stated that there were 100 patients waiting admission. He added that as an enlargement of the hospital was necessary, if the Government would release materials and sanction the scheme, Lady Wills and himself would give a substantial sum towards the appeal for financial support which the committee would make.

Presidential Address
ON
SOME PRINCIPLES OF NEUROLOGY.

Delivered before the Neurological Section of the Royal Society of Medicine,

BY HENRY HEAD, M.D. CANTAB., F.R.S.,
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LADIES AND GENTLEMEN,—It is exactly 26 years since I had the honour of reading my first paper, on Pain in Visceral Disease, before the Neurological Society. Looking back over a quarter of a century, it seemed to me that I might employ my Presidential Address most profitably by considering certain principles which underlie the standpoint of neurology to-day. I am not going to weary you with an historical epitome. In this quarter of a century there have been no startling discoveries; but I believe that to-day the outlook of the younger generation is fundamentally different from that in which we were brought up, and I shall attempt to indicate the direction in which it seems to me the science of neurology is moving.

SATISFACTION WITH WORDS IN THE PAST.

The cataclysmic events of the last four years have shaken men's belief in the old order, and medicine has not escaped the universal demand for a restatement of current values. The young are looking to us to enunciate the principles on which our teaching is founded. They are not disposed to accept without criticism conventional explanations. They regard with scepticism the statements, current in text-books, that the manifestations of an epileptic convulsion are the expression of "irritation of the cortical centres," or that aphasia is explained by "the destruction of visual, auditory, or motor images." Their curiosity is no longer satisfied by attributing the sensory changes, caused by a peripheral nerve injury, to a "paræsthesia" or "hypo-æsthesia." And, indeed, words of this order are but anodynes to the conscience. They explain nothing; they serve only to put to sleep the salutary feeling that further investigation is necessary.

Satisfaction with words, that are in many cases nothing more than a restatement of the problem in bastard Latin and Greek, was one of the most remarkable characteristics of the last quarter of a century. No better example could be found than the misuse of the word "toxæmia." We are assured that certain diseases are due to this cause; but, although we know much about the pathological changes in the central nervous system, the symptoms they produce, and the course of the disease, the "toxin" is purely hypothetical. Everywhere we find this remarkable tendency to explain the known by the unknown.

Now, every student of Natural Science should retain something of the simplicity of the child. You all remember the story of the emperor and his new clothes. Two weavers asserted that they had woven a cloth of extreme beauty and fineness; it had, however, one unusual characteristic: it was invisible to those who were stupid or unworthy of the post they held. Neither the emperor nor his courtiers could, it is true, see the stuff, but each was anxious not to betray himself, and all were loud in its praises. Royal robes were made of this wonderful material, but as the procession wound through the streets a child called out, "Why, he has nothing on"; and the child's saying passed from mouth to mouth among the crowd. So the young to-day are calling to us to recognise that many of the terms we use so glibly mean nothing. They do not cover the nakedness of our explanations.

CONCEPTION OF SYPHILIS OF CENTRAL NERVOUS SYSTEM.

This satisfaction with names is apparent in our conceptions of disease. No better example could be found than the customary attitude of clinicians towards syphilis of the central nervous system.

Tabes dorsalis and general paralysis of the insane are thus spoken of as "diseases." In reality, there are two factors only in the morbid manifestations produced by syphilis of the nervous system, the character of the infective activity and the site of its anatomical incidence. The *Spirochæta pallida* may attack almost any structure, and the "disease" expresses the functions of the tissues affected. Tabes dorsalis is a convenient term to express the fact that the principal focus of the destructive process lies in the posterior columns, and "general paralysis" simply indicates that it has fallen mainly on the higher cerebral centres. Year by year the line, once so finely drawn between tabes dorsalis and dementia paralytica, grew fainter as the identity of the pathological process underlying the two conditions was recognised. With the invention of the term "tabo-paresis" the boundaries between the two diseases fell. We now know that any nervous function, from the lowest reflexes to the highest intellectual activities, may be affected in consequence of syphilitic infection of the nervous system; and it is only by arbitrary selection that these diverse signs and symptoms can be erected into "diseases."

Then, again, "parasyphilis" was supposed to be the manifestation of a process, syphilitic in origin, but not strictly syphilitic in nature. We now believe that "parasyphilis" is nothing more than an anaphylactic reaction in the tissues of the central nervous system, which have been rendered hypersensitive in accordance with their peculiar lymphatic supply. "Parasyphilis" does not differ from "chronic cerebral syphilis" in any essential pathological particular. It is merely a similar reaction in a different tissue. No better example could be given of the law that, in morbid conditions of the nervous system, the form assumed by the disease is determined by the site of the destruction, whilst the course it runs is dependent on the natural history of the pathological process.

CHANGED ATTITUDE OF THE NEUROLOGIST.

During the last few years the attitude of the neurologist has undergone a subtle change, not only to disease, but also to its general effect upon the patient. At one time everyone was seeking for a sign or a syndrome. Happy the man who could discover a new reflex; it did not matter that he left it unexplained and failed to correlate it with other ancillary functions. It was a "fact," and to it his name was attached.

But the discovery of such a phenomenon is nothing more than the statement of the terms of the problem awaiting solution. To find its explanation we must look to the behaviour of the nervous system as a whole and observe how its reactions are changed. In many cases this leads to the consideration of phenomena which would have been thought frivolous by the older generation. Take, for example, the importance attached to the patient's account of his own sensations, or the diagnostic value now attributed to certain dreams.

In 1901 I described certain mental changes associated with disease of the heart and lungs, and showed that they formed another aspect of referred visceral pain. This work fell dead. For those who were interested in morbid conditions of the internal organs cared nothing for changes in the mental state of the patient; on the other hand, the alienists denied the facts, because of the remoteness of asylum life from the conditions of hospital experience. They made no effort to discover, whether such remarkable examples of the dependence of mental states on disturbances of bodily functions were really open to their investigation. To-day, however, this work is falling into its place as a small contribution to the relation of body and mind.

Interest in the functions of the nervous system as revealed by disease is steadily growing. The English school has always been essentially physiological, from the days of Marshall Hall onwards; but this growing attention to function is mainly due to the teaching of Hughlings Jackson. He sprang from the physiologists of the middle of the last century, and was deeply imbued with the principle of evolution not only of structure, but of function. But his contemporaries became increasingly obsessed with anatomical and topographical details. As years passed by, the teaching of the day moved away from Jackson's conception of an evolution of function, still demonstrable in the activities of the nervous system. Finally, his doctrines were scarcely comprehensible to those of us who were brought into daily contact with him in the wards, seduced, as we were, by the glib generalities of more popular teachers. But, when we came to think for ourselves, we found that his conception of a functional hierarchy, in which one form of activity was dominated by another standing higher in the evolutionary scale, explained much that was otherwise inexplicable in the

phenomena of nervous disease. This swing back to the physiological aspect was quickened by the exquisite researches of Sherrington, and the issue of his "Integrative Action of the Nervous System" in 1906 marks an epoch in the progress of neurology.

Integrative Action of the Nervous System.

We then began to appreciate that the existence of the central nervous system was due to the necessity of producing coherent action in a plurisegmental organism. Out of the primitive materials at her disposal, Nature was forced to develop a mechanism capable of integrating the physiological forces evoked by relations with the external world. As the animal rose in the evolutionary scale, the functions required of the nervous system became more and more complex, and out of the anatomical structures of a lower organism had to be developed machinery capable of exercising these higher activities.

This was only possible by integrating the crude physiological processes excited by external stimulation or arising in response to the action of internal forces. A prick excites a universal tendency to withdraw the part exposed to stimulation; it can also evoke a highly organised movement, such as the scratch reflex, capable of removing the noxious object.

But such reflexes are pre-ordained and admit of no choice. It became necessary, therefore, to develop a controlling mechanism that would permit the animal either to attack the stimulus locally or to evade its action by flight. Finally, with the development of the neopallium, was given the power of voluntary choice; the reaction was no longer unconscious, but could be preceded by a definite act of discrimination.

This adaptation to a clearly determined end demands a multitude of adjustments, and such integration is the business of the central nervous system. It can only be carried out by utilising, in a modified form, functions originally developed for a somewhat different purpose. Thus, the withdrawal movement, which forms the basic reaction to pricking the sole of the foot, is controlled by higher centres in the mid-brain and forms the flexor aspect of the stepping reflex. But, when this higher influence is completely removed, as, for example, by total transection of the spinal cord, the lower reflex becomes manifested in its primitive form as a pure movement of withdrawal, accompanied by evacuation of the bladder and rectum.

Afferent Impulses from the Viscera.

Structure is anchored in the past, and expresses in its anatomical dispositions functions which have passed away. Many of them have been carried up to centres of more recent origin, whilst others are exercised normally, in a refined form, under the control of those higher in the evolutionary scale. But nothing remains in its old form, unless it is of utility to the organism under some possible conjunction of circumstances.

Thus, the afferent impulses from the viscera do not normally enter consciousness. The eupeptic knows nothing of the processes of digestion, beyond a certain gentle sense of well-being. But, under abnormal conditions, afferent impressions from the internal organs are capable of arousing pain and discomfort. When this occurs, one form of this sensory disturbance is referred to the superficial structures of the body and is associated with areas of tenderness corresponding to a segmental arrangement of the central nervous system. This is not a "hyperæsthesia," but a tendency to react more violently to any stimulus capable of evoking discomfort. The threshold is not materially lowered, but the vehemence of the response is greatly increased.

Now, this over-reaction is associated with reflexes which still reveal their old defensive character. As an answer to visceral pain, the abdominal muscles become tonically contracted and the leg is drawn up on the affected side. The sufferer is forced to creep into some sheltered place and to lie curled up, till he either dies or recovers. All capacity to move as a whole is abolished; the reactions of the part affected now dominate the activity of the complete animal. Visceral reflexes of this order are antagonistic to general movements, and this is expressed not only in muscular immobility, but in the mental attitude which accompanies visceral pain.

Pain is the oldest defensive reaction and potentially painful stimuli are the basis of all primitive reflexes. It is, therefore, of importance for higher development that these impulses should be rendered less effective in favour of those impressions which lead to a more general and discriminative response. But, although they are controlled and even abolished, the mechanism underlying the production of pain must remain in full physiological activity, ready to play its part, should occasion arise, in the defence of the body against noxious influences.

Control of Higher over Lower Nervous Centres.

The functions of the central nervous system are not a palimpsest, where a new text is written over an earlier manuscript, partly erased. The more primitive activities have been profoundly modified by the advent of the new centres, which utilise some of the faculties originally possessed by the older mechanism. In many cases, the higher function could not be exercised without the existence of these lower powers which it dominates and controls.

When, however, the higher mechanism is thrown out of action, the functions of the lower centres are free to exhibit their activity unchecked. Jackson insisted that the manifestations due to a lesion of the central nervous system must be considered from a negative and a positive aspect. Injury to the pyramidal system was shown negatively in the loss of the finer voluntary movements, but the activity of the lower centres, released from control, was evident in the spastic rigidity of the paralysed parts. In the same way removal of the control normally exercised by the cortex over the activity of the optic thalamus leads to the remarkable condition known as thalamic over-reaction;[1] all stimuli capable of evoking discomfort, and in some cases even pleasurable excitation, cause an exaggerated response on the affected half of the body. This is not due to "irritation"; it is due to release. It is the direct consequence of loss of that control normally exercised by the cortex over the activities of the optic thalamus. Once this control is removed by disease, the lower centre reacts unchecked to any stimulus capable of exciting a response.

It has been the custom to call upon a hypothetical "irritation" to explain all such positive manifestations of nervous energy. The violent flexor spasms and the outbursts of excessive sweating, which occur when the spinal cord is injured, have been attributed to this cause. In reality they are the expression of a diffuse and massive response to stimuli, applied to parts below the level of the lesion; they are manifestations of a primitive mode of reaction, due to removal of control from above. Invo untary movements in hemiplegia, automatic acts following an epileptic attack, the emotional utterances in aphasia are all examples of the same phenomenon.

The condition of sensibility during the protopathic stage of recovery from a peripheral nerve lesion is another instance of a primitive mode of reaction, released from control by the tardy restoration of the epicritic mechanism. Normally the massive "all or nothing" response of the more primitive system is held in check by the localised and discriminative sensations, due to excitation of the epicritic end-organs. But, when the one set of afferent impulses is permitted to play on the ultimate sensory centres unchecked by those arising in the higher mechanism, the response becomes massive and diffuse, and extensity becomes of greater import than intensity.

Importance of Scientific Principles in Neurology.

Had we applied Jackson's law, that the functions of the nervous system are integrated on evolutionary principles, neurology would not have made so many excursions into the wilderness. He taught us that a lesion of the cerebral cortex caused disorder of movement, not paralysis of the muscles. This lesson, however, was not applied to the other functions of the cortex. Much time was wasted on topographical localisation of various sensory centres before the nature had been determined of the functions exercised by the cortex. Now we know that, as far as somatic sensibility is concerned, the cortex is responsible for the appreciation of spacial relations, for the power of responding to different intensities of stimulation, and for the capacity to recognise similarity and difference in external objects brought into contact with the body. The cortical centres are not concerned with the crude appreciation of touch, pain, heat, and cold.

Such principles are not only of theoretical importance; they are perpetually thrust before the neurologist in his

[1] THE LANCET, 1912, i., 79.

daily work. Clinical diagnosis is a by-product of scientific investigation. It is impossible to expose every patient to laborious scientific examination, nor would it serve any useful purpose to do so; but the simple tests employed in the wards are valueless until they have been calibrated by more elaborate investigations. The man who says he can obtain all the information he wants, in cases of injury to peripheral nerve, by means of a pin and a piece of cotton-wool depends on someone else to teach him the significance of these empirical tests. They have no scientific value until the data they yield are correlated with results reached by methods capable of measurement.

The charm of neurology, above all other branches of practical medicine, lies in the way it forces us into daily contact with principles. A knowledge of the structure and functions of the nervous system is necessary to explain the simplest phenomena of disease, and this can be only attained by thinking scientifically.

CONSIDERATION OF LEADING PRINCIPLES.

Let us then consider some of the leading principles which the candidate of the future must master in the course of his initiation.

Effect of Lesion on Complex and Simple Functions.

(1) When any level[2] of activity is attacked the most complex functions, and those which have appeared most recently, are the first to suffer. They are also disturbed to a greater degree and to a wider extent than those which are simpler or more inevitable in their expression.

An excellent example of this rule is seen in the effect of a lesion of the sensory cortex on the appreciation of the spacial aspects of an external stimulus. Tests which demand recognition of movement in three dimensions are more gravely affected than such a comparatively simple one as localising the position of the stimulated spot; for, with the precautions we habitually adopt, this is an exploration in one dimensional space. Division of the spacial aspects of sensation according to one, two, and three dimensions is obviously arbitrary; but the tests we apply become more or less complex and difficult according as they demand recognition of relations in space of three, two, or one dimensions. Consequently, the records obtained by measuring the extent of passive movement, which can be appreciated in the affected limb, are more gravely and extensively affected than those yielded by our method of testing localisation.

Negative and Positive Manifestations.

(2) The negative manifestations of a lesion appear in terms of the affected level.

Thus, if those parts of the cortex are injured which are associated with speech the consequences are not an affection of some totally different function, such as visual or auditory images, but are shown in terms of defective speech. The business of a clock is to show the time. Faulty action of the mainspring may cause it to go fast, to go slow, or to stop. But we cannot look at the face of the clock and say, "That is strong mainspring time;" all we can say is that the clock is fast. So the negative manifestations of a cortical lesion affecting speech are presented to us in the form of a disturbance of speech, not as a destruction of images.

In the same way, morbid conditions at the reflex level appear as changes in the reflexes; a disturbance of cerebellar activities is seen in incoördinate movement; whilst an injury to the sensory cortex affects the discriminative aspects of sensation—a purely mental function.

(3) A negative lesion produces positive effects by releasing activities normally held under control by the functions of the affected level.

I have already given many illustrations of this law. The phenomena of the mass-reflex after injury to the spinal cord and of spastic rigidity in hemiplegia are examples on the motor side; protopathic sensibility and thalamic over-reaction illustrate similar conditions amongst afferent activities.

Evolution of Functions of Central Nervous System.

(4) The functions of the central nervous system have been slowly evolved by a continuous process of development. The methods by which this gradual progress from lower to higher efficiency has been reached are still manifest in the phenomena of its normal activity.

Thus, the lowest reflexes give the most definite response; there is little or no choice, the answer is inevitable. They are, as Jackson expressed it, highly organised. But further development of the needs of the animal demanded a reaction that was less fixed; some variation must be permitted. This led finally to the domination of many reflex manifestations by consciousness. What at lower levels appeared a variable response became, with the progress of evolution, voluntary control.

Integration of Function.

(5) Integration of function within the nervous system is based on a struggle for expression between many potentially different physiological activities.

Let us consider the following example, drawn from the afferent side. A metal test-tube, containing water at 45° C., normally evokes a sensation of pleasant heat. But it is easy to show that this temperature, suitably applied, stimulates the cold-spots and then appears to be cold. If, by chance, both the end-organs for the reception of heat and cold are absent, pain is produced. Thus, the same temperature is capable of exciting heat, cold, and pain; and yet, under normal circumstances, it evokes a sensation of pleasant warmth. Evidently, the incompatible impulses, due to stimulation of the cold- and pain-spots, are prevented from reaching consciousness.

Such integration occurs at several stages during the passage of afferent impressions through the central nervous system. Those, alike in their qualitative potentialities, are gathered together, whatever may have been their origin, at the periphery. Thus, all impulses capable of arousing pain come together in the spinal cord. In the same way, there are separable paths for those associated with sensations of heat and cold. On higher physiological levels is fought out the struggle for final dominance, and of the warring impulses one group only excites a conscious response.

Processes Concerned in Integration.

The processes by which this integration is rendered possible are three in number. First of all, those impulses potentially of a like sensory quality are gathered together. Secondly, all impulses capable of exciting sensations of a different quality are rejected by the receptors which guard each functional level. The third method is manifested in the phenomena of adaptation. Water at 30° C. may appear under suitable external conditions to be neither hot nor cold. But when the hand has been previously soaked in water at 45° C. for some time a temperature of 30° C. will seem to be cold. Conversely, adaptation to water at 15° C. converts 30° C. into a warm stimulus. This power of adaptation to the conditions of the environment and consequent shifting of the neutral points is one of the most important factors in the mechanics of integration. No stimulus acting over a long period can remain continuously at the same level of efficiency; it leads to a state increasingly favourable to the appearance of the opposite phase of activity. This is the essential condition underlying the tendency to biphasic reaction, so characteristic of the central nervous system.

These three processes—acceptance by similarity, rejection by difference, and biphasic dispositions—form the main features of the physiological functions of the central nervous system. They are factors which lead to integration, whether we are dealing with reflexes or with such psychical acts as sensations.

They are interposed between the vital consequences produced by the impact of a physical stimulus on peripheral end-organs and the final processes of consciousness. We have no right to speak of psycho-physical parallelism; we ought rather to consider, on the one hand, physiologico-physical responses, and, on the other, psycho-physiological relations.

Thus, between the impact of a physical stimulus on the surface of the body and the movement or sensation it evokes, lie the innumerable reactions of the physiological level. Here the form assumed by the conscious response is prepared to a degree scarcely suspected until recently. Many of the impressions produced by a single external stimulus are incompatible with one another, and some of them must give way in the conflict. But the result of the struggle is not fixed or pre-ordained; it may be reversed by some previous

[2] The word "level" is employed throughout in a strictly functional sense. Any one anatomical organ of the central nervous system may exercise functions of more than one physiological level. Thus, the optic thalamus contains not only the termination of the fillet, but also the centre for the affective aspects of sensation. For the same reason a lesion of the post-central cortex not only produces loss of certain sensory faculties, but may also cause hypotonia in the affected parts of the body.

occurrence which has changed the disposition of the central nervous system. The form assumed by a reflex may be determined by the character of the movement which preceded it, and the phenomena of sensory adaptation depend upon the active influence of the past in present events.

Moreover, the general resistance of the central nervous system to certain impulses varies greatly at different times and in different persons. This is particularly evident in the case of pain. We are all subjected to innumerable painful impressions, which under normal conditions never reach consciousness; but if the resistance, either local or general, is lowered these impulses may underlie definite sensations of pain.

We neurologists are brought into daily contact with these diverse functional reactions. We work in the passage-way between the physical universe and the dwelling-place of the mind. We can watch the processes of evolution, visible in the actual behaviour of the central nervous system. We see the coming and the going, and we alone can record which of the many aspirants has conquered the right to enter or to leave that council chamber of human activities.

WAR NEPHRITIS:

A CLINICAL STUDY OF EARLY CASES.

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So many able articles have been written on the subject of war nephritis that some apology seems necessary for an addition to the literature. But in spite of much work on the disease its etiology remains obscure. Several different theories have been put forward and have been discarded, so that at present there is a tendency to dispute the existence of a definite clinical entity and to ascribe the prevalence of renal disease on the Western front to a diversity of agents.

In my work on the medical side at a C.C.S. I observed certain features in the onset and course of war nephritis that seem to throw a fresh light on the nature and origin of this affection. The present paper is based primarily on personal study of 50 cases in the early stages, but I have freely drawn on the richer experience of other writers.

Varieties.

While the great majority of cases of acute nephritis seen at the front correspond to the picture of war nephritis, other forms occur which resemble those seen in civil practice. Most observers agree in dividing cases into three main groups: (1) recurrent nephritis; (2) infective nephritis; (3) war nephritis.

(1) In a certain proportion of patients, with or without a previous history of renal disease, chronic changes are present in the kidneys. Such men may suffer from an exacerbation of their disease under the strain of active service, or may fall easy victims to a superimposed war nephritis. It is notorious that a patient who has apparently made a perfect recovery from war nephritis is liable to a recurrence if sent again to the front. But it is certain that the large majority of patients who contract war nephritis have kidneys which have been quite efficient during arduous training at home.

(2) The term "infective nephritis" has been applied by Keith and Thomson[1] to the acute nephritis which is secondary to an acute focal disease. Such cases are not common in the Army and often show no œdema. They may be distinguished by the concomitant symptoms and by the result of functional tests[1]; they are accordingly excluded from the present series.

(3) War nephritis proper comprises those types of nephritis which seem peculiar to active service conditions. While all grades of severity are encountered, there are two main clinical types: (*a*) the common form characterised by breathlessness, œdema, and the urinary signs of acute nephritis; (*b*) a smaller group distinguished by hæmaturia and involvement of the lower urinary tract as well as of the kidneys, but without œdema as a rule. This group was first classified by Abercrombie under the designation of "lower tract cases."[2]

Owing to the occurrence of mixed types and the occasional transition of the second type into the first no sharp line of distinction can be drawn.

Incidence and Distribution.

A survey of the literature shows substantial agreement on the main features bearing on the origin of the disease:—

Since the American Civil War nephritis has been a rare disease among armies in the field until the present struggle.

War nephritis first appeared on the Western front in the spring of 1915. Since then the rate of incidence has continued about the same.

The disease shows distinct seasonal variations, the rate rising in cold weather and falling during the warm summer months.

Troops in the front line are mainly attacked. Officers are relatively exempt and cases are uncommon among units that are well housed.

Civilians in the war zone have not suffered.

The liability to the disease appears to increase somewhat with age. But this opinion has little statistical evidence to adduce

Previous renal disease or a former attack of war nephritis predisposes to nephritis at the front. In one case of my series there was a family history of nephritis. The father and eldest brother had died of Bright's disease before the war; the second brother and the patient himself (a soldier of 18 years' service) contracted war nephritis; while the two younger brothers had also served in France for a time but had escaped the disease.

Other evidence is negative; it is impossible to regard scarlet fever, mineral poison, or chlorinated water as important factors.

Onset.

The circumstances attending the onset of nephritis are quickly forgotten by a patient. Most cases, however, are sent to a C.C.S. as soon as the diagnosis is made, so that the history taken on admission is fairly reliable.

According to the manner of onset of nephritis patients may be divided into two main groups, (*a*) with antecedent symptoms and (*b*) without.

(*a*) With antecedent symptoms. In about 40 per cent. of cases in this series a period of ill-health or definite illness lasting from 1 to 5 weeks had preceded the symptoms of nephritis. The features of this illness were fairly uniform; the patient felt ill and weak, and complained of headache, with pain in the back and legs. All had carried on for most of the time, though many had been excused duty on account of fever while four patients had been admitted to Field Ambulances for P.U.O.

Respiratory catarrh had accompanied the fever in three patients; others had had a cough for several months (in the winter) but it was not affected by their illness.

Two patients gave a definite history of fever and hæmaturia with pain in the back and frequent micturition that had lasted about three days. This occurred 3½ weeks and 10 days respectively before the appearance of œdema and breathlessness; in the interval both patients had returned to duty.

(*b*) Without antecedent symptoms. In the remaining cases (60 per cent.) signs of kidney disease were among the first to attract attention. Six patients had simply noticed increasing breathlessness with a gradual onset of œdema. In no less than 19 patients the signs of nephritis appeared within a day or two of acute fever. It is true that a record of this fever previous to admission was often unobtainable, but the history and the degree of fever when transferred to the C.C.S. left little doubt but that an even higher temperature had been present before. Soldiers rarely complain of "fever"—a patient with a temperature of 103° will complain of headache, pains elsewhere, faintness, or even constipation! If he shows definite signs of nephritis his temperature is often not taken, since it is unnecessary for diagnosis. When cases of nephritis are not seen until a few days after onset a short initial fever will be missed.

The remaining five patients described a similar acute onset closely following a respiratory catarrh. They showed fever, with coryza or sore-throat and bronchitis.

To sum up, the result of this inquiry was to confirm Abercrombie's statement, founded on 500 cases, that the onset of war nephritis was almost invariably attended or preceded by fever.[2]

Early Symptoms of Nephritis.

The first symptoms of actual nephritis are an increasing breathlessness and the appearance of œdema, generally with more or less cough, headache, and pains in the back and legs. Urinary symptoms are only complained of in the special lower tract type.

For descriptive purposes the features of nephritis may be arranged in three categories: (*a*) respiratory phenomena; (*b*) renal signs; and (*c*) general symptoms.

(*a*) *Respiratory Phenomena.*

The general complaint of dyspnœa in the early stages and the frequency of respiratory complications, especially in winter, are striking features. Breathlessness appears most pronounced in those patients who have continued manual work or marching in the early stages of nephritis. Patients who have been kept at rest on account of fever, &c., before the onset of nephritis rarely exhibit dyspnœa.

The origin of this symptom is uncertain. It is rarely dependent on an acidosis,[1 3] nor does examination show signs of cardiac embarrassment. Changes in the lungs are present, though the dyspnœa seems disproportionate to the physical signs. In all patients with œdema moist crepitations and defective air entry may be found over dependent parts, and often rhonchi scattered over the rest of the lungs. The pathological studies of Dunn and McNee[4] suggest that there may be obstruction of air entry to the infundibula, and it is possible that dyspnœa depends on an œdema of the lungs, rapidly intensified by exertion, such as occurs in cases of phosgene gas poisoning. The symptom is often relieved by coughing, sometimes by change of posture.

(b) *Renal Signs.*

Œdema is often moderate and only apparent on the face and legs. When the patient is put to bed it tends to leave the lower extremities and to accumulate in the lumbar region. Pain in the back is by no means a constant symptom except in cases of hæmaturia, when it is often severe.

Urine.—There is usually a moderate reduction in the volume of urine, marked oliguria is uncommon, and suppression very rare. In some patients the greatest diminution in amount seems to occur some days later than the onset. There is little relation between the daily quantity of urine and the severity of the renal lesion, but a patient with persistent oliguria and marked albuminuria makes a tardy recovery.

Density.—The specific gravity of the urine in the early stages corresponds generally with the amount passed. It never shows a higher concentration than normal, and is often of low density in spite of oliguria.

Albuminuria.—The amount of albumin present varies greatly. In severe cases it may rise to between 1 and 2 per cent.; mild cases may show no more than 1 per 1000 by the time of a remission.

Cellular contents.—Gross hæmaturia is a characteristic of "lower tract" cases, but is common in others without signs of irritation of the urinary passages. Microscopically, red blood corpuscles and leucocytes may always be found in the sediment of early cases. Casts are usually plentiful, epithelial and granular forms predominating.

(c) *General Symptoms.*

These may result from several factors—the causative agent of the nephritis, secondary infections, or the impairment of renal function.

Pyrexia.—In the great majority of cases fever precedes or accompanies the onset, as has been described above. It is usually of short duration, so that the temperature is falling or may have disappeared by the time the patient reaches a C.C.S. The degree, nature, and duration of this initial fever shows little correspondence to any bronchitis or other catarrhal condition present. But a more lasting pyrexia of low grade seen in some patients does appear to depend on a definite semi purulent infection of the bronchial tracts.

The general course of war nephritis is afebrile, the patients frequently showing a subnormal temperature, especially in the morning. Recurrences of pyrexia are not uncommon[3] and will be described later.

The pulse is moderately accelerated during the initial fever, but the rate is soon slowed, even before the temperature has settled. A definite bradycardia is the rule later; in most patients a pulse-rate under 50 may be counted on occasion.

The blood pressure, particularly the systolic reading, generally shows a moderate elevation while the œdema lasts and fever is absent.

Pains.—Pains in the limbs are almost as common as in the back; they appear during the initial fever, but are prolonged into the apyrexial period, and are apt to be aggravated at night, keeping the patient awake. In some patients the pains are located chiefly in the shins, but, as in most cases of trench fever, they are rarely confined to those parts.

Headache is often an early sign and is aggravated by coughing. When persistent it is usually associated with a fairly high blood pressure and urea retention.

Spleen.—The spleen showed enlargement in all my cases, and in 80 per cent. became palpable. When considerable œdema was present examination was unsatisfactory, but on its subsidence the organ could generally be felt. In early cases there is often tenderness on pressure over the splenic area.

Blood.—There are no striking changes in the number and variety of the white cells. A differential count usually shows a reduction of the polynuclears, with a corresponding increase in the mononuclear varieties, particularly the larger forms. In prolonged cases a moderate anæmia develops, but persistent hæmaturia is productive of rapid anæmia proportional to the severity of the symptoms.

Course.

The course of war nephritis is seldom uniform, and it is impossible to judge of the severity and outcome of the disease from the nature of the early symptoms. The first sign of approaching recovery is the spontaneous appearance of a diuresis which quickly reduces the œdema. This critical event may occur within a week of the onset in mild cases or be deferred for a month or longer in other patients, while severe cases may reach a tardy convalescence without sudden polyuria.

I had not studied early cases long in the wards when I was struck by a periodicity that seemed to underlie the manifestations and mark the course of war nephritis. Thus the daily output of urine would increase at regular intervals or show periodical falls with a temporary increase in the albuminuria or a visible return of hæmaturia. A critical diuresis, too, would often be temporarily interrupted for no apparent reason. These slight recurrences or relapses were often accompanied or preceded by a slight variation in body temperature or by a distinct febrile reaction of three days' duration. The pulse varied with such change and the blood pressure fell, though there were no signs of any complicating infection.

At this time I was engaged in studying the splenic enlargement that occurs in trench fever. Major J. H. Lloyd, R.A.M.C., had told me that if percussion were employed as well as palpation a definite increase in the size of the spleen could be made out in trench fever, although it was impossible to feel the organ when it was only moderately enlarged. I had not hitherto employed this method, and was somewhat sceptical of its accuracy. But by dint of constant practice I found one could follow an enlargement of the spleen with surprising ease in most cases, and that the results agreed with the findings on palpation. One could trace an enlargement up to the costal margin where the organ became easily palpable, and note the degree of recession after it could no longer be felt. When percussion alone can be employed it is, of course, necessary to obtain a resonant note over the stomach and colon; in doubtful cases an evening examination was often successful.

The use of this combined method, when daily examinations were made, gave most interesting results in trench fever. In all cases where a previous enlargement was excluded the spleen showed alternate advances and recessions at regular intervals of five or six days (rarely four and a half days). This phenomenon occurred in every form of the disease, whether the fever was relapsing or continuous, and in cases where no definite febrile relapse followed the initial bout a second descent of the spleen was evident at the usual interval.

Various other diseases were taken as controls, but none gave the same phenomenon until I applied this method to cases of war nephritis. In this disease identical changes in the degree of splenic enlargement were constantly found, of the same periodicity as in trench fever. It became at once evident that the signs of periodicity of this disease were closely related to the accompanying changes in the spleen.

The reliability of this method has been tested in diagnosis and prognosis. Thus, it is possible to distinguish a continuous pyrexia due to trench fever from paratyphoid and to foretell an imminent relapse in both trench fever and war nephritis.

Clinical Types.

It will be convenient to consider the course of war nephritis according to the general characters shown. The two main types have been mentioned—the lower tract and the ordinary; this latter, the largest, may be further divided into mild, moderate, and severe.

(1) *Lower tract type.*—There is usually an acute febrile onset, followed by hæmaturia, which is often profuse. The hæmaturia is accompanied by severe pains in the back, often radiating to the groins, and by frequent and painful micturition. Indeed, some patients show virtual incontinence, so great is the irritability of the bladder. There is no dyspnœa or œdema, as a rule, and little reduction in the quantity of urine passed. The colour of the urine may be bright red or brownish—due to some reduction of the blood pigment. Microscopical examination at this stage shows crowds of erythrocytes, many forming casts of the renal tubules. There is hardly more albumin than can be accounted for by the blood present. In my few cases (four in number) obvious hæmaturia lasted 4–5 days, with the exception of one severe case who continued to pass blood for 10 days.

As the hæmaturia declines the urine shows an excess of leucocytes, tract epithelial cells with some cellular and granular casts, and a trace of albumin. Relapses are frequent and are usually accompanied by fever and bone pains. The original case published by Abercrombie[2] had a temperature chart typical of trench fever with its successive relapses. Chart I. is taken from one of my cases, and shows an irregular fever with marked excursions of the spleen; the patient was evacuated before the critical diuresis—seen in similar cases—was reached. Another case showed a large palpable spleen on admission, with but slight subsequent changes in its size. Following the subsidence of the initial fever the urinary excretion fell and continued low for five days; the spleen then receded somewhat and diuresis began. I have seen two cases (not included in this series) with similar relapsing features in which muco-pus took the place of blood; bacteria were absent.

Peters and Stevens[5] have recently published a paper on this type of nephritis, with the results of cystoscopic examination. They found multiple small hæmorrhages into the bladder wall, but no ulceration, and they prove that the bulk of the bleeding comes from the kidney and renal pelvis.

The ultimate prognosis of these cases is good. But, as narrated before, too short a rest may be followed by relapse, with the symptoms of ordinary nephritis.

(2) *Ordinary type with œdema.*—(*a*) *Mild cases.*—Of these there were 8 in the present series of 50. The patients usually gave a distinct history of one or more attacks of fever, in the course of which œdema made its appearance.

Examination of the urine showed albumin and casts on entry, but these signs disappeared when the patients were kept in bed and placed on a milk diet for a day or so. A critical diuresis followed, but in some cases oliguria continued for a time after the œdema and albuminuria had vanished. Charts II. and III. are representative of this group, and show the variations that mark their course better than any verbal description. The after-history of these patients is very favourable; they rarely relapse after evacuation to the base.

(*b*) and (*c*) *Moderate and severe cases.*—From observations at a C.C.S., necessarily limited to the early period of nephritis, it is impossible to make an accurate forecast of the subsequent progress of the patients in these groups. So these two groups will be considered together, so far as their early course is concerned.

Charts IV. and V. are representative of the moderately severe forms of war nephritis; Chart VI. shows a severe case: but they all agree in their fundamental characters, although they have been chosen to illustrate the variations that may occur. Thus Chart IV. shows a case, marked by considerable fever and relapse, in which the urinary excretion is seen to be closely associated with the periodical excursions of the spleen and is barely affected by the pyrexia. Chart V. illustrates another clinical form in which an almost level urinary output runs parallel to a fairly constant degree of splenic enlargement. The first indication of a relapse was on the ninth day of œdema, when the patient complained of pains in the back and legs. Following this, the spleen receded slightly, but there was no appreciable improvement in the condition of the kidneys. However, exactly six days later the spleen enlarged perceptibly and then receded to a greater degree than before, and diuresis at once set in.

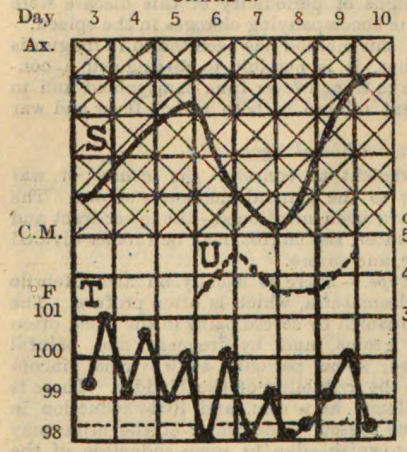
It will be noticed that in the first stage of nephritis a diminution of urinary output is apt to follow after a temporary increase in size of the spleen (Charts II., III., and IV.), but that in the later relapses these phenomena tend to coincide more closely (Charts II. and V.). During the early stage of severe nephritis (Chart VI.) the urine may show only a short temporary increase in amount between the relapses timed by the spleen.

The features of these periodical relapses may be summarised as follows:—General: There is a tendency to febrile

TEMPERATURE CHARTS.

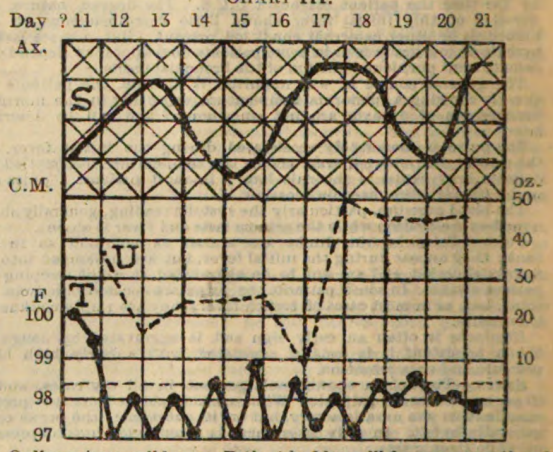
In these temperature charts the daily output of urine is indicated by a broken line (U), reading from the figure column on the right. The upper continuous line shows the variations in size of the spleen (S); an increase is denoted by a descent of this line. The normal size (Ax., mid-axillary line) is taken as the base line above and the costal margin, C.M., below; each space corresponds to a finger-breadth.

CHART I.



Lower tract type. Shows second dip of spleen at the usual time of the first relapse in trench fever (eighth day) quite independent of the pyrexia. Patient was evacuated before any diuresis occurred.

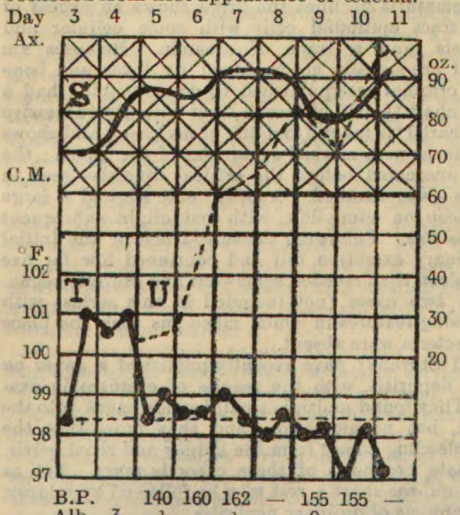
CHART III.



Ordinary type, mild case. Patient had been ill for over a month and had noticed œdema for about 10 days. A trace only of albumin was present and this disappeared with the œdema the day after admission. Note the regular phases of the spleen and continued oliguria after the usual signs of nephritis had disappeared.

CHART II.

In this and following charts day of disease is reckoned from first appearance of œdema.

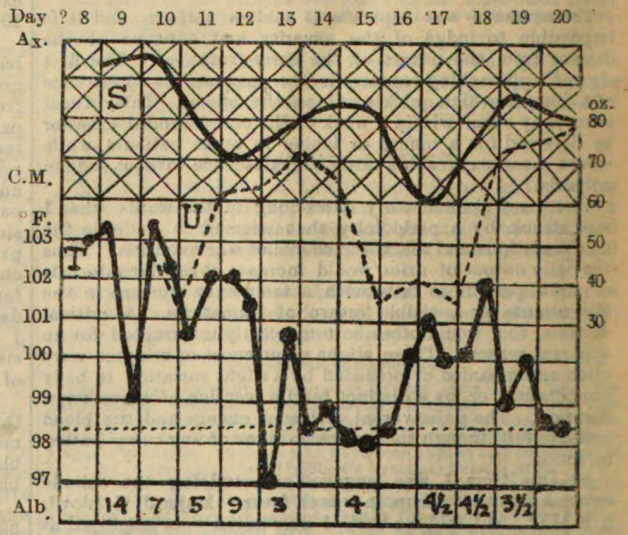


B.P. 140 160 162 — 155 155 —
Alb. 3 ½ — ¼ — 0 — —

B.P., Systolic blood pressure. Alb., Albumin per 1000.

Ordinary type; mild case. Shows early diuresis with disappearance of albumin and œdema. Periodicity indicated by a slight secondary descent of the spleen and interruption of diuresis on ninth day, six days after first recession of the spleen. Note changes in blood pressure.

CHART IV.



Ordinary type, moderately severe. Patient complained of no symptoms except œdema of probably a week's duration. He showed high fever (leucocytes 4800), extreme œdema with much blood and high albumin content in the urine. Lungs clear; no dyspnœa. Chart shows recurrent enlargements of the spleen at 6-days interval and accompanying variations in the urine. The relative independence of the splenic enlargement and the course of the pyrexia is characteristic of the continuous type of trench fever.

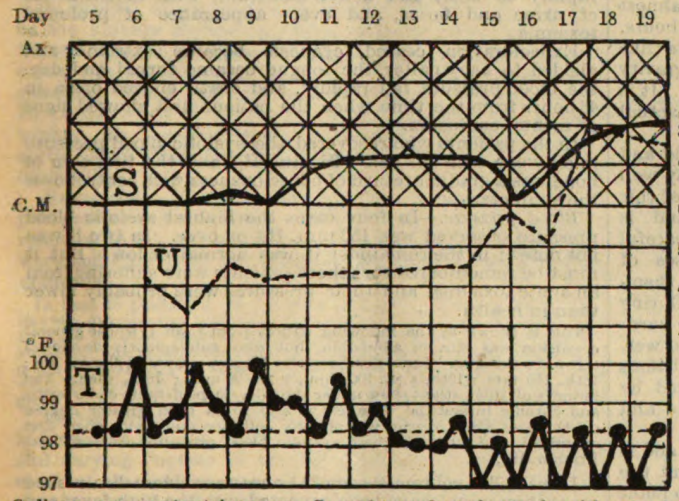
reaction. In slight cases this may only be shown by taking the temperature every two hours; it may be completely absent. The pulse is slightly quickened, and there is usually a definite drop in blood pressure. General aches and pains often precede the relapse by a day.—Spleen: The spleen shows an increase in enlargement and may become tender.—Renal: The excretion of urine falls in amount, while the albuminuria shows a temporary increase, sometimes with a return of hæmaturia. Functional studies reveal a much greater degree of renal block during this phase than is apparent from clinical signs.[1]

So far these periodical recurrences have been described as simply interrupting the course of the disease. But any one of them may reach serious proportions, so that the kidney may suffer more severely in a relapse than in the original attack.

Diuresis: A critical diuresis may occur early and be uninterrupted; in one of my cases as much as 174 oz. were excreted in the 24 hours, although the patient was kept on the same amount of fluid as before. More commonly the diuresis is temporarily checked by one of the periodical phases that characterise the disease. During this diuresis the blood pressure remains elevated and the urinary concentration falls. The œdema rapidly diminishes and the kidneys excrete retained products. Following the polyuria the blood pressure falls and the specific gravity of the urine slowly rises, the albumin and casts disappear or are reduced to a low amount. How long the spleen may continue to exhibit enlargement I am unable to say.

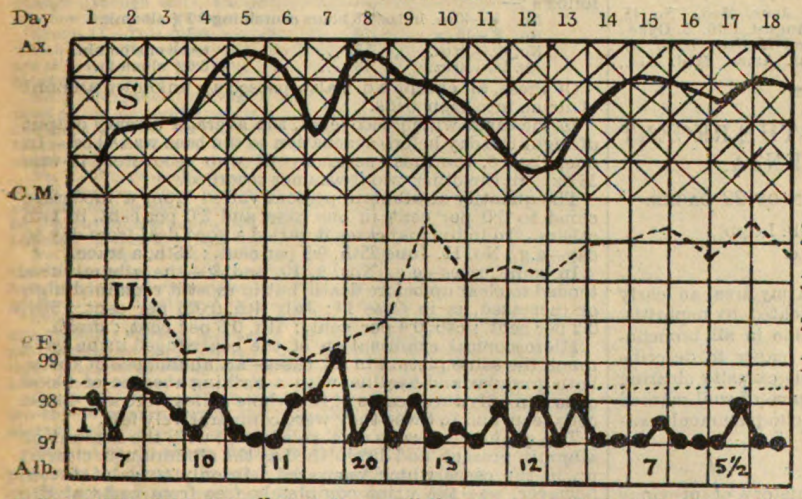
The further course of nephritis as seen at the base is well described by Keith and Thomson.[1] They divide cases into resolving and non-resolving groups; in each relapses are frequent and slight recurrences numerous. Resolving cases exhibit a distinct diuresis, with a rapid disappearance of œdema, diminution in the albuminuria, and a relatively good renal function. The non-resolving group is characterised by the slow disappearance of œdema and delayed diuresis, persistence of blood and albumin in the urine, the development of permanent retinal changes, and grave impairment of renal function.

CHART V.



Ordinary case, moderately severe. Gave history of nasal catarrh, with pains in the legs and fever one week before admission. Dyspnœa, cough, and œdema appeared about three days after onset of his illness. He had a general bronchitis which continued throughout. Chart shows a closely parallel course between the excretion of urine and the degree of enlargement of the spleen. Note check of terminal diuresis; it would probably proceed after next phase of spleen.

CHART VI.



Ordinary type, severe case. No symptoms until the appearance of œdema the day of admission. Shows an almost apyrexial course, with unusually well-marked excursions of the spleen. The periodicity governing the urinary features can be appreciated only by observing the time-marking of the spleen. The first relapse was more severe than the second and the kidneys were severely damaged; signs of mild uræmia were present (blood urea 0·145). Note slight indications of the relapses in the temperature readings.

Complications.

Respiratory.—Bronchitis is very common in the early stages, particularly in patients with considerable œdema, or who are suffering from a winter cough—so common in the trenches. As a rule it disappears with the subsidence of œdema, but may develop into a septic process with purulent sputum and slight fever. Two of my patients developed lobar pneumonia; two others fell victims to the recent epidemic of "influenza" when the wards were full of such cases. But it was remarkable that these complications had very little effect on the course of the nephritis.

It has been suggested that the relapses seen in war nephritis are due to complications in most cases. My experience does not support this view, and it is possible that the converse is true. For patients with febrile recurrences show an aggravation of an existing bronchitis with a return of their fever, and may develop pneumonia as an extension.

Uræmia.—Other complications, such as uræmia, retinitis, cerebral hæmorrhages, &c., may occur, as in other forms of nephritis. These have been fully described by observers of larger experience than the present writer, and only need to be mentioned.[1 2 3]

Summary and Discussion.

The course of war nephritis is marked by more or less evident changes at regular intervals of five or six days. The only other disease prevalent in the war that exhibits a similar periodicity is trench fever. Hence the question arises, Is war nephritis a complication of trench fever?

As far as the distribution and general features of war nephritis are concerned, there appears no valid objection to this suggested relationship. It is generally admitted that certain cases of war nephritis show all the signs of trench fever; but the occurrence of such cases is not too frequent to be explained by mere coincidence. For this reason I have refrained from choosing such examples for the illustrative charts. On the other hand, no one who has had a large experience of trench fever in the line will deny the great prevalence of mild types, characterised either by a single bout of fever of moderate range or by a very low grade of pyrexia throughout. The liability of trench fever to recur months after apparent recovery is notorious. After exhaustion or chill, exposure to poison gas, or receiving a wound, a patient may suddenly develop acute fever again. This may happen to patients who

have no recollection of previous fever, in the same way apparently that a person leaving the tropics may show his first attack of malaria on reaching a cold climate. In these cases, it may be remarked, a chronic enlargement of the spleen is usually present.

These facts show that the types of fever encountered in war nephritis and its modes of onset may be paralleled in trench fever. But when we consider the identity of the diseases from a closer aspect we are confronted by points of difference: (*a*) Ordinary and experimental cases of trench fever, as studied in the wards, show little or no tendency to develop nephritis. (*b*) There is no proportion between the severity of the fever in war nephritis and the degree of renal damage. Many severe cases of nephritis show no definite fever. (*c*) War nephritis has a seasonal variation which is not apparent in trench fever.

Before dealing with these points it is worth while inquiring, What signs of renal damage are shown by ordinary cases of trench fever? It is well known that albumin, often accompanied by microscopical amounts of blood, is often present in the urine during the initial stage of trench fever. But this is not the most striking sign of renal damage. If the urinary excretion be watched certain patients will show a remarkable oliguria independent of the pyrexia and possible early albuminuria. The urinary flow may be almost suppressed for a period varying from 12 to 24 hours. Others may show a marked reduction for several days (like Chart III.) or pass a moderate quantity of low specific gravity urine without albumin after the fever has subsided. It is highly probable that this renal injury may progress to actual nephritis under unfavourable circumstances.

The seasonal incidence of war nephritis points to cold and exposure as predisposing agents. These factors may well turn the scale in trench fever. In an acute attack of this malady the patient is disabled by high fever, and is accordingly removed to shelter and receives careful attention. But a large proportion of milder cases of trench fever do not report sick or may simply avail themselves of a day's rest when circumstances permit. During his illness, therefore, the patient experiences all the hardships of life at the front. He is exposed to cold and wet, especially in the winter, and has a full meat diet, conditions which throw a considerable strain on kidneys injured by trench fever infection. Resolution may be impossible and nephritis results.

This theory meets the main objections put forward and is founded on clinical facts. But it is somewhat beyond the scope of this paper to follow further. My object is to point out a definite periodicity that distinguishes war nephritis proper, and to call attention to the close similarity between its general features and those of trench fever. Whether or not this coincidence depends on an identical infection can only be satisfactorily settled by experimental and laboratory work.

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NEPHRITIS IN RELATION TO THE RECENT EPIDEMIC OF INFLUENZA.

THE RESULTS OF AN INVESTIGATION OF 22 CASES.

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DURING the recent epidemic in the Army area an early fatal case of broncho-pneumonia, complicated by nephritis, led to a careful investigation of the urine in all broncho-pneumonias. It is the purpose of this paper to describe briefly a series of 22 cases admitted to this casualty clearing station with influenza, in which the presence of well-marked signs of renal disease in addition to broncho-pneumonia was associated with a high rate of mortality.

Symptomatology.

Previous illness.—No patient gave a history of previous nephritis or of scarlet fever. Four stated that they had never had any illness. Eleven had suffered from illnesses as follows: Nos. 4 and 11 influenza; Nos. 12 and 14 pneumonia; No. 1 "fits since he can remember"; No. 7 syphilis; No. 9 asthma and bronchitis; No. 13 measles and pleurisy; No. 16 malaria and dysentery in Palestine; No. 17 gassed a month previously; No. 19 colitis in India. From the remaining seven no histories were obtained.

Age.—The age in 18 cases ranged from 19 to 37, the average being 25·3 years. The age was not discovered in the remaining four cases.

Physique.—The average physique in the series was good, only two of the patients being in a category lower than "A," No. 9 for asthma and No. 20 for defective vision.

History of onset.—This was similar to that of other cases of broncho-pneumonia following influenza—a secondary rise of temperature, with breathlessness, pains behind the sternum or in the sides, and cough with purulent expectoration.

Clinical observations.—In only one case of the series (No. 1) was marked œdema observed, the distribution of the fluid in this case being general and the amount extreme. One case (No. 22) gave a history of swelling of the face and feet a day before admission, and was distinctly puffy under the eyes when first seen. In nine of the others it was noted that their faces "looked swollen," but there was no palpable œdema. The remainder showed no signs of fluid retention.

The physical signs in the chest were similar to those observed in other broncho-pneumonias, and varied only in degree and distribution, but dyspnœa seemed more urgent in relation to the amount of lung involved than in cases uncomplicated by nephritis.

The most constant feature of the nephritic cases was the early onset of an acute confusional mental state, progressing rapidly to noisy and active delirium, with incontinence of urine and fæces, and every appearance of profound toxæmia.

Expectoration ceased, cyanosis became extreme and yielded to ashy pallor, the tongue became furred and dry, the blood pressure fell rapidly, and death ensued often in 48 hours from the time when the patient first showed signs of mental confusion.

In the patients who recovered the systolic blood pressure in only one case fell below 95 mm. Hg, and the first sign of hope was a gradual return of consciousness with control over the sphincters.

Blood pressure.—In four cases the highest systolic blood pressure observed was 150 mm. Hg or over. In two it was not noted; in the remainder it was normal or low. But it must be remembered that these patients were suffering from an acute toxæmia, and their pressures were probably lower than in health.

This is shown by the following figures from Case 1, whose general condition was fair on admission, but who subsequently developed signs of poisoning. June 12th, systolic blood pressure, 170 mm. Hg; 13th, 140 mm.; 15th, A.M., 100 mm., P.M., 90 mm.; 16th, died. The kidneys of this patient show under the microscope definite endarteritis and chronic interstitial changes, as also to an even greater degree do those of Case 5, who was already delirious and livid when first examined, and whose highest systolic blood pressure observed was 105 mm. Hg.

Urine.—The volume in each 24 hours was seldom diminished more than might have been expected with the high fever and pneumonia, the lowest average daily output for the first two days being 30 oz. per 24 hours in Case 20, the highest, 65 oz., in Cases 6 and 10.

In the later stages it was, as a rule, impossible to get an accurate measurement owing to incontinence, but in four fatal cases the quantities collected in the last hours were as follows:—

No. 4.—40 oz.	in last	18	hours	containing 0·1% albumin.
No. 6.—15 oz.	,,	20	,,	,, 0·3% ,,
No. 10.—15 oz.	,,	18	,,	,, trace of albumin.
No. 14.—30 oz.	,,	18	,,	,, 0·6% albumin.

Of these, all except No. 4 also passed an unknown amount of urine into their beds.

In the cases which recovered, the average urinary output of eight the day before evacuation to the base was 49 oz. In one, Case 8, the most seriously ill who recovered, it was 35 oz. In the other two it was not recorded.

The quantity of albumin present varied from a moderate cloud to 3·0 per cent. in one case, and 2·0 per cent. in two others. In individual cases it varied a good deal from day to day—e.g., No. 11, June 25th, 0·5 per cent.; 26th, a trace.

In some cases—e.g., Nos. 5, 10, and 20—the albuminuria tended to clear up before death, but in most it remained high or increased, as in Case 14: July 4th, 0·025 per cent.; 5th, 0·2 per cent.; 6th, 0·4 per cent.; 7th, 0·6 per cent.; death.

Microscopical examination of the centrifuged urine gave much the same picture in all cases—an abundance of casts, both granular and hyaline, with a striking absence of blood cells; in only three cases of the whole series were any blood cells seen, and in these they were comparatively few.

The quantity of casts as a rule varied with the amount of albumin present, and diminished as the albuminuria cleared up in the cases which recovered. In only three of these, however, was the urine completely free from casts at the time they were evacuated to the base, although their temperatures had been normal for some days.

The casts also diminished in quantity with the decrease of albumin before death in Cases 5, 10, and 20, and it has been suggested that death in these cases was due to secondary infection of the lungs by organisms whose toxins had not

that selective hostility for the kidneys which those of the primary infective agent would appear to have.

Eye changes.—Captain H. V. White, R.A.M.C., kindly examined the fundi for me in 19 of the 22 cases. In no case were hæmorrhages or retinitis observed, but in Cases 1 and 4 œdema of the discs was noted before death.

Treatment.

Treatment was directed mainly towards the broncho-pneumonia, the patients being encouraged by every means to expectorate the purulent fluid which filled their bronchi. In the cases with high blood pressure venesection was performed with temporary relief of the cyanosis and dyspnœa. Oxygen was given freely by Haldane's apparatus or through intranasal catheters. For the nephritis the motions were kept loose and in some cases hot-air baths were given.

Sodium bicarbonate was given into the veins of two cases without apparent effect; in another patient draughts *ad libitum* of a 5 per cent. solution were followed by a return to sanity after a long period of delirium, and he eventually recovered; but another progressed from bad to worse under the same treatment.

Results of Post-mortem Examinations.

Morbid anatomy.—The lungs showed the appearances of purulent bronchitis and confluent broncho-pneumonia which were typical of all fatal cases seen in this epidemic. None of the kidneys showed any gross changes to the naked eye beyond a slightly adherent capsule. The spleen in most cases was enlarged and firm. In Case 1 the tissues were generally sodden, with excess of fluid in the serous cavities. In Cases 13 and 14 there were signs of terminal acute peritonitis. In Case 7 there was a syphilitic vegetation on the aortic valves (corresponding to a musical systolic bruit heard during life).

Bacteriology.—Routine bacteriological examination was not practicable, and the term influenza is used provisionally in referring to this series of cases; it may be assumed that they were suffering from infection by the causal organism of the epidemic.

In Case 20 Captain J. W. McLeod, R.A.M.C., performed the post-mortem examination and has kindly allowed me to refer to his notes. In films he found small Gram-negative bacilli in pus from the trachea and from the bronchioles; and in culture from the cut surface of a patch of solid lung he obtained a growth of a Gram-negative bacillus with the morphology of *B. Pfeiffer*, but a subculture of this failed to grow.

Morbid histology *.—Microscopical examination of the kidneys was made in the 11 fatal cases; all show congestion and varying degrees of tubular degeneration, but as post-mortem examination was in some cases delayed and the weather was hot, detailed examination of the tubules is of not much value. With regard to other abnormalities, however, the sections may be grouped as follows:—

Group I.—These sections from Cases 1, 3, 5, and 20 all show more or less evidence of an early stage of chronic interstitial nephritis—i.e., thickening of capsule, increase of interstitial connective tissue, end-arteritis, and thickening of Bowman's capsules in the glomeruli. These changes, though early, are definite and widespread—not localised to any one area of a particular section.

Group II.—This group comprises the kidneys of Cases 4, 6, and 13, in which careful search reveals appearances which, though not uniform, are suggestive of pre-existing renal damage. The notes upon these are briefly given below.

No. 4.—No general increase in connective tissue; no endarteritis. In most of the glomeruli there is a fibrinous-looking coagulum filling up the space between the vascular tuft and Bowman's capsule. Hyaline thickening of some of the glomerular capsules, and one completely obliterated. Duration of fatal illness, eight days.

No. 6.—No general increase in connective tissue; no endarteritis. Some glomeruli show proliferation of endothelial lining and hyaline swelling of Bowman's capsules; in the boundary area there is increase in the perivascular connective tissue. Many hyaline casts in convoluted tubules. Duration of fatal illness, 12 days.

No. 13.—Capsule not thickened; patchy increase of hyaline connective tissue round arterioles and in Bowman's capsules. No endarteritis, but the glomerular arterioles look thicker than normal; a single fibroid glomerulus. Duration of fatal illness, eight days.

Group III., Case 7.—This section shows considerable thickening of the capsule; marked increase of connective tissue, both intertubular and periglomerular; this is of fibro-hyaline consistency and poor in nuclei, appearing young and œdematous. The glomeruli are not contracted; no endarteritis. Duration of fatal illness, five days.

Group IV.—In Cases 2, 10, and 14 the sections show no abnormalities worthy of remark except the congestion and tubular degeneration already described as being common to all.

Summing up these findings, it may be said that the four patients of Group I. were all, though apparently healthy, suffering from an insidious form of renal disease before they took the influenza. The significance of the changes described in Group II. cannot be estimated at its true value without comparison with the histological appearances of the kidneys of "normal" men within the same age limits. They suggest a very early stage of the process responsible for the lesions in Group I. The impression gained in Case 7 is that the interstitial changes are of longer standing than the five days' duration of the terminal illness.

Sections of the spleen were examined in nine cases.

In Case 14 only were definite hæmorrhages found corresponding to those described by Tytler and Ryle and others as typical of trench nephritis. In this case the hæmorrhages show up well in a spleen which is not unduly congested and are in process of invasion by large mononuclear cells which have taken up pigment.

In several others there is an extreme degree of congestion producing in one or two instances diffuse patches of agglomerated red cells not unlike the appearances shown in Tytler and Ryle's microphotograph No. 20 in their paper; but in the absence of any evidence of organisation and on comparison with specimens showing lesser degrees of congestion, I have hesitated to pronounce them hæmorrhages.

Sections of the lung show consolidation of broncho-pneumonic type.

The sections in all cases were prepared by Captain Adrian Stokes, R.A.M.C., for whose help and advice I am most grateful.

Following in tabular form are some of the main points in the cases.

No.	Urine.	Albumin-uria.(1)	Casts.(1)	Blood cells.	B.P.	Result.	Albumin-uria.(2)	Casts.(2)
1	48 oz.	+++*	++	A few.	170	D.	+++*	++
2	—	++*	++	,,	—	D.	++*	++
3	—	++*	++	,,	160	D.	++*	++
4	34 oz.	0·1%	++	None.	150	D.	0·1%	++
5	—	++*	++	,,	105	D.	Trace.	None.
6	65 oz.	0·3%	++	,,	122	D.	0·3%	++
7	36 ,,	2·1%	+++	,,	130	D.	2·1%	+++
8	57 ,,	++*	+++	,,	—	R.	None.	—
9	38 ,,	3·0%	+++	,,	122	R.	,,	A few.
10	65 ,,	0·2%	++	,,	100	D.	Trace.	,,
11	36 ,,	0·5%	++	,,	115	R.	None.	—
12	33 ,,	2·0%	+++	,,	110	R.	,,	None.
13	—	0·8%	+++	,,	90	D.	0·8%	+++
14	40 oz.	0·6%	++	,,	110	D.	0·6%	A few.
15	40 ,,	0·025%	+	,,	118	R.	None.	,,
16	33 ,,	+†	++	,,	92	R.	Trace.	One.
17	37 ,,	+†	+	,,	108	R.	None.	None.
18	42 ,,	0·05%	++	,,	112	R.	,,	,,
19	40 ,,	0·05%	++	,,	95	R.	,,	A few.
20	30 ,,	0·2%	++++	,,	115	D.	Trace.	,,
21	—	+	+++	,,	130	R.	,,	One.
22	—	0·25%	+++	,,	160	‡	0·25%	+++

* No Esbach tubes available. † Less than 0·025 per cent.
‡ Sent down at once.

Urine: Daily output; average for first two days of observation. Albuminuria (1) = Highest degree noted; (2) when last observed. Casts (1) = Quantity at height of illness; (2) when last observed. B.P. = Highest systolic blood pressure noted (mm. Hg).

Summary and Conclusions.

1. These cases on the whole did not present a clinical picture typical of nephritis, and in most instances this would not have been suspected without examination of the urine. It was rather the man who looked poisoned by his broncho-pneumonia whose urine was found to be loaded with albumin and casts; delirium and collapse were the outstanding symptoms of the patient whose nervous centres and renal epithelium alike were overwhelmed by the toxins absorbed from his pus-sodden lungs. It is easy to imagine that once the kidney was damaged with consequently impaired ability to excrete the poisonous substances, the prognosis would be proportionately worse, and this vicious circle will account for the 50 per cent. mortality in the series of cases recorded, and the fact that, of a total of 21 men who died of influenzal broncho-pneumonia 11, as described above, had signs of severe renal damage.

On the laboratory side the abundance of casts with comparative absence of blood cells supports the view that the process in the kidney was one of acute degeneration rather than acute inflammation.

2. Microscopical examination of the kidneys shows in at least four cases (possibly also four others) evidence of pre-existing renal disease. This is out of a total of 21 deaths in all from broncho-pneumonia during the period under review, an incidence of at least 19 per cent. of "latent nephritics." The incidence of latent nephritis among "healthy" troops has been estimated from examinations of the urine by Maclean[2] working at the base at not more than 2 per cent.,

* This section was illustrated by a number of micro-photographs, the reproduction of which has not yet been executed.

by McLeod[3] among troops in the forward area at a rather higher figure. The present observations indicate either that the real proportion of men with latent nephritis among healthy front-line troops is much higher than it has been judged from examination of urines or that persons whose kidneys are previously damaged by disease are especially prone to die from broncho-pneumonia in this epidemic—the latter explanation appearing the more probable.

I have pleasure in thanking Lieutenant-Colonel J. Graham Martin, R.A.M.C. (T.F.), for permission to publish this paper, and the officers at his casualty clearing station for helping me to collect the material for it.

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TUBERCULOUS DISEASE OF HIP-JOINT.

A SIGN OF PATHOLOGICAL ACTIVITY.

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THE desirability of a trustworthy clinical indication of activity of tuberculous disease of the hip-joint which has long required treatment is, I trust, sufficient justification for the record of a sign the value of which has been confirmed by a somewhat lengthy experience in the treatment of surgical tuberculosis.

The Insufficiency of the Usual Indications.

The majority of text books are curiously vague, and rarely helpful in assisting those responsible for the treatment of tuberculous disease of the hip-joint in arriving at a decision as to when hip disease may be reasonably regarded as inactive. That there exists much doubt on this point I am convinced by the frequency with which an opinion is sought, and any additional aid in arriving at a conclusion may therefore be welcomed.

The time during which activity persists necessarily varies within wide limits, depending on the virulence of the infection, the resistance of the patient, the nature and extent of the lesion, the treatment adopted, the conditions under which treatment is applied, the existence of complications, &c. Obviously, merely to state a period during which recumbency, immobilisation and extension, or any other form of treatment for active disease of the hip-joint should be enforced is unscientific and of little value, for it does not take into account the varying factors already enumerated.

The temperature chart is of no value because, under suitable conditions, the temperature of an uncomplicated case of hip disease speedily becomes normal, and should remain so even while the disease is active. Pain likewise affords no clue, as with adequate treatment all pain is rapidly relieved and, indeed, is absent long before the disease becomes quiescent. The presence or absence of deformity, abscess, sinus, or added infection affords no sufficient guide, though each may, and should, influence decision.

In the absence of bony ankylosis, however, there remains one factor which is of supreme importance. In tuberculous disease of the hip-joint the most constant and most marked evidence of activity is spasm of the muscles about the affected joint. As the disease becomes less acute spasm becomes increasingly difficult to demonstrate, until eventually it completely disappears. It may last be elicited in the following manner.

Description of the Sign.

If the femur, on the affected side, be grasped firmly in the region of the condyles it will be found that the head of the bone may be gently rotated within the acetabulum, either inward or outward, through a varying but often considerable angle. When this movement is checked, but the disease remains active, a further slight sharp rotation is instantly followed by spasmodic muscular contraction, not confined to muscles about the joint but extending to the abdomen and visible in the abdominal muscles, or still more easily demonstrated if the palm of the hand is placed on the abdomen between the iliac spines. Quite a gentle and painless but sharp rotary movement is sufficient to provoke this reflex spasm of the abdominal muscles. Naturally, it would not be attempted where the disease is obviously active, but in just those cases where doubt exists I have found it a sign of the utmost value. With a little practice the sign is easily and safely obtained if the disease is active.

Confirmatory evidence of activity, as indicated by muscular spasm, may at the same time be demonstrated in the following manner. In a child a finger and thumb of the hand not engaged in grasping the femoral condyles may be applied simultaneously to the two anterior superior iliac spines. During the first rotation of the femur on the affected side no movement is conveyed to the iliac spines. When, however, rotation has been checked and is sharply but gently continued, exaggerated movement in the same direction is transmitted to the iliac spines. With a healthy joint this type of movement is not apparent, with a hip-joint affected with improving but still active tuberculous disease it is very striking, even when the disease otherwise appears to be quiescent.

Bearing of the Sign on Treatment.

The significance of this induced spasm calls for brief comment. Failure to elicit it may not necessarily imply that there is no active disease, though very probably the disease is quiescent. Its presence certainly indicates an active lesion.

Its bearing on treatment depends upon the view those responsible for the patient take as to the nature of the treatment which should be adopted. Briefly stated, I hold the view that acute tuberculous disease of the hip-joint should be treated with the patient recumbent, the lesion immobilised, and extension applied to the limb of the affected joint to prevent or correct deformity and aid in the abolition of muscular spasm. It may be granted that there are occasions when this line of treatment should be modified, or, indeed, not employed; but, speaking generally, it will be found most effective, and should be continued at least as long as the induced spasm described above is demonstrable.

The value of the sign lies in the fact that without such a definite indication of activity ambulatory treatment may be too early permitted, with grave risk of relapse, further extension of the disease, greater disorganisation of the joint, and production of deformity. On the other hand, without means of demonstrating that spasm has ceased recumbency may be unduly or needlessly prolonged, to the detriment of the patient's health and happiness.

Emphasis should be laid on the fact that while failure to elicit the sign is a certain indication that there is no longer muscular spasm about the affected joint, that alone does not justify the assumption that the disease is finally arrested. Prolonged care in treatment is still called for. Efficient immobilisation should still be enforced and the joint protected from strain or injury, but with these precautions observed ambulatory treatment may, as a general rule, be with confidence permitted and extension on the affected joint discontinued.

Prognosis: Significance in Early Cases.

It may be added that if recumbency, immobilisation, and extension be enforced until the sign of activity described cannot be demonstrated, not only may a very favourable prognosis be in general given, but also a very useful range of movement in the attacked joint may be anticipated. Such prognosis naturally presupposes that the joint is effectively immobilised and guarded when ambulatory treatment is first permitted and the patient is given the benefit of that adequate after-care and skilled observation which so serious a condition as tuberculous disease of the hip-joint demands.

The sign also has diagnostic significance in early cases of tuberculous disease of the hip-joint, but it has not the peculiar value in these that may be attached to it later on. In cases of tuberculous disease of the hip-joint which are becoming quiescent it may be considered almost to stand alone as marking, with peculiar exactness, the point where spasm of the muscles and corresponding activity of the disease ceases, and its unique character on that account renders it of especial value.

In early hip disease it is but one of many signs of the onset of tubercle, but it affords confirmatory evidence of active inflammation about the hip-joint which possesses a value not to be despised, and which, in conjunction with other signs of tuberculous disease of the hip-joint, contributes additional evidence of importance in early diagnosis.

A ROUTINE TREATMENT FOR
SEPTIC SORES AND NILE BOILS.

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SEPTIC sores and Nile boils have been from time to time extremely common among the forces in Egypt. It appears that similar troubles affect the Salonika and Mesopotamia armies. When the lesions are severe either condition is incapacitating and may involve the withdrawal of many men from the fighting line. The routine of treatment which I now venture to advocate is certainly capable of being used in the field. If the same results can be obtained at the front as in a base hospital evacuations of sick due to these diseases should be almost eliminated.

I.—*Septic Sores.*

The name septic sores is now hallowed by use, and I adopt it in preference to tropical ulcer, veldt sore, barcoo rot, and I.C.T. (an army title signifying inflammation of connective tissue). I.C.T. is too comprehensive a name, veldt sore and barcoo rot are local titles, whilst tropical ulcer should, I think, only connote that condition associated with the Leishman-Donovan body. Of this I have had no experience. It is undoubtedly rare amongst the troops in Egypt and Palestine.

The most recent work done on the subject appeared in a paper entitled "Observations on the Pathology of Barcoo Rot (Veldt Sore?)."[1] Lieutenant-Colonel C. J. Martin, F.R.S., A.A.M.C., discusses the question in the light of his experience in the Sinai Peninsula during the summer of 1916. He gives an excellent résumé of the study of veldt sores, which he takes to be an identical condition. Colonel Martin considers the immediate cause to be an infection of the hair follicles with staphylococci of low virulence. He does not, however, exclude the possibility of some environmental factor which may dispose to the disease. He quotes Bishop Harman's conviction that "the restricted range in diet during operations on the veldt is an essential factor in bringing about the condition."

Colonel Martin's description of the sores is so clear that I venture to give it in full:—

> The patient may remember abrading the skin, but whether or not, the first sign is usually a bleb or blister containing thin, watery pus and surrounded by an area of slightly inflamed skin. The blister may be the size of a sixpence or even larger, but before it reaches this size it is usually broken. The denuded surface shows little tendency to heal, but slowly extends at its margins, at the same time deepening until there are no more epithelial structures left. The ulcer, however, remains shallow, and it is unusual for the fibrous layer of the skin to be destroyed unless it becomes infected with virulent staphylococci. The glands are not inflamed unless secondary infection occurs, and there are no constitutional symptoms.
>
> When healing has occurred areas of glossy skin more or less denuded of hairs and sweat glands are left. Cicatrisation does not occur unless the true skin is destroyed. Infection of fresh areas of skin in the neighbourhood is usual, so that the patient has several ulcers of different ages. The disease in its minor forms is extremely annoying, and, when the ulcers have become large, incapacitating.

Colonel Martin also makes this statement: "The pus from the early blisters before they were broken afforded only growths of staphylococci." Bishop Harman also found only staphylococci.

Other valuable, though I believe unpublished, work has been done by Captain Craig, R.A.M.C., on septic sores in the Sinai Peninsula, also in 1916. He found true diphtheria bacilli in some 25 per cent. of sores, and noticed diphtheritic sequelæ to follow in a certain number of cases. I should add that Colonel Martin also mentioned having isolated true diphtheria bacilli in one instance.

During the period covered by my own observations (at the base, at any rate) diphtheria bacilli were rare. I found diphtheria-like organisms in about 5 per cent. of all sores examined. The sores in which these occurred were distinguished from the usual ulcers by their depth and by a tough, blackened, dry membrane which covered them, and which I only succeeded in dislodging with the help of a digestive ferment. The membrane contained diphtheria-like organisms in large numbers. I regarded the condition as due to a secondary diphtheritic infection imposed on a primary streptococcal lesion, since, after removal of the membrane and cleaning up with alcohol, in more than half these membranous sores streptococci were isolated in pure culture (the remainder being sterile). At the time there was quite a considerable epidemic of mild diphtheria in progress.

Altogether I cultured 103 cases of septic sores. From the outset also I treated the patients with vaccines, either autogenous or stock, prepared from similar conditions. The indications derived from this treatment were of great assistance to me. For example, I noticed that although staphylococci could be cultured from almost any open sore, yet vaccines of this organism produced no apparent effect.

From the first unopened blister which I punctured a streptococcus grew in pure culture; it was delicate, and seemed to require serum or blood for its successful cultivation. From the pus of open sores streptococci could only occasionally be isolated owing to overgrowth by other organisms. I therefore adopted the technique of cleaning up a sore with absolute alcohol and planting out on Löffler's or other blood medium the serum which presently would ooze up from the bottom. This serum was sterile in about 30 per cent. of the sores examined, but as cases were taken successively and without selection a number of small healing sores were included, and these were the source of most of the negative cultures. Where fresh active sores were thus treated a negative was rare.

Of 98 non-membranous sores in 98 different people cultured by the technique just described 65 were positive and 33 were negative. The table shows the percentages of the different organisms in these positive cultures.

		Per cent.
Streptococci occurred in	59 =	90·8
,, in pure culture in	39 =	60·0
,, with staphylococci in ...	17 =	26·1
,, with diphtheroids in ...	3 =	4·6
Staphylococci in pure culture in	4 =	6·2
Diphtheroids alone in	0 =	0

A further point which became very clear during the work was that the more thoroughly an ulcer was cleaned up with alcohol the more certainly were streptococci found in pure culture. A certain number of sores which yielded a mixed growth of strepto- and staphylococci at the first culture showed streptococci only later on. These are classed as "streptococci with staphylococci" in the table.

Summarising the various findings, my own and those of others described above, the reader will notice that staphylococci alone are found by several observers, including Colonel Martin; diphtheria bacilli in a large proportion by another; and finally, in my own series, there can hardly be any doubt that streptococci were the active agent. If any further evidence is required to confirm this, I may add that inoculations of small doses of streptococcal vaccine, either autogenous or polyvalent stock (made from septic sores), produced a very marked focal reaction with an outpouring of serum, and that larger doses were followed by an outbreak of fresh blisters.

It seems probable from a consideration of all the evidence that we are dealing with a condition directly due to some cause associated with a hot dry climate or with a special dietary, and that in every case the lesion thus produced is infected with the prevailing microbes. It does not seem that there is sufficient evidence to point to any particular climatic agent or form of diet as the actual cause of septic sores.

II.—*Nile Boils.*

These are a totally different lesion from septic sores, though in certain stages somewhat resembling them. They are also quite plainly different from the usual boil seen in temperate climates. I have not been able to discover a publication describing the pathology, nor, unfortunately, have I had the opportunity of investigating the histology myself. But the naked-eye appearances alone are sufficiently unusual to warrant a distinctive title. The earliest appearance of the Nile boil is a tiny, almost pin-head, blister, and at this stage it is not unlike an early minute septic sore. Very soon, however, this small head becomes surrounded with a bright red areola about the size of a sixpence. Some virulent boils start with a larger areola, even up to the size of a five-shilling piece, and the whitish, blister-like head is of a corresponding size. If at this early stage, which is within 24 hours of the commencement, the head be lifted off, within will be seen a small slough about the size of an ordinary pin's head. After 48 hours the appearance is, as a rule, still the same, only larger. During this first period the boil is intensely tender to the touch, as, in fact, it is during its whole course. The second stage now begins by a general hardening and swelling of the surrounding tissues, which

[1] Brit. Med. Jour., June 9th, 1917, p. 761.

become a dusky purple. Gradually a hard, brawny lump forms, which may be any size, from a hazel nut to the half of a large orange. The central slough also steadily grows in size, and squeezing or opening with a knife only results in the expulsion of a little clear serum. At some point in this slow evolution, which may take three weeks or longer, the boil begins to break down, pus is formed, the slough or core is gradually extruded, and eventually a deep-seated ulcer is left, which slowly heals by granulating from the bottom. In the later stages the larger boils resemble an ordinary carbuncle. There is considerable destruction of tissue and a deeply pitted, purplish scar always results. Note here the difference from septic sores in which scarring is usually absent. The distinctive features, then, of the Nile boil are the initial slough, with its red areola, the extreme tenderness, and the complete absence of pus until the last stage.

Chalmers has examined three boils bacteriologically [2] and isolated an organism which belongs to the group of *Staph. pyogenes aureus*, that subdivision called by Dyar the *Aurococcus mollis*. He has used a vaccine in doses of 500 million on cases with, he asserts, good effect.

After culturing some 30 of these boils I have to submit that the *Staph. aureus* is not the cause of Nile boils, though it may possibly be responsible for the pus formation when that occurs. If this pus be cultured, *Staphylococcus aureus* will almost certainly grow. If, on the other hand, cultural experiments be made at the earlier periods before there is pus formation, then a *Staphylococcus aureus* may sometimes appear, but this, I suggest, is merely an accidental contamination. In every case but one I obtained an organism which at first I took to be a short streptococcus, but which I am now inclined to regard as a white staphylococcus allied to the *S. epidermidis albus* of the skin.

In order to isolate this organism successfully the skin surrounding the boil, the red areola, and the head should be carefully sterilised by swabbing with absolute alcohol. The head should then be lifted off in sterile fashion and a heated test-tube applied to the boil. In a short time the suction as the test-tube cools will induce a slight flow of clear serum. This may then be pipetted off into broth or planted out on a favourable medium such as serum, blood agar, or chocolate medium (I have not ascertained whether primary growth will take place on ordinary agar). Personally I always pipette the serum into Wright's pneumococcus broth, for the reason that after 24 hours the correct organism is easily recognisable by the absence of turbidity and the presence of coarse granules. The culture is also available as a vaccine if required.

Microscopically the organism is an irregular coccus almost always seen in closely apposed pairs lying in clumps and larger than a staphylococcus of the pyogenic type. It does not form chains. On subculture the growth soon becomes turbid. I also noted a curious fact—viz., that though on agar the growth is white, on serum yellow pigment is produced.

The most peculiar property of this white staphylococcus, at any rate from the practical point of view, is its extreme toxicity when used as a vaccine. Believing the organism to be a streptococcus the first dose which I administered was ridiculously small for a staphylococcal vaccine. The case was that of a man who had two small early boils (48 hours), one on each buttock, the first he had ever suffered from. I gave him 10 million. The next day he attended my sick parade, having had four fomentations in the night for the relief of well-nigh intolerable pain, and I found the local reaction had resulted in an inflammation involving nearly the whole of each buttock.

Later on, when I was attempting to immunise men by giving them larger doses, I found that anything over 30 million produced a very considerable swelling and stiffness at the site of inoculation.

III.—*Treatment.*

A. *Preliminary observations.*—I have already mentioned that small doses of vaccine had to be used in septic sores to avoid the production of a fresh crop. I found the same to be true in the case of Nile boils. After a considerable amount of experiment I reached the conclusion that the optimum dose for each vaccine averaged 500,000 germs, and, further, that these small doses should be given about every three days. Further, since both varieties of lesions were prone to occur in the same individual and even where septic sores alone were found, after cure, especially in the hot weather, they were often succeeded by boils, the best treatment seemed to be to give a combined vaccine containing many strains, both from septic sores and also from Nile boils, in doses of 500,000 streptococci and the same number of the boil staphylococcus. Inoculations were given twice weekly and only increased for prophylactic purposes after cure was complete. During the evolution of this routine method, and after it had crystallised, I had under my care something over six hundred cases. The results were very encouraging. The average stay of patients in hospital gives a rough indication of these. It was reduced from about one month to ten days. Further, medical officers who had had experience of sores and boils were well satisfied with the treatment. Notably, Major A. V. Tuke, M.C., R.A.M.C.(T.), surgical divisional officer of the hospital, who permits me to quote a written communication of his on the subject:—

> I have had much experience of septic sores in Gallipoli, Egypt, and Palestine, and I am greatly impressed with the results obtained under vaccine treatment as carried out in this hospital (27th General) under Lieutenant Crowe.

Major Tuke has given me very great assistance in the work, both by his sympathetic attitude and also by many practical suggestions for local treatment, and I am glad to take this opportunity of expressing my appreciation.

B. *Preparation of vaccine.*—The septic sore vaccine. A series of suitable cases showing freely discharging superficial sores should be chosen.

(1) A sore is cleaned up with alcohol.

(2) The serum which presently exudes is taken up in a sterile pipette and dropped into Wright's pneumococcus broth. (Peptone broth plus 6 acid, glucose 1 per cent., fresh human serum 2–5 per cent.)

(3) After 24 hours' incubation the broth is shaken and examined microscopically. It will be found to contain streptococci, practically in pure culture. They will number about 2500 million to the c.cm. Some strains require 48 hours to attain sufficient growth. Counting is unnecessary.

(4) Lysol to make ½ per cent. solution is now mixed with the culture. After thorough shaking the tube should be flamed right down to the surface of the fluid and then left upright in a stand.

(5) Twenty-four hours later the now sterile culture is poured into a stock bottle. For this purpose a sterilised medicine bottle plugged with cotton-wool will serve.

The boil vaccine.

A series of typical young boils in different patients are cleaned up with alcohol, the head lifted, and serum made to exude by means of a heated test-tube, as described before. The subsequent steps of the procedure are as for the septic sore vaccine. In a large majority of the cases 24 hours' incubation of the glucose serum broth will show a granular growth with but slight turbidity except on strenuous shaking.[3]

The growth of this organism may also be taken for all practical purposes as 2500 million per c.cm. (as a rule it is less), and a second stock bottle is gradually filled of boil vaccine.

We have now stock bottles of septic sore vaccine and of boil vaccine, both containing approximately 2500 million to the c.cm. These are now capped with rubber caps, paraffined, thoroughly shaken up, and tested for sterility. From the original stock bottles is made up a lower-strength stock containing 400 million of *each* vaccine to the c.cm. Using a 50 c.cm. vaccine bottle for this purpose, 20,000 million germs (400 by 50) of each kind of vaccine is introduced. This is contained in 8 c.cm. from the original stock bottles. In practice 50 c.cm. vaccine bottles, capped and filled with sterile carbolised saline, are made ready, 16 c.cm. is extracted and replaced by stock vaccine.

For use in treatment the following dilutions are needed: 2 million, 8 million, and 32 million to the 20 minims or c.cm., according to the syringe likely to be used. These figures denote the numbers of germs of *each* vaccine.

Using 50 c.cm. bottles, we arrive near enough to these figures by adding 0·25 c.cm. of the 400-million stock bottle to obtain the lowest dilution—1 c.cm. from the same bottle for the middle dilution and 0·65 c.cm. from each of the original

[2] Journal of Trop. Med. and Hyg., vol. xviii. (1915), p. 205.

[3] Provided the serum taken from the boil is clear—and a boil which discharges pus should not be used—little fear need be entertained that the wrong organism will grow. For purposes of identification, however, it may be taken that the true boil staphylococcus is being cultivated if (1) the germs appear as very closely attached diplococci growing in clumps; (2) the broth shows a granular growth with only slight turbidity; (3) colonies on neutral red egg medium (Dorset's medium, with 1 per cent. glucose and 1 in 10,000 neutral red added) pit the medium, are pink and opaque, and *do not turn orange after 72 hours' growth.*

stock bottles for the strong. The labelling of these bottles should be as distinctive as possible, as a dose given by mistake from the 32-million bottle may result in a very severe relapse

C. *Details of routine treatment.*—Records should be kept of the characters of the lesion, whether superficial or deep sores or membranous (diphtheritic), and in the case of boils whether multiple or single, large or small. Also the length of the history and whether continuous or recurrent.

Vaccine is given in bi-weekly doses of 500,000—i.e., 0·25 c.cm., or 5 minims out of the bottle containing the weakest dilution until all lesions are cured, until no fresh ones appear, and until, in the case of sores, no old superficial scars start weeping afresh after an inoculation.

Vaccines in conjunction with certain surgical measures detailed below will cure the great majority of cases in a remarkably short space of time, but the small doses which are the best for cure have had no effect in preventing relapse. I have found, for instance, that even the omission of one dose is frequently followed by a fresh outbreak. It is therefore essential to continue the vaccine when cure is apparently complete, with increasing doses for prophylactic purposes. After-treatment then should consist in giving doses as follows: 1 million, 2 million, 4 million, still at the same intervals—i.e., bi-weekly, then at intervals of seven days: 8 million, 16 million, and 32 million.

From time to time a case crops up which does not react to the stock vaccine. For these an autogenous vaccine will usually be found to be successful. The routine of doses is the same.

D. *Surgical measures.*—The correct surgical treatment is of the utmost importance, especially in the case of boils. All boils must be incised in such a way as completely to divide the central slough at the earliest possible moment. I desire to lay very particular stress on this point, because in this country it is the custom to wait for a boil to "come to a head" before using the knife. In other words, to wait for pus formation. After the slough of a Nile boil has been completely divided it will not grow any larger, and in the ordinary way will then slowly liquefy and resolve, a process taking from a week to ten days. If, however, the half-million dose of vaccine is given at the same time as the boil is incised cure will be complete after 48 hours. This measure entirely prevents the development of large boils.

Septic sores have a tendency to become covered with a seeping scab. Care should be taken to prevent this by soaking and removal of dried serum. Large actively discharging sores need plain moist dressings, but small healing lesions may be painted with advantage with 1 in 1000 brilliant green in 50 per cent. alcohol and left exposed to the air. It should be remembered that sores over joints always heal with difficulty. These, if possible, should be kept at rest by splinting the limb. Occasionally septic sores become infected with virulent staphylococci, as Colonel Martin has noted, and large ulcers of considerable depth may result. For these it is advisable to give a preliminary dose or two of stock *Staph. aureus* vaccine and keep at absolute rest. 1 in 100 brilliant-green ointment on lint is a good dressing.

Fomentations should only be given for the relief of pain, and are practically never necessary except for deep or membranous septic sores. The only dressing required for incised boils is a piece of cotton-wool strapped across and changed twice a day.

Neglected boils sometimes lead to the formation of chronic sinuses. If these are opened up under an anæsthetic, thoroughly scraped, and then rubbed over with spirit and bipp, they can be stitched up and will heal by first intention.

Membranous sores are diphtheritic and Captain Craig recommends large doses of antitoxin. In addition it will be found that applications of trypsin will remove the membrane. After the ulcer is clear, packing with bipp for three days usually leads to a healthy granulating surface being formed.

Summary.

A vaccine prepared from a large number of strains of streptococci isolated from septic sores, combined with a similar series of a peculiar staphylococcus isolated from Nile boils, when given in frequent small doses, in conjunction with certain surgical measures of which the most important is the early incision of boils, is of great assistance in the cure of these diseases. Increasing the dose of vaccine on the scale described after cure is complete prevents relapse.

In conclusion, I would add that I had intended to make a full study of the organisms, but the exigencies of the times have hitherto prevented my finding the opportunity.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

Outbreak of Typhoid Fever among Inoculated Soldiers.

A MEETING of this section was held on Nov. 8th, Lieutenant-Colonel E. W. GOODALL being in the chair, when a discussion took place on an Outbreak of Typhoid Fever among Inoculated Soldiers.

Captain FRED. M. MEADER, U.S.M.C., gave an account of the epidemiology of the outbreak. He said that on July 11th, 1918, there appeared at an American rest camp the Fourth Casual Company, J A.R.D., Camp ——. Soon after entrance to the camp several cases of fever were brought to the camp hospital. At the time many cases of influenza were present among the soldiers who were passing through this camp, so that no special significance was attributed to the symptoms. After a few days' observation the commanding officer, Captain Logan, suspected that the cases might be typhoid fever. At about the same time a few patients had been sent to a base hospital. Suspicion of typhoid fever was soon aroused, and blood cultures were ordered by Captain Hawn. The district sanitary officer inspected the cases and took specimens of blood from each of the new cases for a culture. *Bacillus typhosus* was isolated from 8 out of 10 cases two days later. During the next month *Bacillus typhosus* was isolated from the blood or fæces of 10 more cases. Altogether 38 soldiers developed typhoid fever at this camp. *Bacillus typhosus* was isolated from 18 of these cases. This organisation left a cantonment on June 15th, 1918, for Camp Merritt, New Jersey. While *en route*, on June 18th, the organisation stopped at Meridan, Mississippi, and was taken for a swim in a lake. The organisation arrived at Camp Merritt on June 21st and embarked on June 28th, and arrived at Liverpool July 10th. After disembarkation the organisation proceeded to ——. At Liverpool 3 cases were left at the Red Cross Hospital, and it is reported that 2 other cases were left at some station *en route*. At the American rest camp 40 soldiers were found ill and transferred to a base hospital, where a diagnosis of typhoid fever was made on 38 of them. From a study of the history of each case it was noted that the date of onset varied over a period of about a month. The first case was ill on leaving Camp Cody. The second developed on June 19th, the third on June 21st, the fourth on June 24th, three on June 26th, four on June 29th, five on July 6th; after which a case developed every day up to the time the organisation arrived at the American rest camp. The organisation left the American rest camp before the diagnosis of typhoid fever had been established, and it had since been learned that 57 other cases developed; this made a total of 95 cases of typhoid fever out of a company of 248 men. In seeking the sources of the infection of this outbreak we naturally turn to the patient who was first ill. With regard to the method of spread it was noted that a considerable group of cases developed during the latter part of the month of June and the early part of July. This suggested a common source of infection; there were two possibilities: 1. That these cases became infected in the train early in the journey. 2. That they became infected bathing in the water at Meridan, Mississippi, on June 18th. The water might easily have been infected by one or two cases of typhoid fever which were present in the organisation at the time. The remaining cases of typhoid fever undoubtedly received their infection by contact with the patients who were ill in the organisation. This could be easily done since the men were crowded together on the train or on shipboard. There were about 1800 men on board the steamer, this number being composed of Casual Companies 4, 10, 11, and 15 and Supply Company 112. Most of these organisations went on to France, and among the members of Casual Company 4, 57 other cases developed, as mentioned above. Infection was limited to No. 4 Casual Company, which suggested that the disease was spread during the swim in the lake at Meridan. All of the above-mentioned cases had been inoculated with either typhoid

vaccine and paratyphoid vaccine or triple typhoid vaccine, or both. Many of them had received several doses in excess of the required number. Also, the men were inoculated at widely different posts and at different times. One patient stated that he received but one dose; otherwise it would seem that the whole organisation was thoroughly immunised. Captain Meader thought that there were three possible explanations of the outbreak: 1. The men might have been unvaccinated or inefficiently vaccinated, but they gave a history of having been vaccinated in different camps at different times, and antibodies were present in their sera. 2. The infection might be due to a new race of organism, but bacteriological tests proved the organism to be that of typhoid; there might, however, be a slight difference in the strain. 3. There might have been an overwhelming dose; this was the most reasonable explanation, as the swimming party included a man with diarrhœa.

Captain CLINTON B. HAWN, U.S.M.C., gave an account of the clinical aspects of the outbreak, which included an account of each of the 40 cases mentioned by Captain Meader. Of these 40 cases, 38 were cases of typhoid In hospital segregation was secured by screening. No case developed as a result of infection whilst in hospital. In dieting the patients they were much handicapped owing to the difficulty in preparing soft food. I. The exact date of *onset* was difficult to decide. Diarrhœa occurred in 58 per cent., constipation in 21 per cent., chill in 10 per cent., and nosebleed in 2·6 per cent. II. Clinical pathology: 1. Low white count was present in all uncomplicated cases. 2. Blood culture was positive in 33 per cent. 3. Stool culture was positive in 25 per cent. 4. The atropine test was positive in 79 per cent. III. Clinical course of disease: 1. The average duration of fever was 35 days: (*a*) Severe high grade typhoid, 70 per cent. 2. Complications: (*a*) Lobar pneumonia occurred in 1 case; (*b*) terminal pneumonia in 1 case; (*c*) broncho-pneumonia in 2 cases; (*d*) hæmorrhage in 3 cases; (*e*) perforation in 1 case; (*f*) phlebitis in 1 case. IV. The mortality was 13 15 per cent.

Captain J. G. HOPKINS, U.S.M.C., said that of the 40 patients in this series admitted to Hursley Hospital as typhoid suspects, the laboratory findings were positive in 25. The results are summarised in the following table:—

	Cases.
B. typhosus isolated from blood and from stool	4
,, ,, ,, ,, blood only	8
,, ,, ,, ,, stool only	5
Typical typhoid lesions at autopsy in cases from which the bacillus was not isolated during life... ... ... (*B. typhosus* isolated post-mortem from 2 of the above.)	3
Typical shift in typhoid agglutinins; blood and stool cultures negative	6

In the remaining 14 cases all laboratory tests were negative, although 13 were clinically cases of typhoid. Of 10 blood cultures taken within a few hours of admission to the hospital 8 were positive irrespective of the stages of the disease. Of 29 cultures taken after patients had been in bed 24 hours only 4 were positive. He thought that this suggested that the physical strain the men had undergone might have caused a persistence of their bacteriæmia. Five fatal cases all showed typical typhoid ulceration of the lower ileum; 1 case showed evidence of recrudescence; extraordinary enlargement of the spleen was found in 2 cases. The complications noted at autopsy were as follows: intestinal hæmorrhage, 1; perforation, 1; thrombosis, 2; pneumonia (pneumococcus type, 1), 1; intramuscular hæmatoma, 1. Titration of agglutinins for typhoid and paratyphoid A and B showed a normal amount of agglutinin for recently vaccinated men. Vaccination records showed that the men were vaccinated at several different camps and at different times, so the possibility that a faulty specimen of vaccine was employed might be excluded. The typhoid bacilli isolated were apparently typical. The laboratory findings offered no explanation of the infection of these men.

Surgeon-General Sir W. B. LEISHMAN said that what struck him most was the remarkable severity of the disease, the number of men attacked, that the infection did not extend to other units, and that though the men were inoculated they still got the fever. The disease as seen in this outbreak was similar to the old typhoid which was known in India, and not the type met with in our army among inoculated men. A case was found occasionally as severe as the old type, but nothing comparable to this had been met with in the B.E.F., nor among the forces in other areas. He had seen a group of men attacked with typhoid of the old type, but on investigation it was found that they were nearly all unvaccinated, the exceptions having been vaccinated two or more years previously. A severe type often occurred in men who had not been lately inoculated. He thought that this was likely to be a case of repeated and massive infection rather than a failure of vaccination in protecting those men. Among them the conditions were such as to cause frequent infection, and a big dose was more likely to override the protection given by inoculation. An abnormal strain was conceivable, but there was no evidence to show the presence of a different strain from the three known strains, and agglutinins had been found in the blood.

Dr. F. FOORD CAIGER suggested that the interval between inoculation and infection was too long for protection to be afforded. He remarked upon the number of cases of severe diarrhœa and said that in severe typhoid diarrhœa was the rule and constipation the exception. Distension of the abdomen should be prevented by proper dieting and the administration of antiseptics.

Lieutenant-Colonel HARVEY said that tests made on the blood of the three men left at Liverpool did not prove the presence of a separate strain. He had not made any tests with regard to virulence.

Sir KENNETH GOADBY said that immunity was only relative and might be overcome in two ways: (1) by successive small doses at short intervals, and (2) by a massive dose. In this case both occurred. The men in the other units would have occasional doses, but those in the same company frequent small doses.

Colonel WILLIAM HUNTER gave an account of an outbreak of typhoid among uninoculated men in Gallipoli, and described the effect of inoculation in decreasing the number of cases. He gave comparative statistics showing the extremely low incidence of the disease in Egypt at the present time. He thought that there must be something wrong with the vaccination of that particular company, as the outbreak was limited to that company only.

Dr. G. S. BUCHANAN also spoke.

Captain MEADER, in reply, said that the men came from different States and were therefore vaccinated by different medical officers and from different batches of vaccines, and therefore he could not think the method of vaccination or the particular vaccine employed could be in fault in every case.

SECTION OF OPHTHALMOLOGY.

Changes in the Cornea which Follow Attacks of Various Forms of Inflammation.

AN ordinary meeting of this section was held on Nov. 6th under the presidency of Mr. W. T. HOLMES SPICER.

The PRESIDENT first thanked the section warmly for having elected him to its post of honour, and then proceeded to give an address, aided by numerous sketches shown by the epidiascope, on "Changes in the Cornea which Follow Attacks of Various Forms of Inflammation." He said this subject had received but small attention in the literature. After ophthalmia neonatorum, sometimes very little was to be seen but the existence of vascular channels, yet the stagnation of the lymph circulation might bring about slowly advancing changes after all the inflammatory appearances had long since subsided. The presence of clear lines in cases of old corneal ulcers had been described by but few observers, although they had been long known and had been seen before the introduction of the loop. Nettleship described the linear paths of clear corneal tissue in large diffuse lipomata, the latter having probably arisen after small spots in infancy; while Fuchs discussed the various linear formations existing in the cornea, suggesting that the lines were due to changes in the lymph system and nebulous area. The best description extant of these lines was that by Sydney Stephenson. In one of his cases the lines traversed a nebula with opacity, and there had been repeated attacks of corneal inflammation early in life. Story stated he had seen lines of this character in interstitial keratitis, and he thought they were due to a clearing of vessels. The picture presented to the observer varied according to the depth of the vessels concerned. Besides the surface invasion of trunk vessels, the terminal capillary loops of the limbus were seen involved, these vessels not arising from any main trunk. This was common in marginal

inflammations, such as trachoma and acute interstitial keratitis, in which vessels invaded the cornea at all depths. It was quite uncommon for vessels to disappear and leave no trace; even though empty of blood they could be seen as silky threads on the surface or as clear lines beneath the surface. The vessels in one layer of the cornea did not interfuse with those in another layer. The first necessity in the production of these conditions was a destruction of tissue. The contraction which followed that either interfered with nutrition or interrupted the flow of lymph, leading to stagnation and the deposit of salts. Arcus senilis was more likely to occur in eyes which have been the subjects of corneal ulceration. The President then dealt in detail with the various forms met with.

On the motion of Mr. E. TREACHER COLLINS, seconded by Mr. W. LANG, the meeting accorded to the President a cordial vote of thanks for his address.

LONDON ASSOCIATION OF MEDICAL WOMEN.—A meeting was held at the House of the Medical Society of London on Nov. 5th, Lady Barrett, the President, being in the chair. The President introduced a discussion on "The Retention of 40 D and Allied Subjects," and read an analysis of the results of the Subcommittee of the Federation of Medical Women which have been considering the subject.—Dr. Louisa Aldrich-Blake, Dr. Marian Thornett-Johnson, Dr. Helen Chambers, Dr. Josephine Fairfield, Dr. Mary Roberts, Dr. Morna Rawlins, and others took part in the discussion, which was adjourned to a date to be fixed later.

Reviews and Notices of Books.

The Statics of the Female Pelvic Viscera. By R. H. PARAMORE, M.D. Lond., F.R.C.S. Eng.; Major, R.A.M.C. (temporary). With 26 illustrations, including 23 plates. London: H. K. Lewis and Co. 1918. Pp. xviii. + 383. 18*s.* net.

IN this book Mr. Paramore further elaborates his well-known views upon the mobility of abdominal organs, and those gynæcologists who still regard the question of uterine position, support, and misplacement as centering around the function and disease of the uterine ligaments, and who look upon the "parametric sling" as an all-important factor in uterine prolapse, will find it desirable to reconsider their position, and to bring, if they can, fresh argument and proof to support their hypothesis. Mr. Paramore stands as the champion of the pelvic floor musculature. He cannot concede these structures as vestigeal tail muscles of the lower vertebrates, of interest only from a morphological standpoint, and functioning feebly by virtue of the fascial coverings. For him they are muscles of high development consequent upon the assumption of the erect posture, and they form an almost complete pelvic diaphragm, in complete nervous sympathy with the general musculature of the abdominal parietes. He pleads with cogency for the conception of the "visceral mass," and maintains that the position of the uterus cannot be considered apart from that of the pelvic viscera in general. He sees the position of these viscera as completely dependent upon the factor of a definite and measurable intra-abdominal pressure acting upon an intact pelvic floor musculature, cunningly arranged to form a sphincter for the pelvic outlet. He shows how the abdominal contents, by virtue of their incompressibility, respond to the ever present downward thrust of the diaphragm above, and bring about the regression of the pelvic floor, and finally establish in equilibrium in the adult pelvis organs which in the fœtus and adolescent are abdominal.

Evidence from phylogeny and ontogeny, from pathological and clinical investigation is in turn called. The arguments seem incontrovertible and it is difficult to believe that Mr. Paramore has not made good his case. The book is one essential to gynæcologists, and which may with advantage be read by others. If Mr. Paramore's contentions are found to be correct they will afford some explanation for the mysteries of visceroptosis, and will help to an understanding of the cause of failure of many of the "organ fixation" types of operation. Many excellent drawings conduce to the apprehension of the arguments and the whole book is presented in a pleasing manner. We congratulate the author upon it and await with interest for the second volume which he promises.

Local and Regional Anæsthesia. By CARROLL W. ALLEN, M.D. Second edition, reset. London and Philadelphia: W. B. Saunders Company. 1918. Pp. 674. 28*s.*

SINCE the appearance of the first edition of this book three years ago the scope of local analgesia has widened considerably. Dr. Allen's work remains, however, one of the most complete accounts in the English language both of the technique and of the physiological explanations of analgesia by local injection. The chapter on Nerves and their Sensations, especially Pain, may be read with profit and interest even by those not immediately concerned with the use of local anæsthetics. The author regards the application of this method to the operations for removal of the prostate as one of the most important recent developments of local anæsthesia, and there can be no doubt that many of the subjects of prostatectomy are just those for whom general anæsthesia, however skilfully conducted, affords more than the usual risk. The pages dealing with this operation are worthy of careful study by all surgeons; the author seems in general to prefer operation in two stages; local analgesia makes a heavy call upon the time, patience, and skill of the surgeon, but the results here recorded justify such an outlay. The best medium for anæsthetic solutions is found by Dr. Allen to be a 0·4 per cent. solution of sodium chloride, and he regards novocaine as the anæsthetic which hitherto most nearly meets all the requirements demanded of a perfect local agent. He writes that after an experience embracing the entire field of surgery he has failed to note a single case in which this agent has produced any unpleasant local or constitutional action.

The pleasure of perusing this valuable book is marred by a certain carelessness of diction in which nouns fail to agree in number with the verbs dependent on them, and while it is priggish to suggest that infinitives should never be split, the proper order of words could have frequently been preserved without loss of clearness. None the less, text and illustration are highly commendable work.

Diseases of the Skin. By MILTON H. HARTZELL, Professor of Dermatology at the University of Pennsylvania. With 51 coloured plates and 242 illustrations. London and Philadelphia: Lippincott Company. Pp. 753. 30*s.* net.

IN this country text-books dealing with dermatology are few, and the majority of them are of considerably smaller size than many which appear in America. Professor Hartzell in this regard follows the example of his countrymen, but there is not a page that could be spared. The matter is concentrated and accurate; there is throughout evidence of that thorough knowledge which enables an author to achieve compression without lack of clearness. Treatment is carefully considered, and practical as to detail. The illustrations are well selected and life-like, up to the modern high standard. The consideration of X ray treatment in dermatology is more detailed than we remember to have seen in other American text-books, and the intimate acquaintance with European literature is another high recommendation to a volume appearing in Britain.

Professor Hartzell states in his preface that his experience in general medicine has enabled him to survey the subject of dermatology from the standpoint of the general practitioner as well as that of the specialist. Reference to the paragraphs on etiology and treatment throughout the book shows that this claim is well founded. This is certainly a much needed method of approaching certain diseases, such as eczema, which are dependent upon and vary with the general health. Professor Hartzell considers carefully in this respect the subject of protein hypersensitiveness. Every dermatologist has met with instances of eczema, alternating with asthma, which yield only to a careful dietetic régime. Recently treatment of asthma by injections of foreign proteins has yielded promise of success, and it is therefore of interest to learn that cutaneous tests with various foodstuffs have been carried out in order to ascertain whether the eczematous patient exhibits anaphylactic reaction to selected substances. Psoriasis is another common malady affected by the general health, but this author has found no royal road to its permanent cure

The volume should be a favourite with the advanced student because of the practical nature of its teaching.

Treatise on Applied Analytical Chemistry. By Professor VITTORIO VILLAVECCHIA. Translated by THOMAS H. POPE, B.Sc., A.C.G.I., F.I.C. London: J. and A. Churchill. 1918. Vol. I. Pp. 475. 21*s.* net. Vol. II. Pp. 536. 25*s.* net.

Professor Vittorio Villavecchia's two volumes cover a wide field; the methods and standards described bear witness to his experience in every branch of analytical practice, derived, no doubt, from his directorship of the chemical laboratories of the Italian Customs. The first volume deals with the analysis of potable waters, chemical products, fertilisers, cement materials, metals and alloys, fuels, tar and its derivatives, mineral oils and fatty substances, and the industrial products derived therefrom. The second volume includes chapters on the analysis of flesh foods, milk products, flour and starches, sugars and saccharine products, beer, wine, spirits and liqueurs, essential oils, turpentine, varnishes, rubber, tanning materials, leather, colouring matters, and textile fibres and fabrics. The general plan employed in the presentation of the many analytical methods involved will be much appreciated by the analyst. First a brief statement is given of the different cases and the problems which arise, as well as of the investigations and determinations to be made to solve them. Then follows a detailed description of the methods to be carried out. Then, most valuable of all, the criteria and standards are given by the aid of which the industrial, commercial, or hygienic value of the product may be deduced from the analytical data obtained. Finally, tables are given containing examples of the analytical results relating to the ordinary commercial qualities of the product. All this is excellent, particularly when we find that care has been taken to select those up-to-date methods which have been shown to be trustworthy and convenient. The book is a standard work of reference on the whole subject, and an excellent guide on analytical detail.

Reports and Analytical Records FROM THE LANCET LABORATORY.

(1) AMBRINE CANDLES; (2) MORUBILINE; (3) NÉVROS THÉNINE (FREYSSINGE); AND (4) QUINÉINE.

(ANGLO-FRENCH DRUG CO., LTD., GAMAGE BUILDING, HOLBORN, LONDON, E.C. 1.)

(1) THE ambrine candle provides a simple and safe method of applying melted wax to the skin in the treatment of burns, wounds, and abrasions generally. It dispenses with the use of an outfit of accessories hitherto employed, including sterilising apparatus, though the skilled dresser would prefer to continue the more elaborate method when the surface to be treated is extensive. In the ambrine candle, when the wick is lighted, the melted wax is sufficiently fluid to pour on a burn or wound, and yet is not so hot as to cause suffering, and a candle can be used, with common precautions, in the household and workshop readily and conveniently. We received two specimens: (*a*) a plain single stick, and (*b*) a tricandle (three candles waxed together lengthwise, forming three circles in a triangle).

(2) Morubiline is a dark brown syrupy fluid which is described as the extract of the fresh liver of the cod, to which has been added certain preparations containing phosphorus, iodine, sulpho-guaiacolate of potassium, and methyl arsenate of sodium. We confirmed the presence of these constituents and also found that an ethereal extract gave a purple colouration with sulphuric acid and glucose—the Pettenkofer reaction for biliary acids. In view of recent researches on the part played by accessory factors in animal fats, the theory has been revived that the value of cod liver oil in nutrition may be connected with the presence of such substances.

(3) "Névrosthénine" is a concentrated solution of the glycerophosphates of magnesium, sodium, and potassium, the inclusion of common calcium salt being omitted on the ground that it favours sclerosis.

(4) Quinéine is described as an integral extract of the active principles of cinchona bark, the inert products being excluded. The therapeutic indications are the same as those of quinine, but a claim is made for special efficiency ascribed to the improved method of preparation adopted.

EVATMINE.

(BRITISH ORGANOTHERAPY CO., LTD., 22, GOLDEN-SQUARE, REGENT-STREET, LONDON, W.1.)

This combination in the treatment of asthma is the outcome of clinical experience in France, and the formula is as follows: Pituitary extract (posterior lobe), $\frac{1}{3}$ gr.; adrenin solution (1:1000), 8 minims; physiological salt solution, 8 minims. The preparation is contained in sterilised ampoules of 1 c.cm., with the above quantities of organo-therapeutic constituents. The administration of adrenal extract has long been known to give relief in the paroxysms of asthma, but some interesting evidence is quoted that in combining this hæmostatic principle with pituitary extract the results are more satisfactory than when adrenin alone is used, as not only is the paroxysm rapidly cut short, but the intervals of attack are markedly increased when pituitary extract is simultaneously given. The two are combined in "evatmine."

SOTOL.

(WESTERN DENTAL MANUFACTURING CO. (1914), LTD., 73, 75, AND 79, QUEEN'S-ROAD, BRISTOL.)

Sotol tablets are not inaptly described as "mouth, nose, and throat baths," for in water they produce a pleasant, briskly effervescing solution containing well-known antiseptics suitable for cleansing the mucosa indicated. The antiseptics consist of menthol, thymol, and certain aromatic oils with an alkaline basis, which renders them agreeable to use and mildly detergent. The effervescence serves to circulate the antiseptics uniformly through the fluid, whilst giving it a pleasant, somewhat piquant taste. There is a feeling that the mouth and nasal passages are clean after the use of "sotol" solution and a healthy condition established. The introduction of an effervescing wash for the purpose is, so far as we know, novel.

FERMENTOSE.

(A. BREZET AND CO., 145, WOOL EXCHANGE, LONDON, E.C.2.)

In French clinics "la fermentose" has been employed in diseases arising out of disorders of nutrition, and notably neurasthenia. Its action is said to be that of a constructive metabolic agent restoring healthy functional activity in the gastro-intestinal tract. Its pharmacology is based on the presence of digestive ferments and an oxydase in the form of a metallic catalyst or activator. Fermentose occurs as a pale brownish powder, which is enclosed in cachets for administration. Two of these are prescribed daily, one with the mid-day and the other with the evening meal. We confirmed its hydrolytic activity *in vitro* and found a fairly large proportion of alkaline bi-carbonate present. We found also on suitable treatment the presence of metal, but, of course, in small quantity. The employment of a metallic "ferment" with well-known enzymes in disorders of metabolism is of interest, and suggests further clinical trials being made.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions have been received up to Monday last, Nov. 11th:—

	£	*s.*	*d.*
Mr. W. H. Quarrell ...	1	0	0
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Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 16, 1918.

Peace.

THE cessation of hostilities has let loose a flood of feeling which has long been unnaturally restrained. The traditional procession in London on Saturday to initiate the new Lord Mayor in office was a striking military ceremony carried through with dignity and order. The same streets re-echoed on Monday to the unrestrained cries of a nation free once more to rejoice, and if the celebrations of peace in the capital seem to have been particularly flamboyant this was probably due to the presence in London of such large numbers of American and Colonial troops. In his Guildhall speech the Prime Minister, with instinctive response to the emotions of the nation, characterised the occasion as not an hour for speeches but for thankfulness—thankfulness for the end of a struggle which is going to lift humanity to a higher plane of existence for future ages. He appealed to his hearers, as they had by their unity achieved victory in war, so they should unite in peace to lift up their country by common effort to a position such as it never yet held in its history. Here medicine will see a particular appeal to herself. Medicine has achieved undreamed-of things by unity and organisation during the last four years. The chapter of the Four Years' War, which is now closed, may well be the beginning of a new era of physical health.

The Ministry of Health Bill.

ON Thursday evening last week Dr. ADDISON, the Minister of Reconstruction, introduced in the House of Commons the Ministry of Health Bill. Many of our readers may not have been able by this time to see the text of the measure, but they will have read such a large number of abstracts of it and commentaries upon it that we may assume their familiarity with its general design, as read for the first time. They are probably satisfied with much that it is proposed to do, but it is none the less necessary that the extensive scope and possibilities of the Bill should be closely realised, although its future is seriously compromised. The Bill will not be proceeded with this session, but whether this Bill or some other be in question, a Ministry of Health can only discharge its functions properly towards the public if it conducts its affairs with the coöperation of enlightened medicine. The Bill combines under one State Department all the existing responsibilities of the Local Government Board as far as health is concerned, and all the functions of the National Insurance Commissions for England and Wales. There will also be included the duties of the Board of Education in respect of the health of expectant and nursing mothers and children under five years. The Bill proposes to bring into the same Department the duties of the Home Office in regard to the protection of infant life under the Children Act, 1908, and those of the Privy Council, as administered through the Central Midwives Board, in regard to the midwifery practice of the country. That is the combining scheme of the Bill in respect of existing activities, but the Bill also proposes to give the new Ministry power to bring in other considerable health duties, and all these can be directed under intelligent guidance towards improvement in national health and its steady maintenance upon the higher planes. Thus medical inspection of school children and young persons, which now appertains to the Board of Education, and the duties of the Home Office in regard to lunacy and mental deficiency, if and when possible, may be included in the work of the new Department, while the Ministry of Pensions will also surrender to it the care of the sick soldier. When each additional burden can be best borne we may expect to see the process of solidification go on. A large programme, but one whose object is common; in which, therefore, common wisdom at the centre can well be infused into the different procedures at the periphery. Consultative Councils will be instituted to advise the Ministry in the proper directions, and the functions of these bodies have yet to be announced.

Such in brief are the chief provisions of the Bill instituting the Ministry of Health, and in introducing it Dr. ADDISON claimed that the measure was the outcome of general agreement, save in details, the agreement having been arrived at after consultations with many local authorities, medical men, and representatives of the Approved Societies under the National Insurance Act. We may be certain that the consolidation of existing State energies was viewed with approval by all who were asked, as it will be by others. The step is one which has been demanded in our columns and in those of the *British Medical Journal* for a long time, since those whose business it is to follow public administration in relation to medical affairs have known that the overlapping under the existing conditions was a perpetual impediment to progress. None the less, the Board of Education could not resign without real regret its functions of medical inspection and treatment of school children, and we have every reason to think that no such step will yet be taken. Certain difficulties which lie ahead can be focussed around questions of Poor-law. The present position of Poor-law administration does not lend itself to an easy transfer of responsibilities to any new central authority. The Boards of Guardians, the responsible authorities under the Poor-law, owe allegiance to the Local Government Board in other directions besides those which lead directly towards the maintenance and progress of health, though in all these directions the health of the people may be really concerned. Still, its medical duties form a very large part of the Poor-law. A recent Committee, presided over by Sir DONALD MCLEAN, Deputy Chairman of Ways and Means, in considering the transfer of the functions of the Poor-law authorities in England

and Wales, recommended that the services relating to the care and treatment of the sick and infirm should no longer be administered as part of the Poor-law but should all be made a part of the general health service of the country. The Government was stated by Dr. ADDISON—and the point is one of enormous importance—to regard the carrying out of this recommendation as a matter of urgency, and effect will be given to it by the inclusion of Poor-law medical administration in the work of the new Ministry as soon as the general policy for the transfer of the remaining functions of the Poor-law authorities to other hands has been settled, but some time must elapse before this can be definitely accomplished. The whole problem here presents considerable difficulties, but the Bill need not be delayed in other respects until what is commonly called "the break-up of the Poor-law" is accomplished. With regard to Scotland, the Bill brings together in practically the same way as in England the different State activities of medicine in that country, and institutes a Board of Health for the country which will be under the direction of the Secretary for Scotland. The position of Ireland for the present will be that the National Insurance will remain under the same direction as the Local Government Board of Ireland. The resolution into national components of insurance administration places the Medical Research Committee without the scope of the Bill, and with magnificent prospects before it.

The measure is an administrative one, and its main results will emerge not from the fusion of overlapping energies, and, at first at any rate, not from the development of constructive work made possible where system reigns in place of disorder. The results which will be appreciated practically will follow upon the part played by the Consultative Councils. If the functions of these Councils are well defined, if their advice is accepted as being in great measure authoritative—which means if their constitution is scrupulously considered—and if the public is kept duly informed of the reasons which determine State action on medical grounds, there resides in these Councils a power for good of incommensurable strength. The people want to be healthy. It is not apathy which makes sections of our population blind to their insanitary plight, or which keeps localities satisfied when their death-rates and infantile mortality are scandalous. This calm does not come from apathy—behind the supineness is ignorance. It is usual to say here that the housing of the poor and the industrial wages being what they are, salvation cannot be obtained by sanitary administration or institutional or domestic medicine. Granted to a certain point; but if the people knew what sanitary and medical science could do for them, a popular war would be waged against dirt and disease as successful as that which a popular war has waged against German militarism. And the end would be similar. The Ministry of Health Bill should constitute a great alliance between authorities for the putting down of insanitation and erecting the standard of personal hygiene; the authorities must secure the best advisers, when a well-instructed people will see that the counsels of these advisers are followed.

The Sexual Complement.

IN certain insects, such as *Bombyx mori*, parthenogenesis, or the complete evolution of the adult form from an unfertilised ovum, is known occasionally to occur; and this is a phenomenon probably capable of some biochemical explanation not yet understood. Among some of the lower invertebrates, such as *Ciona intestinalis* and *distomum*, the individual is all-sufficient unto itself in regard to the reproductive functions: each is male and female, not only structurally but also functionally. In Nudibranchs and Vermes it is usual to find only structural hermaphroditism, as it is called—that is to say, each creature has functional male and female gonads, but cannot fertilise itself. From this stage of evolution we find an increasing divergence in the sexes; but a divergence only, for the separation is never complete; even in the human subject there are structural, and probably functional, attributes of the opposite sex. In the lower vertebrates, such as the fishes and some amphibians, the ova are expelled by the females from their oviducts to the exterior, and are fertilised by the spermatozoa which the male pours over them. In certain of the amphibians, such as *Salamandra maculosa*, we see the first attempt at copulation with the entry of the spermatozoa into the female channels and the fertilisation of the ova within the oviducts—a constant physiological performance in all the higher animals. The phylogenetic importance of copulation and viviparity, as seen in the mammals above the monotremes which are oviparous, has been the subject both of serious study and of speculation. Many interesting differences in the manner in which the sexual act is accomplished, and in the immediate results thereof, are to be noted. It is impossible here to enter into all the details, each of which is of some morphological or physiological importance, but attention may be directed to two phenomena which have, perhaps, some special bearing on the subject under discussion. First, in rabbits, and probably in other rodents, copulation mechanically causes dehiscence of the ripe Graafian follicles in the ovaries; second, the inseparability of the bitch from the dog for some minutes after the semen has been ejaculated allows time for the spermatozoa to enter the uterus. Viviparity, in all the stages of completeness of placental fusion and chemical interchange between the mother and fœtus, can be traced from the marsupials to Man. It is almost certain that the evolution of the processes of reproduction has been far more concerned with the requirements of the offspring than with the welfare of the forbears: the parents, as such, are by their individual lives serving posterity, and to such an extent does this obtain in some of the lower creatures that death closely follows reproductive consummation. There can be little doubt, however, that in the later phases of evolution Nature offers many compensations and rewards to those who fulfil the reproductive destiny that is theirs.

In an article in THE LANCET of Nov. 9th Sir ARBUTHNOT LANE discusses the sexual and reproductive functions from the point of view of the health of the progenitor, rather than of the claims of posterity. Yet it is obvious, of course, that in a perfect scheme of sexual opportunity the generations to come need not suffer; indeed, with sexual prohibitions as well as sexual facilities considerable benefit might accrue. Sir ARBUTHNOT LANE, however, is chiefly concerned with the health of the women of our

civilisation. He draws attention to his own valuable work on the secondary structural characteristics of Woman, and he refers to well-known facts concerning the thyroid gland and its relation to the genital functions in the female. Other evidence, too, concerning the correlation of most, if not of all, of the internal secretions in their influence on the sexual characteristics and functions might well be adduced; but in the present day it is not necessary to labour the question of sex-differences—physical, physiological, and psychological—for they may safely be accepted. Sir ARBUTHNOT LANE raises interesting physiological considerations in regard to the sexual relations between Man and Woman. His statements indicate that intercourse and gestation are beneficial to Woman. This is certainly true, though the measure of the truth is probably proportionate to the exact differentiation of the individual into male and female. All medical men know how different in health and outlook may be the unloved woman from the happy wife and mother; yet many can recall instances in which celibacy has left *apparently* unaffected both the physiology and psychology. Yet most normal, healthy women become more womanly, more composed and happy, and their vital organs more vigorous as the result of gestation and lactation. But this effect will take place in proportion to the distinct sexual divergence already mentioned, which is present in the individual.

But apart from conception and its results, is there any evidence to show that sexual intercourse is beneficial to Woman? Sir ARBUTHNOT LANE says that there is, and we are inclined to agree with him, but not on the ground stated—namely, that the prostatic secretion is absorbed by the female and is "far-reaching and active in its results." With regard to the male, the prostate is said to be an organ of internal secretion that acts as a "powerful stimulant." With this statement, too, we find it difficult to agree. The glands in the prostate are developed from the epithelium of the urogenital sinus in close relationship with the urethra. In the female the homologue of the prostatic glands is to be found in the para-urethral glands. Castration produces atrophy in the prostate, but recent observations—experimental and clinical—indicate that prostatectomy does not lead to retrogressive changes in the testes, as originally stated by SERRALACH and PARÈS. Further, it is unlikely on phylogenetic grounds that the prostate is an organ of internal secretion, for even in the lowest mammals—a late stage of evolution—there is no prostate, nor are there vesiculæ seminales; indeed, until the urethral canal, through which both urine and semen are voided, is formed, this gland is not developed. It is probable that the prostate subserves only the functions and requirements of the spermatozoa—that is to say, the external secretion keeps active the male sex-cells, and by the production of a ferment known as "vesiculase" causes temporary coagulation of the fluid from the vesiculæ seminales after ejaculation, a condition that prevents the easy escape of the semen from the vagina. The absorbent properties of the vagina have not been sufficiently studied, but in view of its structure these cannot be great. The benefits, then, that a woman derives from sexual intercourse, apart from the advantages of conception, are mechanical, sensory, and psychological, and these, it is true, may greatly affect her normality and well-being. Hence the importance of what we may call the "sexual complement," which, as Sir ARBUTHNOT LANE indicates, is frequently not available in the present state of civilisation.

Annotations.

"Ne quid nimis."

THE MENTALITY OF THE WAR PRISONER.

PRISONERS' camps in all parts of Europe are being broken up, and the early return of our own prisoners of war and of civilian internés from enemy countries is expected. Much has been written, but little is definitely known, about their mental well-being, and we welcome a little pamphlet[1] of 50 pages by Dr. A. L. Vischer, of Basle, devoted to the study of the psychology of prisoners of war, and especially to what was first called the "barbed-wire disease" in an agreement for exchange made between this country and Germany in July, 1917. Dr. Vischer is a surgeon in Basle, and does not claim for himself special experience in mental affections, but he has himself spent much time in various prisoners' camps in different countries (he was attached to the Swiss Consulate in London), has conversed with hundreds of prisoners, and learned to know many of them. His experience is therefore first-hand, and he claims that it is important owing to the fact that 4 or 5 million men have been kept in confinement in enemy countries, and that many of them will return with impaired mentality to their homes. Dr. Vischer is well read in his subject and accepts Dr. F. W. Mott's dictum (THE LANCET, Jan. 26th, 1918) that hysteria and severe neurasthenia are seldom seen in prisoners' camps; but he draws a picture of a mentality characteristic of prisoners of war, to which the majority fall victim within two or three months and from which few escape completely. The factors in its causation he considers to be partly the monotonous and scanty food-supply, the absence of fresh air, the circumstances of their incarceration, the loss of personal freedom, and the loneliness; summing up in one sentence the three basal factors as follows—loss of liberty for an unknown period in close company with many others. The result is a continual longing with entire inability to perform. The factor of loneliness in the midst of company he illustrates from writings emanating from various camps. A little poem entitled "Lagereinsamkeit," from Knockaloe, begins with the stanza—

> Kein Plätzchen in der Hütte,
> Kein Fuss breit Platz im Freien,
> Wo du nur auf Sekunden
> Mal könntest einsam sein—

which may be compared with a passage from Gaston Riou's "Journal d'un Simple Soldat," which runs:—

> "..... vivre entre hommes, rien qu'entre hommes, tous les jours, toutes les nuits, cœur à cœur, bec à bec, griffe à griffe, sans activité, sans solitude, sans la compagnie de femmes—c'est autre solitude,—oui, c'est cela le purgatoire!"

And in the midst of this loneliness "the barbed wire draws itself like a red thread" through his whole world of thoughts. Not only so, but it impels him to resistance. The prisoner finds himself obliged to kick against the pricks. He is always on the defensive, and begins to complain not only of the management of the camp, but also of his friends and relatives, and this not only in word but in writing. The camp magazines of all countries

[1] Die Stacheldraht-Krankheit: Beiträge zur Psychologie des Kriegsgefangenen. 1918. Rascher and Cie., Zurich. Fr. 1.60.

show a marked resemblance in this respect. In the German camps the prevailing feeling is one of mistrust, which especially takes the form of suspecting those who bring the post. In camp jargon, the postal officials are supposed to be always "trying it on," which is an inadequate translation of the German "Schiebung." The word constantly recurs in the records of the camp satirists. Briefly, the camp community consists of people who hope and wait together, and in so doing become wearied in mind and soul. Some find outlet in gambling, many in the familiar occupation of "grousing." Rumour plays a large part in camp life. Reports which are not at first actually believed circulate freely, so that the whole camp population may pack their things at night in preparation for a departure on the morrow, of which there was no reasonable prospect. Ruhleben has been described by an inmate as the "City of Futility." Even the best-educated has to struggle to perform mental work of any kind. Concentration becomes ever more difficult. Restlessness sets in, with mental fatigue, on the slightest exertion, whether of mind or body. Lack of memory is a frequent complaint. The depression as it increases involves disinclination to speak, and gradually the full picture develops of what is called "Stacheldraht-Fieber," and familiarly "grauer Vogel," or in French "cafard." Dr. Vischer found many grades of the affection, but is unable to give any idea of the proportion of severe cases. He instances 3 out of 30 in one hut, 50 out of several hundred in one camp. Cases are more marked as well as more numerous among internés than prisoners of war for the reason, Dr. Vischer thinks, that the former are often people who left their homes in order to find a freer existence elsewhere, and are therefore peculiarly intolerant of restraint. His statement is noteworthy that bad and even brutal treatment does not produce the disease, while good treatment does not keep it in check. Even a charming site for the camp is no prophylactic, as those will guess who have had to deal with sick folk kept for long periods away from home in beautiful surroundings. In regard to recovery he can say but little, except that the condition is not cured at once on leaving the camp. When it is in any way highly marked recovery may require a long time. Many of the internés gave him the impression of broken people. An old general who visited a number of his own officers and privates interned in Switzerland frankly admitted that he could not understand them, nor they him. The latter part of Dr. Vischer's monograph is given up to an interesting comparison of barbed-wire disease with other similar conditions. Napoleon in St. Helena suffered from an "irritation nerveuse considérable." The "mentalité grégaire" of isolated military colonies, the mass illusions of seamen becalmed on the equator, the trivial quarrels of polar explorers, the frequent neurasthenia noted in the French maritime service: all these he finds nearly akin. In all may appear the irritability, the ideas of suicide and persecution, the various obsessions, and the desire for solitude and isolation. The polar explorer has the most intimate points of similarity with the prisoner of war, with the great difference that his incarceration is voluntary. Dr. Vischer concludes with an expression of thankfulness at the share which Switzerland has taken in mitigating the prolonged isolation of the war prisoner.

THE MEDICAL SERVICE OF THE ROYAL AIR FORCE.

WE publish in another column a letter from Sir Arbuthnot Lane, Dr. G. A. Sutherland, and Mr. Joynson-Hicks, M.P., calling attention to the announcement made in Parliament last week by Major Baird, Under Secretary of the Air Ministry, in respect of the appointment of the Medical Administrator of the Medical Service of the Royal Air Force. The letter exposes exactly a situation of considerable anxiety. Not a word in it suggests that the appointment has been offered to an officer who has not the proper qualifications, and as a matter of fact the record of the officer in question, Colonel Fell, R.A.M.C., is favourably known. But Sir Arbuthnot Lane and his co-signatories call attention to the fact that no guarantee is forthcoming either from Colonel Fell himself or from Major Baird, speaking for the Royal Air Force, that under Colonel Fell's administration the scientific prospects of the Medical Service of that Force will be maintained in the promising position laid down by the newly devised conditions of the Service. These conditions were published in THE LANCET, Sept. 28th, and were read with high satisfaction by the medical profession as representing an improvement from the scientific point of view upon any terms which have hitherto been offered to the medical profession when engaged on naval, military, civil, or administrative work. Our remarks upon the conditions might well have formed the text for the letter in our columns from Sir Arbuthnot Lane, Dr. Sutherland, and Mr. Joynson-Hicks. The conditions of the Royal Air Force Medical Service, following on the Report of the Watson Cheyne Committee, make proper room for the allocation of all the medical officers of the new Service to occupations for which they are fitted, and secure the promotion by selection of particular men for particular work. To say, as Major Baird did in Parliament, that Colonel Fell will be guided by the principles of the Watson Cheyne Report is not enough. An excellent set of conditions has been devised by a strong Committee, has received the approval of the sister services and scientific laymen; to learn that they may form a guide to the conduct of the Service is to arouse a very natural suspicion that the Report of the Committee is going to be set aside, how, when, and where it may suit the incoming administration. Why can this natural suspicion not be removed?

RECONSTRUCTION IN NEUROLOGY.

OUR present ideas upon biological evolution have resulted in large measure from the work of Darwin and Spencer. Shortly after the publication of their writings workers in all branches of science—zoology, physiology, sociology, clinical medicine, and the rest—began to see the application of the principles of progressive change and evolutionary adaptation to their own particular problems, but until recently little coördination of the results obtained along these various lines of investigation had taken place. Few clinicians, for example, were conversant with the works of Marshall Hall, Balfour, Foster, Lankester, and Gaskell, whilst to laboratory workers the generalisations of Anstie, Laycock, and Hughlings Jackson from cases of disease were almost unknown. In the "seventies" and "eighties" the English school of neurology was still dominated by physiological conceptions, but with the discoveries of motor cerebral localisation and its

implications by Ferrier, Horsley, Gotch, Mott, and others anatomical and structural conceptions gained the upper hand. Now, however, the pendulum is swinging back again, and principles deduced from careful clinical investigations correlated with the findings of experimentalists are taking their proper place. This subtle change in the attitude of the neurologist not only to disease but also to its general effect upon the patient is ably described by Dr. Henry Head in his presidential address before the Neurological Section of the Royal Society of Medicine, which we print on another page. This change, in which Dr. Head has himself played no mean part, really began with the foundation by Michael Foster of the Cambridge School of Physiology. A band of workers whom he collected around him devoted themselves to the problems of nervous activity, but for many years to the bulk of the medical profession their findings remained a closed book. Even now few practitioners are fully aware of the light which the experiments of Gaskell, Sherrington, Anderson, Langley, Dale, Keith Lucas, and others throw upon the every-day problems of general practice; the essential message of Hughlings Jackson's writings in THE LANCET and *Brain* was not intended to have special appeal, but thirty years ago the general audience must have been small. To Jackson the inner meaning of disordered process was of greater importance than the obvious disability. Following him, English neurologists are beginning to see the fundamental importance of the functional adaptation shown in the integrative action of the nervous system and mind, and in dealing with the injuries, diseases, and disorders of the nervous system resulting from the stresses of war, the universal application of this principle has forced itself upon our notice. Nervous, mental, psychological, and sociological problems all illustrate the principles of incomplete adaptation. Dr. W. Aldren Turner, in his paper on the Neuroses and Psychoses of War, published in last week's issue of THE LANCET, stated that all neuroses, whether of the individual or of the nation, are the consequences of a failure of psychological adaptation or readjustment to environmental conditions. Such functional failure of adaptation can only be properly faced when the principles underlying it are kept constantly in view. No static solution of these problems is possible, and no scheme can command success which does not allow of progressive evolutionary change towards more complete adaptation. This principle also has its application in the wider fields of national reconstruction.

BOTULISM DUE TO CANNED VEGETABLES.

THE form of food poisoning known as botulism was first described in Germany, where it was found to be due to infection of meat or fish with the *Bacillus botulinus*, ham or sausage (as the name implies) being the usual source of the poisoning. In the *Journal of the Canadian Medical Association* for October, Captain E. C. Dickson, C.A.M.C., has published an important paper from the Laboratory of Experimental Medicine, Stanford University Medical School, San Francisco, in which he shows that since December, 1913, it has been recognised in the United States that botulism may be due to vegetable foods. In that month, as already recorded in THE LANCET of August 24th, p. 246, an outbreak of food poisoning of the botulinus type occurred at a "Sorority house" at Stanford University, in which 12 persons were poisoned by eating a salad prepared from home-canned beans. It was not proved that the beans were infected with the *B. botulinus*, but a series of experiments were made which showed that the toxin of the bacillus may be formed in mediums prepared from peas, beans, corn, asparagus, artichokes, peaches, pears, apricots, and prunes. Records were then collected of a series of outbreaks in which poisoning was caused by one or other of these vegetables or fruits, in all cases home-canned. Botulism differs from the usual type of food poisoning in that the central nervous system is essentially involved. It is not an infection but an intoxication, being due to a toxin somewhat analogous to the toxins of diphtheria and tetanus, which is formed in the food before it is eaten. It is never formed in the body as the optimum temperature for the bacillus is 24° to 28° C., and the toxin is not formed at 37·5° C. (the normal body temperature). The prevalence of the toxin in American home-canned vegetables and fruits is due to the fact that methods of sterilisation are not sufficient to kill the spores. The common practice is to immerse the filled jar in boiling water in a wash boiler for from two to three hours. But experiments show that emulsions of the spores resist immersion in boiling water for more than two hours. Very few outbreaks have been due to commercially canned vegetables, because in the United States vegetables are sterilised with steam under pressure at a temperature of 240° to 250° C. In all the cases of poisoning the food was not cooked before it was eaten. It has been shown that the toxin is destroyed if heated to the boiling-point, and that contaminated food is safe, so far as botulism is concerned, if cooked before it is eaten. In a number of instances portions of contaminated food have been cooked and eaten without ill-effect, while the remaining portion has been served as a salad and caused fatal poisoning. It appears that food which shows signs of spoilage, and for this very reason may be canned, is particularly dangerous. The process of home canning is not common in this country, which perhaps accounts for immunity from this form of food poisoning.

THE EFFICIENT TEACHING OF NURSING.

Dame Ethel Becher was only voicing the general feeling of the nursing world when, at a recent complimentary luncheon, as matron-in-chief of Queen Alexandra's Imperial Military Service, she spoke of the high ideals which the nurses of this country have always kept before them. It is in the translation of these ideals to actual practice that the difficulty is encountered. At present, apart from the lectures given by the medical staff, instruction in nursing methods is largely of a haphazard character and left to tired ward-sisters and over-burdened matrons, the results naturally being often disappointing to pupil and teacher alike. Matrons and sisters often do not know how to teach because they have not themselves been taught. The appointment of sister-tutors in connexion with training schools would ensure efficient instruction in nursing methods, and the College of Nursing, Ltd., has been enabled to offer through the Nation's Fund for Nurses three studentships, valued at 100 guineas each, in order to facilitate these appointments. Many hospitals and Poor-law infirmaries are prepared to appoint nurse-instructors or

sister-tutors, and it is to be part of the constructive work of the College of Nursing to qualify the trained nurse for these posts. Delay in State registration need not prevent progress in the direction of desirable constructive work. There is ample reason why it would be better to offer these studentships rather than to await the actual end of the war, or the great processes of rearrangement that will follow, yet for the moment prompt action has debarred nurses on active service from competing. The training schools have lost some of their best teachers, and the probationers are already suffering from this loss. The Entrance Examination for the studentships was held at King's College for Women on Sept. 3rd, 1918, and included two papers, one on general knowledge and the other on purely nursing topics. Two of the successful candidates come from a London school, the third from the Royal Infirmary, Manchester. The course at King's College for which the studentships are granted is an experimental one, subject to improvement from year to year. The nurses will derive benefit from working in the College with students of wider outlook, and the contact will help to break down the too cloistered attitude of the nurse's mind. We welcome the institution of these studentships and hope that next year they may be increased. Lady Cowdray has offered a special studentship for Aberdeen nurses.

Professor J. G. Adami, Colonel, C.A.M.C., has been appointed one of the Canadian representatives upon the permanent Inter-Allied Committee for the Treatment of the Disabled Soldier, and is attending the Conference now sitting in Paris.

THE death is announced, at the advanced age of 94 years, of Sir Hermann Weber, who graduated in medicine at the University of Bonn in 1848 and became a Fellow of the Royal College of Physicians of London in 1859. To him we largely owe the beginnings of the modern science of climatotherapy.

THE fourth annual report of the Medical Research Committee of the National Health Insurance has just been issued in the form of a pamphlet of 80 pages (Cd. 8981. Price 4*d*.). The report covers the work of the year ending Sept. 30th, 1918. We are indebted to the Committee for a further summary of work done abroad on the epidemiology and bacteriology of influenza.

A MEMORANDUM ON INFLUENZA

FROM THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

IN view of the alarming and contradictory reports of the present epidemic of influenza that have appeared in the public press, the Royal College of Physicians of London has made the following authoritative statement in the public interest:—

[MEMORANDUM.]

The past few weeks have now afforded sufficient experience to permit some positive statements to be made. Though the epidemic shows signs of abatement in London, it is still severe elsewhere; moreover, its after-effects call for intelligent anticipation.

The present epidemic is virtually world-wide, irrespective of race, community, or calling. Similar world-wide epidemics occurred in 1803, 1833, 1837, 1847, 1890. The long intermission since the last widespread epidemic had already made an early reappearance probable, but the conditions of epidemic prevalence of influenza are too obscure to allow of precise prediction.

This outbreak is essentially identical both in itself and in its complications, including pneumonia, with that of 1890. The disproportionate occurrence of a special symptom, a well-recognised phenomenon in the case of epidemics—as, for example, nose bleeding in the present epidemic—does not invalidate this statement. The present epidemic has no relation to plague, as some have suggested.

Although there can be no question that the virus of influenza is a living organism, and capable of transference from man to man, yet the nature of the virus is still uncertain. It is possibly beyond the present range of microscopic vision. The bacillus discovered by Pfeiffer, commonly known as the influenza bacillus, has in the past been regarded as the probable cause, though on insufficient evidence. There is doubt as to the primary part it plays in the disease, important though it probably is as a secondary infecting agent. Pfeiffer's bacillus, the pneumococcus, and above all in this epidemic the streptococcus, seem to be responsible for most of the fatal complications of influenza.

Infection is conveyed from the sick to the healthy by the secretions of the respiratory surfaces. In coughing, sneezing, and even in loud talking these are transmitted through the air for considerable distances in the form of a fine spray. The channels of reception are normally the nose and throat.

It is manifest that the closer the contact the more readily will this transmission occur; hence the paramount importance of avoiding overcrowding and thronging of every sort, whether in places of public resort, public conveyances, factories, camps, dwelling rooms, or dormitories.

The sum of available evidence favours the belief that the period of incubation is about 48 hours or even somewhat less.

The dangers of influenza are gravely increased by the complications, and much can be done to avoid or to mitigate these. Such complications may develop insidiously, and without previous signs of severe illness.

Carefulness does undoubtedly decrease, and carelessness increase, both morbidity and mortality; it is important, therefore, that the public should have a clear idea of such measures of personal prophylaxis as are available against infection; larger measures of public health, administered by Government or local authorities, stand outside the scope of the present Memorandum. The individual must be taught to realise and acquiesce in his duty to the community.

Well-ventilated airy rooms promote well-being, and to that extent, at any rate, are inimical to infection; draughts are due to unskilful ventilation and are harmful; chilling of the body surface should be prevented by wearing warm clothing out of doors.

Good nourishing food, and enough of it, is desirable; there is no virtue in more than this. War rations are fully adequate to the maintenance of good health, though they may not afford just the particular articles that each fancy demands. Alcoholic excess invites disaster. Within the limits of moderation each person will be wise to maintain unaltered whatever habit experience has proved to be most agreeable to his own health.

The throat should be gargled every four to six hours, if possible, or at least morning and evening, with a disinfectant gargle, of which one of the most potent is a solution of 20 drops of liquor sodæ chlorinatæ in a tumbler of warm water. A solution of common table salt, one teaspoonful to the pint of warm water, is suitable for the nasal passage; a little may be poured into the hollowed palm of the hand and snuffed up the nostrils two or three times a day.

Since we are uncertain of the primary cause of influenza no form of inoculation can be guaranteed to protect against the disease itself. From what we know as to the lack of enduring protection after an attack, it might in any case be assumed that no vaccine could protect for more than a short period. But the chief dangers of influenza lie in its complications, and it is probable that much may be done to mitigate the severity of the affection and to diminish its mortality by raising the resistance of the body against the chief secondary infecting agents. No vaccines should be administered except under competent medical advice.

No drug has as yet been proved to have any specific influence as a preventive of influenza.

At the first feeling of illness or rise of temperature the patient should go to bed at once and summon his medical attendant.

The early stages of an attack are the most infective, but infection may persist throughout the illness, and segregation should be maintained at least till the temperature is normal.

Relapses and complications are much less likely to occur if the patient goes to bed at once and remains there till all fever has gone for two or three days; much harm may be done by getting about too early. Chill and over-exertion during convalescence are fruitful of evil consequences.

The virus of influenza is very easily destroyed, and extensive measures of disinfection are not called for. Expectoration should be received when possible in a glazed receptacle in which is a solution of chloride of lime. Discarded handkerchiefs should be immediately placed in disinfectant, or if of paper burnt.

The liability of the immediate attendants to infection may be materially diminished by avoiding inhalation of the patient's breath, and particularly when he is coughing, sneezing, or talking. A handkerchief should be held before the mouth and the head turned aside during coughing or sneezing. The risk of conveyance of infection by the fingers must be constantly remembered, and the hands should be washed at once after contact with the patient or with mucus from the nose or throat.

Each case must be treated, as occasion demands, under the direction of the medical attendant.

No drug has as yet been proved to have any specific curative effect on influenza, though many are useful in guiding its course and mitigating its symptoms.

The Memorandum closes with the statement that in the uncertainty of our present knowledge considerable hesitation must be felt in advising vaccine treatment as a curative measure. A warning is added that a period of enfeeblement following an attack of influenza should never be disregarded, as it is apt to mask the presence of other morbid conditions.

Correspondence.

"Audi alteram partem."

THE MEDICAL SERVICE OF THE R.A.F.: PRINCIPLES OF PROMOTION.

To the Editor of THE LANCET.

SIR,—Major Baird's statement in the House of Commons on Nov. 4th that the appointment of Director of the Medical Service had been offered to Colonel Fell, who would act on the principles of the Advisory Committee's Report, hardly coincides with the position as we see it at the moment, and the matter is of such vital importance, not merely to the future of the Air Service, but to the whole medical situation throughout the country, that we enture to trouble you with the following remarks.

The Report of the Flying Services Medical Advisory Committee, to give it its full title, was a long and carefully considered document, unanimously passed on Nov. 29th, 1917, not only by the civilian members, but also by the representatives of the Admiralty, the War Office, and the Air Service. Put shortly, the whole object of this Committee in formulating their scheme for an Air Medical Service was that promotion should be by medical efficiency, and not, as in the R.A.M.C., by administrative capacity.

The most important proposal involved the formation of a service in which specialisation and efficiency, assisted by a wise system of competition, would afford to the State a body of expert medical men who would rise in rank independently of the necessity of discarding the practice of their profession in order to assume administrative duties, which system prevails in the existing medical services.

The Report further contemplated the appointment of three Medical Officers for Training, for Air Command, and for Hospital Work, and four officers for the supervision of general pathology, sanitation, statistics, and medical supplies.

We will not trespass upon your space to describe in detail the proposals of the Committee; suffice it to say that in our opinion the ground was laid for a Medical Service superior to that of any existing force.

As part of these proposals a Medical Administrative Committee was instituted in order to assist the Medical Administrator of the Air Force in carrying into effect the principles of the Report. They have devoted nearly a year to this work, which is now to be thrown on one side.

It is known, moreover, that after the war the medical administration of the three Services will in all probability be amalgamated into one Imperial Medical Service, and it is of the highest importance from every point of view that the administration of this united Service should be scientific in the best sense of the term. Moreover, it is more than probable that the new Civilian Medical Service, which will presumably be the outcome of the Ministry of Health, will, in fact must, be founded on either the lines of the R.A.M.C. or the lines of the Air Force Medical Service, and again we suggest that it is of vital importance to such Civilian Service to commence on what we conceive to be the right lines.

Now, however, the work of the Advisory Committee is being undone by the Air Council. The office of Medical Administrator has apparently been offered to Colonel Fell (a gentleman of whose administrative abilities we say nothing, but who, during the war, has occupied himself simply and solely with administration in various areas), with freedom from the control of the Medical Administrative Committee. It is possible that he may work on the principles of the Report, but it is hardly likely, particularly as Major Baird admits that the Administrative Committee has as such been dissolved, and we can find no trace of its retention in an advisory capacity as suggested by the Under-Secretary; in fact, at the last meeting of the Committee on Oct. 21st the chairman stated that the Committee was automatically dissolved and that there would be no further meeting.

Surely the Air Board will not, without consulting the Committee, which took so much pains to lay the proper foundations of the Medical Service, tear up all its work and lose the opportunity of founding a really scientific Medical Service for the new Air Force.—Yours, &c.,

W. ARBUTHNOT LANE, } Members Medical
G. A. SUTHERLAND, } Advisory Committee.
W. JOYNSON-HICKS,
Chairman, Parliamentary Air Committee.

Nov. 7th, 1918.

THE TREATMENT OF INCIPIENT MENTAL DISEASE.

To the Editor of THE LANCET.

SIR,—Among the proposals for reconstruction which are to the fore is one for legalising treatment of persons who are suffering from incipient mental disease. The Board of Control have devoted some space to the subject in their fourth annual report recently issued, where they suggest (amongst other things) the amendment of the present law (1) to enable incipient cases of mental disorder to receive treatment in general or special hospitals, mental institutions, &c., for not more than six months without the necessity for certification under the Lunacy Acts; (2) to permit the establishment at general hospitals of sections for both in- and out-patients for the early diagnosis and treatment of incipient cases; and (3) to extend to public asylums the principle of voluntary admission which now obtains with respect to private asylums.

It does not appear to be generally known that the London County Council has already to some extent anticipated the first and third at least of these suggestions in connexion with its proposed use of the Maudsley Hospital at Denmark Hill. This hospital, originated by the late Dr. Henry Maudsley, towards the erection of which by the Council he generously contributed the sum of £30,000, is designed for the early residential treatment of acute cases of mental disorder and for the provision of advice and treatment for out-patients. It has not yet been used for the purpose intended, for it was taken over by the War Office before the building was completed, and is now being used for treatment of neurasthenic and shell-shock cases arising from military service. In anticipation of its use, however, upon the lines originally laid down, the London County Council, in its General Powers Act, 1915, obtained authority to receive and treat voluntary boarders at the hospital. The powers obtained were somewhat restricted, but they will permit the Council, when the hospital reverts to the use for which it was designed, to receive as patients persons who desire *voluntarily* to submit themselves for treatment. It is the fervent hope of many who are associated with the care and treatment of mental cases that this power, together with the establishment of a clinic at the hospital, will afford means of early treatment, which may avoid the necessity for subsequent certification in many cases, and will further help to spread a general knowledge of mental diseases which is often, for a variety of reasons, not found to-day.

I am, Sir, yours faithfully,

R. J. COOPER,
Chairman of the Asylums and Mental Deficiency Committee of the London County Council.

County Hall, Spring Gardens, London, S.W., Nov. 6th, 1918.

To the Editor of THE LANCET.

SIR,—On Oct. 5th you published a letter of mine dealing with the early diagnosis and treatment of the insane. Judging by private correspondence and conversation which I have had since then, I think I ought to explain in more detail what I intended. I pointed out the difficulties that beset the general practitioner in the diagnosis and treatment of insanity in its early stages. When the reform of lunacy practice comes about I hope that it will be found possible to provide expert assistance for the general practitioner. What I would suggest would be that in any case of suspected insanity the practitioner in attendance should have the right of calling in an appointed specialist, just in the same way as he can now do in the case of suspected tuberculous disease. In this case it should be arranged that the medical attendant would actually meet the specialist in consultation. The medical attendant would then have the advantage of a really useful clinical lecture, and the advantage would extend not only to the patient, but to the expert who would often see what he now seldom has an opportunity of seeing—the patient in the early stage of his illness in his usual and ordinary surroundings; and he could not fail to gather useful information as to the cause of his attack and guidance for treatment, which must vary with the circumstances of different patients.

I do not see what other chance there is for a specialist to get these patients at this stage at a clinic where he could demonstrate their condition to the practitioners who are anxious to be taught. It has always seemed to me that, in a very large proportion of diseases, a clinic in a patient's natural and usual surroundings must have a great advantage

over any other form of teaching. A question might arise as to who should be the expert. The answer to this is not the intention of my letter, but I would suggest that the most suitable person to call in would be the medical superintendent of the county asylum of the area in which the patient is residing. It would be impossible for any local authority to suspect him of having any sordid interest in any treatment he might recommend.—I am, Sir, yours faithfully,

Bradford-on-Avon, Oct. 28th, 1918. CHAS. E. S. FLEMMING.

THE VISITS OF CONSULTANT PHYSICIANS TO PRIVATE SERVICE LUNACY PATIENTS.

To the Editor of THE LANCET.

SIR,—I have been in practice now for 45 years and have done consulting work in mental medicine for over 32 years. During the whole of that period I have seen many patients at the request of their relatives in public asylums, registered hospitals, licensed houses, private care, and in many nursing homes, and until this case my visits have never been opposed but rather welcomed, and I can look back to many very happy hours spent in some of these institutions. I fear from what I hear from several medical men this has not always been the case in their experience.

Not long ago I was asked by a brother of a private service patient in a county asylum to visit and report on his brother's case. I agreed to make this consultative visit and asked him to write to the medical superintendent of the said institution asking for permission for such visit. I also wrote asking the medical superintendent for permission to visit this patient. I received a letter from the medical superintendent stating that such a visit of an outside practitioner to any patient in his asylum would be creating a precedent and that he must refuse permission. I at once pointed out Sec. 47 of the Lunacy Act which dealt with this question and also wrote to the Board of Control. The brother of the patient wrote to the Board also, pointing out the same section, and referred to the report of the Select Committee on admission of friends, relatives, and medical men to patients in institutions for the insane. The Board of Control refused to intervene on the ground that it would create a precedent for an outside practitioner to visit any patient in a public asylum. To this a solicitor replied, saying that unless an order was given for my visit under Sec. 47 of the Act he should immediately apply for a mandamus. A similar request from the wife of the patient was enclosed. By return of post an order for my visit was sent. I wrote to the medical superintendent, telling him the day and time I was coming down, and asking him to let me see the entries in the case-books and the certificates upon which the patient was received as a private service patient. I also asked if he would kindly tell me the best means of getting quickly from the railway to the asylum. To this letter I received no reply. I arrived at the asylum at about the time stated in my letter, and was told by the head attendant that he had orders to allow me to see the patient. I asked that I might first see the entries in the case-book *re* the case, and also the certificates upon which he was received. His answer was that he had orders not to show me these. I found the patient in bed. I asked why he was in bed, and was told, "To see you." I examined him, and all I could get from him was that he wanted to get back to his wife and family, and to work for them; that he had tried to commit suicide when in a hospital at Cambridge, and that he felt he was buried alive. I then asked several questions of the attendant in charge, who was unable to reply to them. The medical officer in attendance on the patient refused to see me.

The solicitor then wrote to the Board of Control, telling them what had happened and asking for another order with special instructions that I was to see the entries in the case-book and the certificates in respect of the patient, and some medical man. To this letter the Board of Control answered that I had already visited the patient and that there was no reason for granting another order. The matter is now before counsel as to the next step to be taken.

I admit that the Board of Control have the right to make the order for such visits as I proposed, and that they reserve that right lest undesirable persons should seek admission to patients in asylums, but I hardly see how a medical consultant can be considered an undesirable visitor.

I am, Sir, yours faithfully.

LIONEL A. WEATHERLY, M.D.

Winsley House, Bournemouth, Nov. 7th, 1918.

PHTHISIS IN FACTORY AND WORKSHOP.

To the Editor of THE LANCET.

SIR,—As chairman of the Subcommittee on Phthisis in Relation to Occupations appointed by the Medical Research Committee, I would point out that Dr. Benjamin Moore's article in your issue of Nov. 9th was a contribution to the work which is being carried out by this committee of the Medical Research Committee, which was started in 1914 under the chairmanship of Dr. Addison, and the members of which now are Dr. Brownlee, Professor W. Bulloch, Dr. Edgar Collis, Sir Walter Fletcher, Captain Major Greenwood, Dr. Benjamin Moore, and Dr. Leonard Hill. A report of the Subcommittee on the Boot and Shoe Industry was issued by the Medical Research Committee in 1914, and therein the idea of the factory sanatorium was put forward—an idea which arose out of a conversation between Dr. Edgar Collis and Dr. Eslemont. In a paper published in the Proceedings of the Tuberculosis Conference at Leeds in 1913 Dr. Edgar Collis pointed out that the incidence of tuberculosis among adult males, as compared with that of females, suggested an industrial influence, and that the lack of this difference for males and females in agricultural areas supported this suggestion. Dr. Brownlee, in a report recently published by the Medical Research Committee, further and extensively examined the incidence of phthisis in rural and industrial districts. Dr. Benjamin Moore now concentrates attention on, and still further elucidates, this important matter.

I am, Sir, yours faithfully,

Loughton, Nov. 11th, 1918. LEONARD HILL.

DISPENSARY SUPERVISION IN PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Dr. Geo. Jessel's paper on the above subject in your issue of Oct. 26th raises the very important question, Are the tuberculosis dispensaries really doing anything to reduce tuberculosis? Dr. Jessel does not, naturally, attempt to answer this question, but only claims that, in his experience, "dispensary supervision has resulted in a considerable measure of success." What may be the kind and degree of this success is not made clear in his paper, as his own figures show that, with the same staff of nurses, the number of cases under observation increased from 1164 in 1916 to 1615 in 1917. That this increase cannot be attributed to greater accuracy in notification Dr. Jessel has himself pointed out.

Dr. Jessel assumes that the possession of a separate bedroom is synonymous with "complete isolation," and from this concludes that "home treatment is thus possible and safe in about 70 per cent. of cases occurring in the industrial areas of Lancashire at any rate." Unfortunately, a long and intimate acquaintance with the industrial conditions of Lancashire has convinced me that this assumption is entirely fallacious. A consumptive who is not bedridden will, of course, make his way to the fire in the "living-room," and when he becomes bedridden the very warmth of Lancashire people's family affection will effectually prevent his being left in "splendid isolation."

The fact has to be faced that vital statistics show no decline whatever either in the incidence of tuberculosis or the mortality from this cause, and if, as Sir James Barr asserts, our present methods are not only futile but mischievous, it will not do to hide our heads in the sand of such phrases as "studying every patient in relation to his environment." Dr. Jessel emphasises the importance of consultation with the "general practitioners," and it is satisfactory to learn that the profession is thus giving a fair trial to the system. I have no doubt that such consultation with experienced practitioners must be of value to officials who, prior to the passing of the Insurance Act, were themselves, as a rule, either general practitioners or medical students.

I am, Sir, yours faithfully,

FRED. E. WYNNE,

Medical Officer of Health, Wigan; President, N.W. Branch, Society of Medical Officers of Health.

Nov. 7th, 1918.

THE Royal Dental Hospital, Leicester-square, has received a donation of £300 from the Alexandra Day Committee, being the amount allocated to this hospital from Her Majesty Queen Alexandra's Special List.

Obituary.

LIEUTENANT-COLONEL E. F. HARRISON, C.M.G.

IF the death of Colonel Harrison had occurred nine months ago his loss would have been a national disaster. As it is, worn out by unremitting toil of the last three and a half years, he has died in the moment of the victory in the winning of which he played so great a part. Only a few people, and the public not at all, have any idea of the immense debt that the country owes to Harrison. They have dimly apprehended the fact that very soon after the introduction of gas warfare the British established a preëminence in methods of defence which has been retained up to the end. In this work of gas defence Harrison was the guiding brain; not only were the methods employed for the greater part his invention, but the enormous organisation necessary for their utilisation by our troops was due to his business capacity and brain power. It is impossible to reckon the thousands of lives which have been saved by his work; without this we might more than once have met with disaster under the influence of the new chemical poisons continually being introduced by our enemies. During practically the whole of this time Harrison was compelled to work in a subordinate position. Not till a week before his death, in the fifth year of the war, had he been appointed Controller of Gas Services. If this had happened only a year ago we should not have remained hopelessly behind the Germans in our gas offensive, and under Harrison's direction we might have achieved as notable a success in the offensive use of gas as we have throughout enjoyed in the defence against gas.

Harrison was a man of acute brain, and with a wide knowledge of his subject, endowed with the spirit of an investigator, he would have made a name for himself in pure chemistry had he elected to apply himself to research. Previous to the war, however, he had been engaged in work as an analytical chemist and was chiefly known to the public as the author of two works on "Secret Remedies" which had been published by the British Medical Association. His training, however, had made him peculiarly fitted for the task to which he was called in the nation's hour of trial. He had acquired technical skill, methodical habits of work, a great knowledge of chemical material, and a wide acquaintance with chemical processes and with sources of supply. Although endowed with indomitable resolution, he was modest and unassuming in manner, so that he was able to get things done without giving offence to those whose deficiencies he had to supplement. This characteristic of his was invaluable to him in his dealings with the War Office. When met by the obstructions of slackness and incompetence in other departments he slowly gained his way by steady, quiet persistence. Hindered and again in the organisation of his department, and in obtaining the necessary personnel as well as the proper rank for them which would have enabled him to delegate part of his arduous duties, he got the essential work done by himself doing the work of two men. It is hardly to be wondered at that, when the stroke came in the form of an attack of influenza, it found his reserve forces exhausted and that the worn-out machine succumbed.

Throughout his work Harrison was actuated by the purest patriotism, and there was never any trace of self-seeking or desire for honours. As soon as he recognised that the war was going to last some years he threw up his private work and enlisted as a private in May, 1915. With the formation of the Chemical Corps he was made a corporal in this corps. Almost immediately afterwards—in July, 1915—he was given a commission and appointed to work with a number of other chemists in the R.A.M. College. Here his first duty was to assist in the experiments being made at that time on the improvement of the gas helmet. In September he was appointed to act as head of the chemical department, and 12 months later was made officer in charge of the Anti-gas Department. When he came to the R.A.M. College the gas helmet had been recently introduced. Harrison, while working on the improvement of this helmet and at securing some standard of excellence in its manufacture, was continually striving to obtain a means of protection, not only against phosgene, chlorine, and similar gases, but also against all possible poisonous gas. The first result of his endeavours was the production of the large box respirator, often spoken of as "Harrison's Tower," which was intended only for the use of the special Chemical Corps. The increasing concentration in the phosgene used by the enemy and the introduction of new poisonous gases made it evident that an equally complete protection would have to be provided for all the troops, and experiments carried out by Harrison and under his guidance finally led to the adoption of the present type of box respirator. Having settled upon the type, it was necessary to ensure the manufacture, not only of the chemicals, but also of the multifarious parts of each respirator on an enormous scale. The chemical protection involved first the working out of a method for making permanganate granules. Then it was necessary to discover the best methods of preparing charcoal, the absorptive powers of which may be altered 20 times according to the method of preparation. At first these substances were made by private firms, but their resources not proving adequate to the enormously increasing demands Harrison organised large factories where the process of manufacture was carried out under his direction. Every one of the parts had to be perfect, since any defect might lead to the loss of life of the soldier. Some idea of the magnitude of the task may be gleaned from the fact that, in addition to 15,000 workpeople directly under the Anti-gas Department, there were 120,000 engaged in the manufacture of box respirators. The perfection of the organisation and the foresight employed can be gauged from the fact that at no time did Harrison fail to respond to any increased demand, however unexpected. When the Americans failed to turn out, as they had expected, sufficient box respirators in time to equip their troops Harrison was able to supply all deficiencies. In the spring of this year there was much anxiety lest the Italian Army should be knocked out by a gas attack similar to that which initiated the disaster at Caporetto. A sudden resolution was adopted to equip the Italian Army with the British respirator, and within one month Harrison furnished the Army with a million of these respirators.

Harrison had the satisfaction of the consciousness of work well done. Though he was the driving brain and force of the whole organisation of gas defence, he had only received the rank of Lieutenant-Colonel, and shared the honour of a C.M.G. with a host of mediocrities. And yet his part in gaining our complete victory has been not inferior to that of any general in the field It is to be feared that, because he worked out of sight and because he was not a professional soldier, his great services may be forgotten. They will, however, always rank high in the memory of his friends and fellow workers, and in the proud remembrance of his children.

E. H. STARLING.

MEREDITH TOWNSEND, M.R.C.S., L.S.A.,

LATE MASTER OF THE APOTHECARIES' SOCIETY.

WE regret to announce the death, from pneumonia following influenza, of Mr. Meredith Townsend, late Master of the Apothecaries' Society of London, which occurred on Nov. 5th, at Barnes, in the house of Dr. M. Milton Townsend, his son. Mr. Meredith Townsend was born in 1847, the son of Dr. Henry Meredith Townsend, who practised in Clapham. He entered the medical school of St. Thomas's Hospital on leaving school, and qualified as M.R.C.S.Eng., L.S.A., in 1868. Going immediately into practice in the south-west of London, he was for no less than 50 years medical officer to the Kensington guardians. He resided for many years in Upper Phillimore-place, and for 35 years he was surgeon to the F Division of the Metropolitan Police and public vaccinator for Kensington. In 1914–15 he was Master of the Worshipful Society of Apothecaries, and at the time of his death represented that corporation on the General Medical Council. He was also a very active member of the executive committee of the Belgian Doctors' and Pharmacists' Relief Fund, and through his energy the Apothecaries' Society allowed their premises to become a depôt for surgical instruments which were distributed among the Belgian medical men.

Mr. Townsend only retired formally from medical practice a few weeks before his death. His widow and ten children, four sons and six daughters, all survive him.

Dr. O. Veraguth has been appointed Director of the Clinic for Physical Therapeutics in Zurich with the title of professor.

The War and After.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Died of Wounds.

Capt. J. J. Tough, R.A.M.C., qualified at Edinburgh in 1910. He held appointments at the Sick Children's Hospital and at the Royal Infirmary, Edinburgh, and prior to joining the R.A.M.C. was in practice at Accrington.
Lieut. D. W. Sinclair, R.A.M.C., attached R. Scots.
Capt. H. Dunlop, Canadian A.M.C.

Previously Reported Wounded, now Reported Died of Wounds.

Capt. N. H. Little, Canadian A.M.C.
Capt. H. P. Whitworth, R.A.M.C., attached Scottish Borderers, was a student at Guy's Hospital, London, and qualified in 1914.

Died.

Major D. Burrows, R.A.M.C., qualified at Glasgow in 1902. Prior to joining the R.A.M.C. he was in practice in Sierra Leone, where he was provincial medical officer. He died at the War Hospital, Chester.
Lieut.-Col. J. T. McEntire, R.A.M.C., qualified at Dublin in 1903 and joined the R.A.M.C. shortly afterwards.
Capt. L. T. McClintock, R.A.M.C., qualified at Edinburgh in 1901 and held an appointment at the Salop Infirmary. At the time of joining the R.A.M.C. he was in practice at Loddon, Norfolk, where he was medical officer to the Red Cross Hospital and to the workhouse, and was also public vaccinator for the district.
Capt. C. H. V. Smith, Canadian A.M.C.

Wounded.

Capt. E. Rogerson, R.A.M.C., attached K.R. Rifles.
Col. H. N. Dunn, C.M.G., D.S.O., R.A.M.C.
Capt. T. L. Bomford, I.M.S.
Capt. L. H. Fraser, Canadian A.M.C.
Capt. J. Rowland, R.A.M.C.
Capt. A. R. Hagerman, Canadian A.M.C.
Capt. M. W. Thomas, Canadian A.M.C.
Surg. D. L. Baxter, R.N.
Capt. W. G. Shakespeare, R.A.M.C.
Capt. E. T. Curran, Canadian A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Lieut. J. E. Stephen, The Buffs, attached Indian Infantry, killed in action, only son of Temp. Lieut.-Col. G. N. Stephen, R.A.M.C., of the staff of the *British Medical Journal*.
Lieut. H. A. Edridge-Green, R.W.F., attached R.A.F., died at Dover, only son of Dr. F. W. Edridge-Green, of Willesden, London, N.W.
Lieut.-Col. A. Thorp, D.S.O., R.A., killed in action, eldest surviving son of the late Dr. C. W. Thorp, of Todmorden, Lancs.
Acting Major E. H. S. Chapman, Indian Cavalry, died abroad of influenza, only son of Dr. H. F. Chapman, of Richmond, Surrey.
Capt. C. B. Girvin, Royal Dublin Fusiliers, died in camp in Yorkshire, only son of Col. J. Girvin, A.M.S.
Second Lieut. S. C. L. Guilding, R.F.A., died abroad of influenza, only son of Dr. L. M. Guilding, of Reading.
Lieut. W. Adam, Yeomanry, attached Machine Gun Corps, died from influenza, following on wounds received in action, third son of the late Dr. J. Adam.
Second Lieut. T. H. Hammond, M.G.C., killed in action, only son of the late Dr. T. Hammond, H.M. Prison Service, Liverpool.
Lieut. H. T. P. Moore, M.C., R.F.A., killed in action, only son of Lieut.-Col. E. J. Moore, C.B., R.A.M.C., of Blackheath, London.
Capt. H. P. D. Helm, R.A.F., late Border Regiment, eldest son of Dr. R. D. Helm.
Lieut. L. T. D. Stables, Northamptonshire Regiment, killed in action, second son of Dr. W. W. G. Stables, of Upper Norwood, London, S.E.

REPATRIATED MEDICAL OFFICERS.

The following members of the R.A.M.C., who were prisoners in Germany, have now reached England :—

Capt. W. Arnott; Capt. M. T. Ascough, M.C.; Capt. A. G. Bisset, M.C.; Capt. T. Blackwood; Lieut. A. Boyle; Capt. H. Crassweller; Capt. C. R. Crowther; Capt. S. J. Darke, M.C.; Capt. W. F. Dunlop; Capt. J. G. Elder; Capt. M. S. Esler; Capt. C. W. Fowler, M.C.; Capt. D. Gillespie; Capt. L. S. H. Glanville; Lieut.-Col. A. C. H. Gray; Capt. P. H. Green; Capt. E. H. Griffin, D.S.O., M.C.; Capt. R. M. Handfield Jones, M.J.; Capt. W. G. Harnett; Capt. G. F. P. Heathcote, M.C.; Capt. A. C. Hepburn; Capt. R. W. Hodgson Jones; Capt. C. E. P. Husband; Capt. W. J. Isbister, M.C.; Capt. G. L. Jones; Lieut. J. W. Jones; Lieut.-Col. H. B. Kelly, D.S.O.; Major J. Kennedy; Major J. S. McConnachie, M.C.; Lieut. A. M. McCormick; Capt. J. M. Mackenzie, M.C., Capt. D. Macnair; Capt. H. C. Martin; Capt. W. T. P. Meade-King; Capt. C. A. Meaden; Capt. C. Mearns; Lieut. O Le F. Milburn; Col. A. Milne-Thompson, C.M.G., M.C.; Capt. J. C. Muir; Capt. F. C. Nicholls, M.C.; Capt. W. O Brian; Lieut. F. S. O'Dowd; Capt. R. W. Pearson, M.C.; Lieut. E. S. Phillips; Capt. S. V. P. Pill; Lieut. F. J. Power; Capt. W. A. Rees; Lieut. D. Robertson; Capt. J. Ross, M.C.; Lieut. W. H. Rowden; Capt. A. B. Simpson; Capt. F. P. Smith; Capt. R. M. Soames; Capt. J. Sullivan; Capt. J. Tate; Capt. F. R. Tickle; Capt. G. Torrence, M.C.; Capt. W. Warburton; Capt. D. A. Wilson; Capt. C. Witts, M.C.

THE HONOURS LIST.

The following awards to medical officers are announced. All are members of the R.A.M.C. unless otherwise stated :—

Bar to the Distinguished Service Order.

Capt. (acting Lieut.-Col.) GEORGE PRITCHARD TAYLOR, D.S.O., M.C.—For conspicuous gallantry and devotion to duty in arranging for clearing the wounded in the forward area during an attack. He personally reconnoitred the whole area and arranged relay posts for the bearers, freely exposing himself in the front line to heavy fire while searching for wounded. Throughout the operations the wounded, thanks to his splendid zeal and devotion to duty, were cleared with remarkable rapidity.

Distinguished Service Order.

Major FREDERICK NEILL LE MESSURIER, Australian A.M.C.—For conspicuous gallantry and devotion to duty. He was continuously in the front line during both stages of an attack, assisting in collecting and arranging for the prompt disposal of the wounded to the rear. He behaved splendidly, and by his untiring efforts and a complete disregard of his own safety he greatly assisted the brigade throughout.

Lieut.-Col. ARTHUR MITCHELL WILSON, Australian A.M.C.—For conspicuous gallantry and devotion to duty during an attack while in charge of bearer divisions. He followed close on the heels of the infantry into captured villages, establishing bearer-posts, and effected the evacuation of the wounded with remarkable rapidity. He worked splendidly throughout, and by his untiring devotion to duty saved a number of lives.

Second Bar to the Military Cross.

Capt. JAMES ALWIN COLVILLE SCOTT, M.C.—For conspicuous gallantry and devotion to duty. He attended to a very large number of wounded in the open, under heavy fire from machine-guns and artillery, and it was largely owing to his skilful arrangements that the casualties were rapidly evacuated. Later on, while performing these duties, he was severely wounded by shell fire. Throughout the whole of the operations his courage and his example of self-sacrifice were worthy of high praise.

Bar to the Military Cross.

Capt. FRANK WILLIAM FAY, M.C., Australian A.M.C.—For conspicuous gallantry and devotion to duty during an attack. He was in charge of motor ambulances, and before moving them forward he reconnoitred the roads at considerable risk in his car. He remained on duty continuously for four days, exploring each route and opening up new tracks for each successive advance. By his untiring zeal and devotion to duty he enabled the evacuation of the wounded of two divisions to be smoothly continued.

Temp. Capt. ARTHUR WILMOT RAYMOND, M.C.—For conspicuous gallantry and devotion to duty. Hearing that a number of wounded men were on an exposed ridge in front, he went forward with his stretcher party, and, in spite of heavy machine-gun fire, dressed and evacuated them all. This incident was typical of his spirit, for throughout operations he displayed magnificent courage.

Capt. ALEXANDER FRAZER WILSON, M.C.—For conspicuous gallantry and devotion to duty. He attended to the wounded of a party which was caught in a sudden barrage of enemy high-explosive and gas shells, working in the open under heavy fire. He succeeded in dressing their wounds and evacuating them to hospital. His coolness and disregard of his own safety were worthy of great praise.

Military Cross.

Temp. Capt. LEO BLAKE.—During operations in connexion with a counter-attack he displayed great courage and skill in attending to the wounded at all hours of the day and night.

Temp. Capt. FERGUSON FITTON CARR-HARRIS, D.S.O.—For conspicuous gallantry and devotion to duty during an attack. He attended the wounded under heavy fire and organised bearer parties. It was due to his fine example under most difficult conditions that a large number of wounded were evacuated from "No Man's Land."

Temp. Capt. FRANCIS WILLIAM CLARK.—He dressed the wounded continually by day and by night, although his aid-post had no cover except small banks and he was constantly under heavy shell fire. His cheerful devotion to duty was a splendid example to all.

Temp. Capt. PERCY SELWYN CLARKE.—For conspicuous gallantry and devotion to duty. After an unsuccessful attack he went out into "No Man's Land" and attended to many wounded, being exposed to heavy shell and machine-gun fire the whole time. His courage and coolness were a fine example to the stretcher-bearers working under him, and encouraged them in their difficult and dangerous task.

Capt. ELMER JOHN DICKINSON, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. He attended to the wounded, both our own and those of our Allies, in a first aid post close to the enemy lines under heavy fire and aircraft attacks. On two occasions enemy aircraft flying very low fired into the post, breaking the medicine bottles and causing casualties. He behaved with great coolness and courage, inspiring the men around him and keeping up the spirits of the wounded by his example.

Lieut. WILLIAM ALDRIDGE FRASER.—For marked courage and untiring zeal in carrying out his duties under heavy artillery and machine-gun fire. He inspired all his staff by his energy in organising parties to bring in wounded, thereby saving many lives.

Temp. Capt. JOHN WILLIAMSON FREW.—For conspicuous gallantry and devotion to duty. During five days' hard fighting he was indefatigable in attending to the wounded, leading his bearers forward under heavy fire to the regimental aid-posts, arranging for the evacuation of casualties and maintaining the supply of medical necessaries. His example of disregard of danger greatly encouraged his bearers, and his efforts undoubtedly saved many lives.

Temp. Capt. FREDERICK WAISTELL HIRD.—For conspicuous gallantry and devotion to duty. He remained for two and a half days in a village that was being heavily shelled and many houses of which were in flames, and attended to a very large number of wounded from our own and Allied troops. When his aid-post was set on fire he was indefatigable in his efforts to remove the wounded to a safer place. The excellent manner in which he organised stretcher parties under heavy fire undoubtedly saved many lives, and he set a splendid example to all who were working with him.

Capt. WILLIAM JOSEPH LACY-HICKEY.—For conspicuous gallantry and devotion to duty. He worked for two days and two nights practically without sleep attending to the wounded in the field and organising stretcher parties to evacuate the casualties. His work was carried out under the most difficult conditions, and he was under heavy fire the whole time. He set a very fine example of courage and endurance.

Capt. ALGERNON GEORGE ROWLEY LILFORD, Australian A.M.C.—For conspicuous gallantry and devotion to duty. He remained at his post under gas-shell and H.E. bombardment which exploded gas shells near by. His cool example and energy caused the successful evacuation of patients and saved many lives.

Lieut. GERALD ESMOND MACALEVEY.—For great gallantry and resource in evacuating casualties from rear aid-posts under heavy artillery and machine gun fire. Though frequently forced to move on account of hostile fire, he never lost touch with any of them, and it was entirely due to his untiring devotion that all the casualties were safely cleared.

Capt. DONALD WALTER McCREDIE, Australian A.M.C.—For conspicuous gallantry during an advance. His battalion was practically isolated for two days, during which he tended wounded under fire. He continually crossed machine-gun-swept spaces, after stretcher-bearers had been shot down, to attend wounded. Throughout he showed untiring energy and devotion to duty, and by his fine conduct saved many lives.

Capt. JOHN CLARK McCULLOUGH, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. Under heavy shell fire, and at great personal risk, this officer continued to attend to the wounded of his own and other units until he himself was seriously wounded. On previous occasions his fine work has resulted in the saving of many lives.

Capt. (acting Major) GEORGE MORTIMER McGILLIVRAY.—For conspicuous gallantry and initiative during an attack. As officer in charge of bearers, he personally visited all regimental aid-posts and maintained a continuous evacuation of casualties. He also, under heavy fire, led a bearer party to clear a wood of wounded. He behaved splendidly and saved a large number of lives.

Capt. MALCOLM ARCHIBALD McKECHNIE, Canadian A.M.C.—For conspicuous gallantry and devotion to duty. He worked with untiring perseverance in evacuating the wounded from the field of action, under heavy fire, until he was seriously wounded himself. It was largely due to his efforts and self-sacrifice that the casualties were so successfully and rapidly evacuated from the area.

Temp. Capt. JAMES FRANKLIN McLAY.—For great courage and devotion to duty in tending to the wounded under heavy shell fire. His conduct was worthy of the highest praise.

Temp. Capt. MICHAEL MURPHY.—For conspicuous gallantry and devotion to duty during an attack. He worked continuously for 36 hours attending the wounded under heavy fire and evacuated a large number of cases. It was due to his splendid energy that the evacuation of the wounded was so successfully carried out.

Capt. JOHN MILLIE PRINGLE.—For conspicuous gallantry and devotion to duty. He attended to the many casualties of two battalions, working in the open under heavy fire for 36 hours without rest. During 10 days' hard fighting he was untiring in his efforts, and it was very largely due to his excellent organisation in one locality that the wounded of five battalions were successfully evacuated. He set a splendid example.

Temp Capt. DANIEL FALCONER RIDDELL.—For conspicuous gallantry and devotion to duty in tending to the wounded under trying conditions. His skill and coolness under fire undoubtedly saved many lives.

Temp. Capt. (acting Major) GAVIN STIELL.—For conspicuous gallantry and devotion to duty. He went with a party of volunteers to an Allied field artillery position which was being heavily shelled, the ammunition also of the dump in the vicinity exploding, as it was on fire, and superintended the dressing and removal of the casualties. He was quite regardless of his own safety, and worked with an energy and determination that undoubtedly enabled the rapid evacuation of the wounded to be completed. He was eventually wounded himself.

Temp. Capt. DENNIS JEFFCOTT STOKES.—After a shell had burst in his dug-out, killing or wounding all those present, he continued without any hesitation to dress the wounded, notwithstanding his exposed position and the enemy artillery fire. His cheerfulness and courage were instrumental in saving many lives.

Temp. Capt. WILLIAM HENRY SUTCLIFFE.—For conspicuous gallantry when acting as ambulance bearer officer. He superintended the clearing of wounded under heavy fire, and successfully evacuated all casualties from the posts under very trying conditions. Though several of his stretcher-bearers were wounded, he kept in constant touch with the units in the line. His untiring devotion was a splendid example to the men.

Temp. Capt. JOHN CHARLES WOOTON.—He attended to the wounded throughout the day, in spite of gas and heavy shell fire. On one occasion the roof of the aid post was blown in on the top of him. Later, when his aid-post was the furthest forward of any, he dealt with casualties under constant fire. His cheerfulness and confidence were an inspiring example to all.

Bar to the Distinguished Service Cross.

Surgeon ALFRED ROBINSON MACMULLIN, D.S.C., R.N.—For services with the 63rd (Royal Naval) Division in France. He worked unceasingly day and night for three days to succour the wounded. Times without number, when the enemy shelling and machine-gun fire was at its worst, he walked about in the most exposed places attending to the wounded, being utterly indifferent to his own safety. The result was that the lives of many men were saved who might otherwise have been blown to pieces where they lay. Throughout the whole of the operations his unflinching bravery won the admiration of all who saw him.

THE CONTRIBUTIONS TO RED CROSS.

M. Cambon, the French Ambassador, gave his support last week to the continued claim of the Red Cross upon the generosity of the nation. The occasion was the handing over to the French Red Cross by the Lord Mayor of London of a cheque for £355,530 collected on "France's Day." The most difficult time in France, M. Cambon said, will be after the conclusion of peace, because there will then be a very expensive liquidation. Crowds of repatriated men, mutilated and invalid, will return from Germany, and France will have to care for a great number of cripples, of blind men, and of needy people of every kind. M. Cambon welcomed the comradeship of charity which has been established between the women of France and of England, and drew a picture of women in their homes teaching French children to love England and English children to love France.

MEDICAL DEMOBILISATION.

Many of the surgeons in the Royal Naval Volunteer Reserve and medical officers of the Special Reserve and Territorial Forces have served away from the area of their practices since the beginning of the war, and the Central Medical War Committee has made a recommendation that all such who were engaged in private practice at the time of mobilisation should be released before other medical officers serving temporarily with the Forces. A resolution to this effect has been forwarded to the Ministry of National Service for transmission to the Interdepartmental Committee on Demobilisation, the Ministry itself endorsing the principle. Further, the Army Medical Department has agreed that Territorial and Special Reserve medical officers who have served since the beginning of the war should be released first from the Army, and that temporarily commissioned R.A.M.C. officers who have served longest should have the first claim for early repatriation, while those who have qualified since the war should be withdrawn from the Army last.

URBAN VITAL STATISTICS.

(Week ended Nov. 9th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had increased from 11·4 to 43·0 in the six preceding weeks, further rose to 43·8 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 55·5 per 1000, and coincided with that recorded in the previous week; among the remaining towns the rates ranged from 15·7 in Carlisle, 16·2 in Exeter, and 16·3 in Rochdale, to 63·8 in Swindon, 65·8 in Cambridge, 71·0 in Gillingham, 74·6 in West Ham, and 75·9 in Sheffield. The principal epidemic diseases caused 198 deaths, which corresponded to an annual rate of 0·6 per 1000, and included 57 from diphtheria, 52 from infantile diarrhœa, 35 from measles, 32 from whooping-cough, 16 from scarlet fever, and 6 from enteric fever. The deaths from influenza numbered 7560 or 148 above those recorded in the previous week, and included 2433 in London, 402 in Sheffield, 247 in Leeds 223 in West Ham, 187 in Birmingham, 186 in Bristol, and 168 in Hull. The 1197 cases of scarlet fever and 1155 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 4 and 11 below the respective numbers remaining at the end of the previous week. The causes of 75 deaths in the 96 towns were uncertified, of which 10 were registered in Birmingham and in Liverpool, 7 in Nottingham, 5 in Stoke-on-Trent, and 4 in London.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 10·6 to 30·5 in the eight preceding weeks, fell to 27·0 per 1000. Of the 1244 deaths from all causes, 87 were classified to influenza, which was also stated as a contributory cause in 447 deaths classified to other diseases; in the previous week these numbers were 66 and 493 respectively. The 410 deaths in Glasgow corresponded to an annual rate of 19·2 per 1000, and included 4 from diphtheria, 3 from whooping-cough, and 1 each from enteric fever and infantile diarrhœa. The 235 deaths in Edinburgh were equal to a rate of 46·2 per 1000, and included 2 each from scarlet fever and infantile diarrhœa, and 1 from whooping-cough.

Irish Towns.—The 459 deaths in Dublin corresponded to an annual rate of 60·0, or 5·5 per 1000 below that recorded in the previous week, and included 204 from influenza, 5 from infantile diarrhœa, 3 from diphtheria, and 1 each from scarlet fever and whooping-cough. The 256 deaths in Belfast were equal to a rate of 34·0 per 1000, and included 2 from infantile diarrhœa.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—M. Girgis (Sect. I.), Univ. Coll. Hosp.; O. Halstead (Sects. I. and II.), Guy's Hosp.; W. H. Haupt (Sect. II.), George Washington Univ.; D. Menzies (Sect. I.), St. Mary's Hosp.; G. E. Spero (Sect. I.), London Hosp.; and T. C. Stephen (Sects. I. and II.), Manchester.

Medicine.—M. Ibrahim (Sect. I.), Middlesex Hosp.; and T. A. Jordan (Sect. I.), Manchester.

Forensic Medicine.—C. R. Corfield, Manchester; I. R. Florence, Guy's Hosp.; H. B. Hyde, Middlesex Hosp.; G. F. Smith and T. C. Stephen, Manchester; and J. L. Walker, Glasgow and Univ. Coll. Hosp.

Midwifery.—G. M. Beaven, St. George's Hosp.; C. R. Corfield, Manchester; H. D. L. Jones, St. Mary's Hosp.; and S. H. Robinson, Guy's Hosp.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: O. Halstead, W. H. Haupt, and T. C. Stephen.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next quarterly meeting of the association will take place on Tuesday, Nov. 26th, at 11, Chandos-street, Cavendish-square, London, W., under the presidency of Dr. John Keay, at 2.45 P.M. Dr. David Orr and Dr. R. G. Rows will contribute a paper (illustrated by lantern) entitled "The Interdependence of the Sympathetic and Central Nervous Systems."

INFLUENZA IN IRELAND.—Our Dublin Correspondent writes: Like other large cities in the kingdom, Dublin has suffered heavily from influenza. For several weeks physicians and general practitioners have been overwhelmed with work, and many among them have suffered in their own persons, although up to the present only one member of the profession in Dublin, Mr. J. H. R. Holtby, chief demonstrator of anatomy in Trinity College, has lost his life. The labours of medical men were rendered much heavier by the present shortage of nurses. Fortunately, the past 10 days show a great decrease in the number of cases, and few fresh cases are now occurring. The entire mortality of the disease appears to have been due to broncho-pneumonic complications. In the week ending Nov. 2nd 501 deaths were registered as occurring in the Dublin registration area. This represented an annual rate of mortality of 65·5 per 1000 of the population. The annual death-rate for the 44 weeks ending Nov. 2nd was 22·3 per 1000. Of the 501 deaths, 250 were registered as due to influenza and 89 to pneumonia. It is probable that the great majority of cases of pneumonia occurred in patients suffering from influenza. Our Belfast Correspondent writes: The influenza epidemic, after prevailing for about five weeks, is now very extensive in Belfast. Unlike the June visitation, which spread upwards socially from the workers, the present scourge attacked the better classes first, but has rapidly spread to all sections of the people, being in type, as a rule, mild, but with many deaths due to so-called pneumonia complications, which on post-mortem examination show the lungs filled with a hæmorrhagic exudate full of streptococci. The public health authorities have at last awoke (Nov. 7th), but their action is hopelessly belated. Indeed, the present situation would make thinking people very cynical were it not for the Hibernian sense of humour. Pasted in the windows of the tramcars is a public notice issued by the health committee, in which they "recommend all schools (both Sunday and day schools) and places of public entertainment be closed for at least ten days." As a result some of these places obey, others refuse; indeed, one of the kinema managers, in refusing to close, announced in one of the Belfast papers his willingness to show on the screen remedies for the influenza, and gave one—"phenol"—as a "sure and certain cure," by the use of which, he wrote, his employees were immune. Some of the schools have closed, others are still open, the education authorities concerned believing that to call on them to close these institutions while all places of amusement are allowed to be filled as usual is little short of a farce, and the public health authorities, it is reported, have no compulsory powers. The following precaution (suggested by the public health committee)—"avoid all crowded gatherings"—appears in the tramcars, but can only be read when these thronged methods of conveyance are free of the central strap-hangers. The public are becoming quite panicky, some calling out for injections of vaccine and others using remedies of which among the working classes the following is said to be the most popular: "24 drops of phenol to 8 ounces of water, two teaspoonfuls of the dilution being a dose." What amount of scheduled poison may thus be taken? Possibly an amount which in some people would cause carboluria. To crown all, owing to a strike of labourers in the house- and street-cleansing departments of the town council, the streets and back-yards of a great city with a population of 400,000 people have been left derelict for almost five weeks, so that from a sanitary point of view there is not at the present moment a more actually filthy city than Belfast. Everyone dreads—as a result—another epidemic which may be even worse than the influenza, though as I write (Nov. 12th) the strike has ceased.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surgeon Lieutenants to be Surgeon Lieutenant-Commanders: S. W. Grimwade, B. Taylor, H. H. Ormsby, E. Moxon-Browne, and A. E. P. Cheesman (acting Surgeon Lieutenant-Commanders), H. E. Perkins, E. C. Holtom, C. F. Willes, J. G. Danson, G. J. Carr.

ARMY MEDICAL SERVICE.

Col. Sir William B. Leishman to be Major-General, vice Major-Gen. Sir W. G. A. Bedford, retired.

Col. R. H. Luce (T.F. Res.) to be temporary Major-General.

ROYAL ARMY MEDICAL CORPS.

Temp. Major W. Murray (Lieutenant-Colonel, R.F.A., T.F.) to be temporary Lieutenant-Colonel.

Majors relinquishing the acting rank of Lieutenant-Colonel on re-posting: T. B. Moriarty, C. G. Browne.

To be acting Lieutenant-Colonels:—Whilst employed as Assistant Directors of Medical Services: Major (Bt. Lieut.-Col.) H. V. Bagshawe; Temp. Capt. W. Angus. Whilst in command of Medical Units: Majors G. De la Cour, J. J. O'Keeffe, A. W. Gater; Capts. A. C. Elliott, J. F. Grant, S. J. Higgins, E. A. Strachan.

Temp. Capt. W. Edmondson to be acting Major whilst specially employed.

To be temporary Majors: Temp. Major W. F. L. A. Holcroft (from South African Medical Corps) and Major R. S. White (from North Rhodesian Medical Corps).

Captains relinquishing the acting rank of Major on re-posting: T. J. Kelly and W. F. Christie.

Temp. Capts. C. L. T. Arthur and H. T. H. Butt relinquish the acting rank of Major.

To be acting Majors: Capts. P. A. Opie, F. P. Rankin, H. W. Carson, T. F. Kennedy, H. P. Rudolf, J. P. Litt, C. K. G. Dick, D. W. Pailthorpe, and H. Bedingfield; Temp. Capts. P. McCool (while specially employed), G. D. Laing, K. C. Middlemiss, A. E. Quine, R. B. Roe, W. W. Forbes, G. F. Bird, J. S. Stewart, A. Ryland, and A. B. Cardew; Temp. Lieut. T. E. Coulson.

The undermentioned temporary Lieutenants to be temporary Captains: F. W. Maunsell, W. Dalgliesh, C. H. A. Alderton, J. Robertson, W. O. Pitt, J. B. Burt, R. E. Moyes, H. Walker, V. T. P. Webster, J. J. Smith, M. J. Landy, J. M. Sheridan, W. T. Thomson, F. J. Cutler, I. Feldman, W. Murray, E. Clarke, W. H. Richardson, E. A. Miller, J. McCausland, H. M. Gilbertson, A. Evans, F. W. K. Lawrie, W. S. Gibson, T. C. Graves, H. Love, W. H. Condell, H. F. Penman, W. H. Ogilvie, G. Hoffmann.

To be temporary Captains: Capts. T. S. Keith (from Royal West Surrey Regiment, T.F.), A. Wallrugh (South African Medical Corps), J. Humphreys, C. W. J. Dunlop, T. Sheehan, A. E. Gravelle, C. V. Cornish.

To be temporary Honorary Captains: D. R. W. Crile, J. S. Burn (whilst employed with St. John Ambulance Brigade Hospital).

To be temporary Lieutenants: G. S. Livingston, W. J. G. Johnson, T. W. Lumsden, S. A. Bontor, H. G. Watters, R. Harley, H. H. McClelland, W. J. N. Todd, A. Linn, M. Rust, S. J. Healy, P. Carroll, G. A. Valentine, M. Cahill, J. N. McTurk, C. A. D. Bryan, J. Moulton, W. H. M. Smith, C. B. Gervis, G. A. Fothergill, R. J. Smith, T. T. Smith, J. D. E. Williams, A. Shearer, A. E. Ainscow, H. H. Patrick, S. T. Rowling, W. U. Morton, B. Dunlop, D. A. Johnstone, F. Anderson, D. M. Barcroft.

To be temporary Honorary Lieutenants: C. H. Backus, A. H. Miller (whilst serving with Welsh Hospital, Netley).

Officers relinquishing their commissions: Temp. Major A. M. Leake, V.C.; Temp. Capts. (acting Major) C. Roche (on account of ill-health contracted on active service, granted honorary rank of Captain), L. G. White (on account of ill-health, granted honorary rank of Captain); Temp. Capts. M. J. Mulligan and W. H. Howat (on account of ill-health contracted on active service, and are granted the honorary rank of Captain), H. A. Cecil (on account of ill health, and is granted the honorary rank of Lieutenant); Temp. Hon. Capt. A. Renshaw (on ceasing to be employed with Welsh Hospital, Netley); Temp. Lieut. H. N. Marrett.

Canadian Army Medical Corps.

Temp. Major J. S. Carruthers to be temporary Lieutenant-Colonel.

Temporary Captains to be temporary Majors: T. L. Towers, H. W. Whytock, (acting Major) J. R. Goodall, G. E. McCartney, (acting Major) H. J. Williamson.

Temp. Capt. R. N. W. Shillington to be acting Major while specially employed in a Hospital Ship.

Temp. Capt. W. A. Wilson to be acting Major while specially employed at a General Hospital.

Temp. Capt. (acting Major) C. F. Martin to be acting Lieutenant-Colonel while specially employed as Officer in Charge of a Medical Division.

Hon. Capt. H. J. Testar to be Honorary Captain, with pay and allowances.

ROYAL AIR FORCE.

Medical Branch.—F. F. Muecke (temporary Major, R.A.M.C.) is granted a temporary commission as Major and to be acting Lieutenant-Colonel whilst employed as Lieutenant-Colonel. The undermentioned are granted temporary commissions as Captains: G. C. Hall (Surgeon-Captain, retired, I.M.S.) and R. J. Aherne (late temporary Captain, R.A.M.C.). E. T. McElligott and W. C. A. Ovey are granted temporary commissions as Lieutenants.

Dental Branch.—The undermentioned are granted temporary commissions as Lieutenants: W. J. Singleton, J. Smith.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Parliament and the Armistice.

THE Prime Minister on Monday, Nov. 11th, read to the House of Commons the Armistice terms which the German delegates had signed that morning. The House adjourned immediately thereafter to a service of thanksgiving at St. Margaret's Church.

Ministries of Health Bill.

This measure was introduced by Dr. ADDISON, the Minister of Reconstruction, under what in Parliamentary procedure is known as the "ten minutes' rule." Ten minutes are allotted to the Minister for his introductory speech, and only one speech, similarly limited in time, is allowed of comment. Several Members rose to speak, but only one of them, Mr. HOGGE, had the opportunity of offering remarks on the measure. The Bill was formally read a first time, but there are now two motions for the rejection of the Bill on second reading. One stands in the name of Mr. HOGGE, the other in the name of Sir EDWARD CARSON. The motion of the latter is in the following terms:—

"That this House declines to proceed with a measure dealing with public health which excludes Ireland from the benefit of its provisions."

It is now announced that the Ministries of Health Bill will not be proceeded with this session. The text of the measure, however, is published.

Clause 1 sets out that for the purpose of promoting the health of the people throughout England and Wales, a Minister of Health may be appointed.

Clause 2 defines the general powers and duties of the Minister. It runs:—

It shall be the duty of the Minister to take all such steps as may be desirable to secure the effective carrying out and coördination of measures conducive to the health of the people, including measures for the prevention and cure of diseases, the treatment of physical and mental defects, the collection and preparation of information and statistics relating thereto, and the training of persons engaged in health services.

Clause 3 deals with the transfer of powers and duties to and from the Minister. It is as follows:—

(1) There shall be transferred to the Minister (*a*) all the powers and duties of the Local Government Board; (*b*) all the powers and duties of the Insurance Commissioners and the Welsh Insurance Commissioners; (*c*) all the powers of the Board of Education with respect to attending to the health of expectant mothers and nursing mothers and of children who have not attained the age of 5 years and are not in attendance at schools recognised by the Board of Education; (*d*) all the powers of the Privy Council and of the Lord President of the Council under the Midwives Act, 1902; (*e*) such powers of supervising the administration of Part I. of the Children Act, 1908 (which relates to infant life protection) as have heretofore been exercised by the Secretary of State.

It is, however, provided that the power conferred on the Insurance Commissioners of retaining and applying for the purposes of research sums mentioned in the Insurance Act shall not be transferred to the Minister, but the duties performed by the Medical Research Committee shall be carried on under the direction of a Committee of the Privy Council. The clause proceeds:—

(2) It shall be lawful for His Majesty from time to time by Order in Council to transfer to the Minister: (*a*) all or any of the powers and duties of the Board of Education with respect to the medical inspection and treatment of children and young persons; (*b*) all or any of the powers and duties of the Minister of Pensions with respect to the health of disabled officers and men after they have left the service, (*c*) all or any of the powers and duties of the Secretary of State under the Lunacy Acts 1890 to 1911, and the Mental Deficiency Act 1913.

Power is taken to transfer to other Government departments certain subjects such as public libraries, museums, and gymnasiums, fire brigades, and other matters now under the administrative supervision of the Local Government Board.

Clause 4, which authorised consultative councils, is to the following effect:—

(1) It shall be lawful for His Majesty by Order in Council to establish consultative councils for giving in accordance with the provisions of the Order advice and assistance in connexion with such matters affecting or incidental to the health of the people as may be referred to in such Order. (2) Every such council shall include persons of both sexes, and shall consist of persons having practical experience of the matters referred to the Council.

Powers are taken to carry out from an office in Wales the powers and duties transferred from the Welsh Insurance Commissioners.

Clause 9 constitutes a Scottish Board of Health which shall take up in Scotland the duties which in England and Wales fall on the Minister of Health. It will consist of not more than six members, one of whom must be a medical man holding a Public Health Diploma. The Board will act under the directions of the Secretary for Scotland. The clause contemplates the appointment of a Scottish Parliamentary Under-Secretary.

Under Clause 10 the National Health Insurance Joint Committee shall consist of the Minister of Health, who shall be chairman, the Secretary for Scotland, and the Chief Secretary for Ireland, together with one other person appointed by the Minister, being a person having special knowledge and experience of national health insurance in Wales.

There are other provisions of the nature of machinery in the Bill.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 6TH.

Influenza Epidemic at the Crystal Palace.

Answering Mr. CHANCELLOR, Mr. MACNAMARA (Secretary to the Admiralty) said: Since the present influenza epidemic broke out there have been 784 cases at the Crystal Palace; 538 were treated at the Palace, 233 were transferred from the Palace to local hospitals, and none were sent home for treatment. I should add, however, that 442 cases have been reported to us of men contracting influenza at home while on leave. As regards the number of deaths during the present epidemic, 3 died at the Crystal Palace, 93 died in local hospitals, and 10 died at their own homes.

Influenza at Blandford Camp.

In reply to Mr. W. ANDERSON and Sir G. GREENWOOD, who asked for information regarding Blandford Camp Major BAIRD (Under Secretary to the Air Ministry), said: The conditions at Blandford Camp have been receiving the close attention of the Air Council. Personal inspections have been made by Sir Humphry Rolleston, a member of the Medical Administrative Committee, by the inspector of hospitals, and by the medical administrator. Additional doctors and nurses have been sent there, the hospital accommodation has been materially extended, and the camp has been kept well supplied with all necessary medical stores and equipment. The total number of men who now are or have been stationed at Blandford from Sept. 21st to Nov. 2nd, 1918, is 32,593. The total number of deaths has been 78. Of these 77 were due to influenza or pneumonia consequent on influenza. The percentage of deaths is therefore 0·24 per cent. and the weekly average 13·5. The average daily number of men under canvas for this period has been 6611. The number has been steadily reduced, and it is hoped that all the men will be in buildings by to-night. From now on no recruits will be put under canvas.

Local Government Board and Medical Research.

Sir WILLIAM COLLINS asked the Parliamentary Secretary to the Local Government Board what was the total sum expended on auxiliary scientific investigations and medical research from the establishment of the Board to the present time.—Mr. S. WALSH replied: The grant for auxiliary scientific investigations concerning the causes and processes of disease was transferred from the vote for the Privy Council Office, to that of the Local Government Board in the year 1877–78. From that year to the present date sums amounting to £77,258 18*s.* have been paid for those investigations. In addition sums amounting to £15,361 3*s.* 3*d.* have been expended by the Board in respect of their pathological laboratory which was established in 1910.

THURSDAY, NOV. 7TH.

R.A.M.C. Officers in Ireland.

Answering Mr. LARDNER, Mr. MACPHERSON (Under-Secretary for War) said: A small number of officers of the Royal Army Medical Corps with recruiting experience have been employed in Ireland to assist the National Service Board. These officers are liable for service abroad if physically fit.

Dental Treatment of Discharged Soldiers.

Mr. PENNEFATHER asked the Financial Secretary to the War Office whether he would consider the advisability of so extending Army Council Instruction 1187 of 1918 as to include provision, if desired, for dental treatment prior to discharge of all soldiers returning from abroad whose teeth had deteriorated during their period of active service, and also to provide for the dental treatment, if desired, of all returned prisoners of war whose teeth had deteriorated during captivity.—Mr. FORSTER answered: This suggestion is not free from difficulty, but I will consider the question.

Medical Research Committee.

In reply to Sir WILLIAM COLLINS, Sir E. CORNWALL (representing the National Insurance Commissioners) wrote: The total sum expended up to the present time under my sanction and that of my predecessors under the National Insurance Act, 1911, by the Medical Research Committee has amounted to about £247,000.

Ministries of Health Bill.

Dr. ADDISON (Minister of Reconstruction) moved for leave "to bring in a Bill to establish a Ministry of Health and a Board of Health to exercise in England and Wales and in Scotland respectively powers with respect to health and local government and for purposes connected therewith."

He said: The war has revealed in a very striking manner what a good many of us have been calling attention to for many years—namely, the need for improvement in the health of our people. After the war the need will be greater almost than during the war for making the best use of all our powers and resources, and it is very certain that in the time of reconstruction we shall not be able to afford any waste either of material or of human power. The late Lord Rhondda, when he was President of the Local Government Board, invited me to take charge of an inquiry into this matter, and during recent months I have had very many consultations with the local authorities of this country, with medical men, and with representatives of the great insurance organisations, and the measure which I ask leave to introduce represents, except in some unimportant particulars, a common measure of agreement.

Mr. BOOTH: No.

Dr. ADDISON: The honourable Member not having seen the measure is not in a position to say. There is unanimity on the part of all who have examined this topic that steps are necessary and that it is impossible in this country either to prosecute a vigorous health policy or to secure efficient administration of it until we have brought about in the first place the consolidation of those Government authorities who have charge of it. For example, with respect to woman and her child, the Local Government Board, the Insurance Commission, the Home Office, and the Privy Council are all involved in various matters concerning the health of the mother and her child. I could, of course, furnish many illustrations, but it is obvious to anyone who has knowledge of public administration in this country that it is impossible to expect any progressive and continuous development of improved service while you have this overlapping in the central departments, and the main purpose of the Bill is to bring together, under one body of men and one Minister, the chief Government departments concerned in matters affecting the health of the people. Until that is achieved I am convinced that it is hopeless to expect any real and substantial improvement. This Bill does not provide medical treatment for any individual. It does not affect the functions of any local authority of any kind. It is purely concerned with bringing together the responsibilities of the different Government departments, both in England and in Scotland, which are concerned with health matters. The Bill brings together under one Minister the powers and duties of the President of the Local Government Board and the Health Insurance Commission of England and Wales. It brings in also the powers and duties of the President of the Board of Education with regard to the health of mothers and infants, the duties of the President of the Council with regard to midwives, and the Home Secretary with regard to the protection of infant life.

Sir E. CARSON: Does the Bill apply to Ireland?

Dr. ADDISON: I will deal with that presently. It unites those in one health department and then we take power in the Bill to bring in, as and when it is possible, other considerable health duties—namely, the medical inspection and treatment of school children, at the present time under the charge of the Board of Education. Further, all the health duties of the Ministry of Pensions as regards the treatment of sick soldiers and, finally, the powers of the Secretary of State for the Home Department with regard to lunacy and mental deficiency. It is not proposed to consolidate these latter powers at this stage. They are involved in various administrative arrangements which it would take some years at least to disentangle. A good deal of misapprehension exists with respect to this Bill owing, perhaps, to the fact that we have not been able to bring it forward earlier in consequence of the association of these health services with the present Poor-law duties discharged by boards of guardians who are responsible to the Local Government Board. I may say that the bringing together of the different services which I have mentioned in no way fixes to these services any Poor-law taint whatever. It is separate from them hereafter as it is now, for example, from the sanitary services of the local authorities. We have had an important committee presided over by the Deputy Chairman of Ways and Means, and I am authorised to say that the report of the Local Government Committee presided over by Sir Donald Maclean on the transfer of the functions of Poor-law authorities in England and Wales has been carefully considered by the Government, and that the Government accepts the recommendations of the committee that all services relating to the care and treatment of the sick and infirm should not be administered as part of the Poor-law, but should be made a part of the general health services of the country, and that the Government regards it as a matter of urgency that effect should be given to these recommendations as soon as possible. The Government accepts the principle that the remaining functions of the Poor-law authorities should be transferred to other bodies, but are not in a position to formulate precise proposals at the present time. Any approach to the complete application of the scheme recommended by the committee will involve a considerable length of time, and must be preceded by further inquiries into certain questions with regard to detailed matters. The Government recognises its responsibilities for making proposals on these subjects as soon as the exigencies of the Parliamentary situation permit of their doing so. I should like to say here that those enthusiasts for a Health Ministry who say we must wait until we have reformed the Poor-law are thoroughly impracticable people. The Poor-law will require many years of steady effort, both in this House and in connexion with administration, wholly to disentangle and to bring about the reforms which many of us desire, but we are not prepared to postpone until that is achieved the necessary consolidation of these important health services. With regard to Scotland, the Bill brings together in precisely the same way as in England these different health services under a board—a Board of Health—which is responsible to the Secretary for Scotland, who has had charge of this part of the Bill in the course of its formation. With regard to Ireland, we have not extended our proposals therein view of the possibility, as we hope soon, that Ireland may administer her affairs herself. But it is proposed to leave the position of the Irish Insurance Commissioners as far as possible unchanged. We do provide, however, for the continuance of the Joint Committee similar to that which is now in existence representing the four countries with regard to financial matters.

Sir E. CARSON: Is that all there is about Ireland in the Bill?

Dr. ADDISON: Another important feature of the Bill is that we provide advisory or consultative councils as part of machinery of the Ministry. This proposal has been a good deal criticised in many quarters, and I for one thoroughly believe in having at my elbow expert critics. I believe it will have a very wholesome effect on administrative work, certainly in the development of the health services of this country, if we have a live active body of this kind in existence.

Mr. CHANCELLOR: Are they to be empowered to go over the heads of the Ministry?

Dr. ADDISON: Certainly not. The Ministry must be responsible. In order that it may be made clear what the functions of these advisory councils are I propose to lay on the table of the House a draft Order in Council, which sets out their functions and which has been agreed to by all concerned. They deal with matters referred to the Ministry. They are to be able to make suggestions to the Ministry on subjects that may be referred to. They are also on their own initiative to make recommendations. We bring together, therefore, under this Bill all the important Government services which are concerned with health, and we thereby also bring under one Ministry the surveillance of all the local health services of the country. If this is achieved we believe that it will be possible to expect real progress with respect to the improvement in the health of the people. It is essential to take this step first because the legislation necessary to provide for the full development of the health services of the country may be controversial and certainly will be difficult and involved. Therefore it is necessary to take it in two stages. I believe that if we acquire the powers sought in this Bill we may for the first time in this country be able to develop and ultimately to apply scientific, well-thought-out and thorough health measures for the benefit of our people.

Mr. HOGGE gave certain reasons why he opposed the introduction of the Bill. In the first place, it attempted to take away from the National Health Insurance Commissioners in three parts of the kingdom their existing rights to deal with questions of disease and ill-health. He also opposed the Bill because there was associated with it the administration of the Local Government Board, which administered the Poor-law. If the right honourable gentleman had acquainted himself with the views held by large bodies of Approved Societies in England, Wales, and Scotland with regard to the inclusion of the functions of the National Health Insurance under any Government department associated with the Poor-law, he would have known the strength of the opposition to it. He knew that the right honourable gentleman had not taken the trouble.

Dr. ADDISON: That is entirely incorrect. I have consulted scores of representatives of authorities and of Approved Societies.

Mr. HOGGE said that he knew that as far as the National Health Insurance Commissioners in Scotland were concerned, they had never been asked their views at all on the question of a Ministry of Health and how far their functions should be roped in under the new arrangement. Moreover, in Scotland there was a demand for a separate Bill dealing with a Ministry of Health for Scotland. In these declining days of Parliament it was absurd to bring in what was really an electioneering measure.

Leave was given, and Dr. ADDISON formally brought in the Bill. He intimated that it was "backed" by Sir George Cave (the Home Secretary), Sir Auckland Geddes (President

of the Local Government Board), Mr. Munro (Secretary for Scotland), and Sir E. Cornwall (the representative of the National Insurance Commissioners).

The Bill was read a first time.

TUESDAY, NOV. 12TH.

Medical Women and Army Service.

Answering Mr. W. THORNE regarding the suggestion to give commissions to medical women, Mr. MACPHERSON (Under Secretary for War) said: I am informed that even if the Government entertained the proposal there is no possibility of the necessary legislation being introduced this session.

WEDNESDAY, NOV. 13TH.

The Shortage of Medical Men.

Major EDWARD WOOD asked the Representative of the National Insurance Commissioners whether his attention had been called to the difficulty experienced by many persons in country districts owing to the shortage of medical officers during the present epidemic of influenza in securing the certificate of a medical officer necessary to obtain sick benefit under the National Insurance Act; and whether he could make provision by which money to which such persons were entitled might be more easily and expeditiously obtained.—Sir E. CORNWALL replied: I am aware of and am giving careful attention to the serious difficulties under which the medical profession are striving to carry out their duties just now with their numbers so depleted by the demands of the Army for medical men and the great aggravation of these difficulties by the present epidemic, and I trust that Approved Societies generally are showing all possible consideration for these conditions in their dealing with sickness benefit claims from their members. But I am advised that a general relaxation of the requirement of periodical medical certificates as evidence of incapacity for work would be open to grave objection as tending to destroy the administrative basis requisite for financial stability.

Replying to a supplementary question, Sir E. CORNWALL stated that negotiations were now being carried on with a view to bring home medical men to this country as rapidly as possible.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, Nov. 21st.—Papers:—Mr. W. Stiles and Dr. F. Kidd: (1) The Influence of External Concentration on the Position of the Equilibrium attained in the Intake of Salts by Plant Cells; (2) The Comparative Rate of Absorption of various Salts by Plant Tissue.—G. Marinesco: Récherches Anatomo-Cliniques sur les Névromes d'Amputations douloureux—Nouvelles Contributions à l'Etude de la Régénération nerveuse et du Neurotropisme (communicated by Prof. F. W. Mott).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.
Tuesday, Nov. 19th.
GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)
MEETINGS OF SECTIONS.
Tuesday, Nov. 19th.
PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 4.30 P.M.
Presidential Address:
Dr. William McDougall, F.R.S.: The Present Position in Clinical Psychology.
Wednesday, Nov. 20th.
HISTORY OF MEDICINE (Hon. Secretaries—Charles Singer, Arnold Chaplin): at 5 P.M.
Papers:
Dr. Raymond Crawfurd: Antonius Musa—his Practice and his Patients.
Dr. Cumston: A Note on Celsus' Operation of Lithotomy.
Thursday, Nov. 21st.
DERMATOLOGY (Hon. Secretary—S. E. Dore): at 4.30 P.M.
Cases will be shown.
Friday, Nov. 22nd.
DISEASE IN CHILDREN (Hon. Secretaries—G. E. C. Pritchard, H. C. Cameron, C. P. Lapage): at 4.30 P.M.
Cases will be shown.
Notes on a case of Chronic Nocturnal Priapism.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
WEDNESDAY, Nov. 20th.—4.30 P.M., Inaugural Address:—Mr. A. A. C. Swinton: Science and the Future.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of Post-Graduate Course were given in issue of Nov. 2nd.)

UNIVERSITY COLLEGE, LONDON, Gower Street, W.C.
Two Lectures on Wound Shock.
FRIDAY, Nov. 22nd.—5 P.M., Prof. W. M. Bayliss. (Lecture I.)

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.
Course of Lectures on Public Health Problems under War and After-war Conditions (each Lecture will be followed by a Discussion):—
WEDNESDAY, Nov. 20th.—4 P.M., Lecture VII.: Sir John Collie, C.M.G.: The Care of Pensioners and Disabled Combatants in Relation to National Health and Wealth.

Appointments.

ORMISTON, ISABEL, M.B., has been appointed Medical Inspector of Schools of Health under Egyptian Government.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.—Physician for Out-patients: HOLMES, GORDON M., C.M.G., M.D., F.R.C.P. Lond. Registrar: YEALLAND, LEWIS R., M.D. Ontario. Resident Medical Officer: BLANDY, M. A., M.B. House Physicians: RIVINGTON, EVELEEN B. G., M.B., B.S., GAINSBOROUGH, RICHARD, L.R.C.P., M.R.C.S.

ST. THOMAS'S HOSPITAL.—Casualty Officers and Resident Anæsthetists: BENAROYA, M., FOSS, R. S., GOOLDEN, G. A., M.R.C.S., L.R.C.P. Lond., MACDONNELL, J. J., PALMER, W. H., M.R.C.S., L.R.C.P. Lond. Resident House Physicians: HULL, G. R., WALKER, R. A., WARD, A. E., WILLIAMS, P. LLOYD. Resident House Surgeons: ANTHONY, W. M., MACDONALD, E. K., MCLEAN, C. F., SPOOR, A. T. House Surgeon: CALVO, R., M.R.C.S., L.R.C.P. Lond. Obstetric House Physician: HUGGETT, A. ST. G., M.R.C.S., L.R.C.P. Lond.

Vacancies.

For further information refer to the advertisement columns.

Birkenhead Borough Hospital.—Jun. H.S. £170.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Caterham Asylum, Caterham, Surrey.—Temp. Asst. M.O. £7 7s. p.w.
Clifton, Yorks, North Riding Asylum.—Locum Tenens M.O. £10 10s. w.
Derbyshire County Council.—Tuberc. Officer. £500.
Devonport, Royal Albert Hospital.—Res. H.S. £200.
Dorchester, Dorset County Council Education Committee.—School Dentist. £350.
Essex County.—M.O.H. £1000.
Glasgow District Mental Hospital, Gartloch.—Asst. M.O.
Grosvenor Hospital for Women, Vincent-square, S.W.—Hon. Path.
Glasgow, Lightburn Joint Hospital, Shettleston.—Res. Phys. Sup. £300.
Liverpool, Brownlow Hill Poor-law Hospital.—Asst. M.O.'s as Locum Tenens. £7 7s. per week.
London County Council Evening Institutes.—Lecturers. 1 g. a lecture.
Monmouthshire County Council.—Female Asst. M.O. £400.
Perth, James Murray's Royal Asylum.—Phys.-Superintendent. £800.
Queen's Hospital for Children, Hackney-road, London, E.—H.P. £100.
Roll of Honour Hospital for Children, 688, Harrow-road, W.—Female Asst. P.
Royal College of Surgeons of England.—Election to the Court of Examiners.
St. Helens Lancs, Pilkington Special Hospital.—Res. M.O. £500.
St. Peter's Hospital for Stone, &c., Henrietta-st., W.C.—Jun. H.S. £75.
Sheffield. Jessop Hospital for Women.—Junior Female H.S. £150.
Sheffield Royal Infirmary.—Two H.S.'s. £150.
Shrewsbury Dispensary, 42, St. John's-hill, Shrewsbury.—Locum M.O.
York City Asylum, Fulford.—Temp. Asst. M.O. £350.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Dawley, Salop.

Births, Marriages, and Deaths.

BIRTHS.

KELLY.—On Oct. 31st, at The Orchard, Bushey Grove-road, Bushey, Herts, the wife of Lieutenant-Colonel W. D. C. Kelly, D.S.O., R.A.M.C., of a daughter.

LEE.—On Nov. 5th, at Prince's-gate, the wife of Captain Harry Lee, F.R.C.S., R.A.M.C. (T.F.), of a son.

PAYNE.—On Nov. 5th, at Glengarry, Park-hill, Ealing, W., the wife of Surgeon-Lieutenant R. W. Payne, R.N., of a daughter.

REYNELL.—On Nov. 6th, at Highweek, Newton Abbot, the wife of Captain R. W. Reynell, R.A.M.C., of a daughter.

MARRIAGES.

COLLET—TYDD.—On Nov. 6th, at All Saints' Church, Ascot, Lieutenant-Colonel G. G. Collet, R.A.M.C., to Gertrude Eulalie, daughter of Mr. and Mrs. George B. Tydd, of Burleigh Lodge, Ascot.

GREEN—GARLICK.—On Nov. 8th, at St. Saviour's Church, Eton-road, N.W., Philip Withers Green, Captain, R.A.M.C. (T.), to Florence Hester, eldest daughter of the late George Garlick, M.D., of Gordon-square, and Mrs. Garlick, of Steele's-road, Hampstead.

DEATHS.

DAWNAY.—On Nov. 8th, at Marchwood-crescent, Ealing, of pneumonia following influenza, Archibald Hugh Payan Dawnay, F.R.C.S.

DICKEY.—On Nov. 4th, at Oakham, J. S. P. Dickey, M.A. Oxon., M.B., Ch.B. Edin., in his 36th year.

FISHER.—On Nov. 6th, at King's Langley, Frederick Charles Fisher, F.R.C.S., aged 60.

LOGAN.—On Oct. 31st, at Stone, Aylesbury, from influenza, Thomas Stratford Logan, L.R.C.P. & L.R.C.S. Edin., D.P.H. Lond., Assistant Medical Officer, Bucks County Asylum, elder son of the late William Logan, M.D., and of Mrs. Logan, Whitehead, co. Antrim.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

INFLUENZA DISINFECTION AND THE RÔLE OF THE CARRIER.

ON Nov. 6th, at the Royal Institute of Public Health, Professor J. M. Beattie delivered the fifth of a course of lectures on Public Health Problems Under War and After War Conditions. He began by referring to the work that had been done in regard to typhoid carriers. Many such were found among persons who showed no clinical symptoms of the disease. Cure was a difficult matter, and all workers recognised intermittent discharge at long intervals of pathogenic organisms in the fæces. Men were discharged as "cured" who still had bacteria in their urine. Such unsuspected carriers distributed among the population might become serious centres of infection. The same applied to the pneumococcus, the diphtheria bacillus, meningococcus, &c. An important matter seemed to the lecturer to have been neglected by sanitary authorities. In the act of flushing a water-closet spray is produced which may easily spread bacteria to the immediate surroundings, but in how many cities is the public closet disinfected after use? In the case of typhoid and dysentery carriers clothing and hands readily become infected and provide a fruitful source for the spread of disease. Infections of the upper air-passages are easily spread by the spray produced in coughing, more especially when overcrowding is also present, as was unavoidably the case in the present epidemic of influenza, where, owing to war conditions, a lowered resistance of the body was an added factor. Professor Beattie described a spray of electrolysed 3 per cent. saline solution to be used for disinfecting soldiers on a large scale. Although certain mechanical difficulties at present stand in the way of its use for the general public, an ordinary hand spray can be used. Disinfection of the throat is one of the most important factors, both in checking the carrier-rate and the actual spread of many common infections. It should be a routine practice in fever hospitals to disinfect the nose and naso-pharynx at least once every day, while in schools a daily nose and throat drill is to be desired. Children should thus learn that cleanliness of the mouth and upper air-passages is as important as that of hands, face, and teeth. In dysentery cases thorough washing out of the bowel is required. Cases of infantile and summer diarrhœa treated on these lines had produced striking results in the lecturer's hands. In the discussion which followed the lecture Professor J. R. Simpson urged that influenza should be made a notifiable disease, and Dr. T. N. Kelynack instanced an open-air sanatorium of 100 beds, not far from London, with visitors constantly coming and going, where no cases had occurred. The same was the case with a children's sanatorium, although cases had occurred among the outside staff, while another institution for children not far away, where open-air treatment was not in force, had had half its inmates in bed. Professor Beattie, in reply to questions, considered that influenza probably conferred a certain amount of immunity, but for a brief period only. Vaccine treatment, if practised at all, should, he thought, be on the lines suggested by the recent War Office conference (see THE LANCET, Oct. 26th, p. 565). Notification of influenza was a difficult task.

THE INSTITUTE OF HYGIENE.

THIS Institute proposes to build a Temple of Hygiene in the centre of London in order to provide better facilities for its work. Sir Malcolm Morris is acting as chairman of a committee to promote the scheme. Sir Samuel Scott, Bart., M.P., is the honorary treasurer.

THE LEBANON HOSPITAL FOR MENTAL DISEASES.

DURING the four years of war the Lebanon Hospital for Mental Diseases, near Beyrout, founded in 1896 by the late Theophilus Waldmeier, has been allowed to carry on its beneficent work without cessation under the care of the British director, Dr. H. Watson Smith. The work of the hospital has necessarily had no publicity given to it during recent times, and this has made it a difficult matter to keep up the necessary remittances for its maintenance. This has been done, however, through the kind offices of America. The Turks at one time desired to commandeer the institution for military purposes, but found that it was doing such good work amongst people of all races and creeds that they decided to leave it, and Djemal Pasha even presented 100 sacks of wheat at a time of difficulty.

The way is now clear and money can be sent through to Beyrout. The hospital needs help badly; food and other necessaries have been, and are, very expensive; added to this, when details are received it will be found that repairs are needed after the four years of war conditions. The difficulties have been many and formidable, but Dr. Watson Smith and his helpers have been able in a wonderful way to "carry on." The committee appeals for wider interest and for financial help to bring the hospital, which is the only one of its kind in the country, fully up to date. Information will be given by the general secretary, Lebanon Hospital Office, 35, Queen Victoria-street, London, E.C. 4.

THE MEDICAL MAN'S INCOME TAX.

To the Editor of THE LANCET.

SIR,—In the article by Mr. John Burns on the above subject, published in your columns of Oct. 19th, it is stated, with reference to taxable income, that the deductions permissible include "professional subscriptions and literature." I have inquired of the Surveyor of Taxes whether a subscription of 3 guineas to the Royal Society of Medicine and 30s. to THE LANCET may be deducted, and have received the following reply:—

"In reply to your letter of the 28th inst., I beg to inform you that subscriptions to medical societies are not admissible deductions for income tax purposes.

With regard to your claim to deduct the cost of literature, the matter appears to be governed by the case of Charlton *v.* Commissioners of Inland Revenue, 1890, 17 R. 785, in which it was decided that a minister assessed under Schedule E. was not entitled to a deduction in respect of cost of books purchased in connexion with his profession."

I enclose my card.—I am, Sir, yours faithfully,
Nov. 5th, 1918. MEDICAL SUPERINTENDENT.

*** Income-tax interpretation is not an exact science, and its practical application varies in different parts of the country. Whilst the purchase of a professional library would not be permitted as a legitimate deduction, replacements are generally allowable, and should be claimed. Subscriptions to medical societies should also be claimed, despite the opinion expressed in the letter of the Surveyor of Taxes above.—ED. L.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. S. H. Appleford, Hoddesdon; Mr. A. Z. Abushâdy, Lond.; Dr. W. Allingham, Orsett; Sir R. Armstrong-Jones, Lond.

B.—Mrs. T. R. Beale-Brown, Andoversford; Mr. G. G. Bonser, Sutton-in-Ashfield; Prof. W. B. Bell, Liverpool; Mrs. G. C. Brownson, Bristol; Mr. W. H. Baxter, Bournemouth; British Science Guild, Lond., Sec. of; Dr. L. T. Burra, Aylesbury; Dr. A. Balfour, C.M.G., Lond.; Sir John Byers, Belfast; British Fire Prevention Committee, Lond.; Mr. J. L. Balderston, Lond.; Dr. G. F. Buchan, Lond.; Dr. M. K. Barradah, Cairo; Dr. G. Blacker, Lond.; Mr. H. Blakeway, Lond.; Dr. B. Baskett, Rayleigh; Prof. P. Boveri, Milan.

C.—Mr. R. F. Cooper, Lond.; Mr. R. I. da Costa; Lt.-Col. A. Castellani, Lond.; Dr. J. G. Copland, Huddersfield.

D.—Decimal Association, Lond.; Mr. K. J. Dougall, Lond.; Mrs. C. Duggan, Lower Broadheath.

E.—Mr. D. E. B. Ericson; The Englishwoman Exhibition, Lond., Sec. of; Miss E. L. C. Eden, Lond.; Major-Gen. G. J. H. Evatt, C.B.; Dr. H. A. Ellis, Middlesbrough; Miss Eden, Lond.; Mr. A. B. Elliott, Abergele.

F.—Lt.-Col. F. E. Fremantle, R.A.M.C.(T.); Hon. Surg.-Lt.-Com. P. Fildes, R.N.V.R.; Dr. E. L. Fisk, New York; Dr. R. B. Ferguson, Lond.; Mr. C. Franks, Lond.; Mr. W. Fleming, Lond.

G.—Capt. D. Guthrie, R.F.A.; Mr. W. Greig, Lond.; Mr. E. H. Glenny, Lond.

H.—Mr. J. H. Hart, East Molesey; Mr. W. J. Hall, Brighton; Sir Thomas Horder, Lond.; Mr. H. B. Hill, Eston; Capt. F. Heatherley, R.A.M.C.; Lt.-Col. A. F. Hurst, R.A.M.C.

I.—Incorporated Institute of Hygiene, Lond., Sec. of.

J.—Mr. M. H. Judge, Lond.

K.—Dr. F. Knight, Lond.

L.—Dr. R. A. Lyster, Winchester; Dr. A. Latham, Lond.; Messrs. J. B. Lippincott, Philadelphia; Major T. Lewis, R.A.M.C.(T.)

M.—Dr. C. E. Macnamara, Aberdovey; Dr. R. O. Moon, Lond.; Sir Henry Morris, Bart., Lond.; Medical Research Committee, Lond., Asst. Sec. of; Messrs. Masson et Cie, Paris; Medico-Psychological Association of Great Britain and Ireland; Mr. J. Murray, Lond.

N.—National League for Health, Maternity, and Child Welfare, Lond.; Sir A. Newsholme, Lond.; National Union of Trained Nurses, Lond.

P.—Dr. A. A. Parson, Lond.; Dr. A. S. Percival, Newcastle-on-Tyne.

Q.—Q. E. D.

R.—Royal Earlswood Institution, Redhill, Medical Superintendent of; Religious Tract Society, Lond.; Dr. R. R. Rentoul, Liverpool; Royal College of Physicians, Lond.; Royal Dental Hospital, Lond.

S.—Capt. F. N. Smith, R.A.M.C.; Society of Public Analysts, Lond., Joint Hon. Sec. of; Dr. C. F. Sonntag; Mr. J. C. Spensley, Lond.; Dr. W. Spettigue, Wellington.

T.—Dr. J. M. Taylor, Philadelphia; Dr. F. H. Teale, Lond.; Dr. J. Tatham, Oxted.

W.—Dr. C. D. Wood, Frimley; Messrs. Watson and Sons, Lond.; Dr. F. E. Wynne, Wigan; Dr. L. A. Weatherly, Bournemouth; Rev. G. A. Weekes, Cambridge; Capt. G. Ward, R.A.M.C.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2.

The following journals, magazines, &c., have been received:—Journ. of Mental Science, Public Health, School Hygiene, Edin. Med. Journ., Archives Méd. Belges, Journ. of Laryngology, &c., St. Bart.'s Hosp. Journ., British Journ. of Dental Science, Journ. of State Med., Veterinary Review, Rev. Med. del Uruguay, Middlesex Hosp. Journ.

Introductory Remarks ON EPIDEMIC CATARRHS AND INFLUENZA.

Delivered at the Discussion on Influenza at the Royal Society of Medicine, Nov. 13th, 1918,

BY SIR ARTHUR NEWSHOLME, M.D., K.C.B.,
MEDICAL OFFICER TO THE LOCAL GOVERNMENT BOARD.

MR. PRESIDENT AND GENTLEMEN,—When I promised to open this discussion it could not be forecasted that we were about to experience our national share of a pandemic of influenza unexampled both in distribution and severity. Under present circumstances a discussion on influenza will necessarily include consideration, so far as our lack of knowledge will permit, of the circumstances leading to the minor epidemics with which in recent years we have been fairly familiar, and those leading to the mysterious occurrence of the wider pandemics, such as those of 1890 and of the present year.

It is necessary, in my view, to consider these minor epidemics and the endemic prevalence of influenza in this country in relation to bronchitis and pneumonia, which year by year cause a much heavier toll on health and life than is demanded by influenza. I have little hope of success of any personal or public measures against influenza which will not influence even more favourably the incidence of bronchitis and pneumonia. It is not improbable, in fact, that the influenza problem may be most successfully attacked when influenza is not epidemically prevalent.

ETIOLOGY.

The first difficulty is to define influenza. Is it one disease, or a group of diseases? And is the disease now prevailing the disease which prevailed in the spring, and still more in July, of this year? These two questions cannot easily be separated. The symptoms were usually milder in the earlier than in the present outbreak, but that may be due to the very exceptional culmination of the epidemic in the summer months. War conditions prevented civilian bacteriological work on the disease on a considerable scale, but I am hoping that this discussion will elicit contributions as to the bacteriology of the July and the present outbreak, and that later the results will be available of the inquiries by the Medical Research Committee, who have been collating evidence from military as well as civilian outbreaks, and making independent inquiries.

The report of the Influenza Committee of the Advisory Board to the D.G., Medical Department, France,[1] shows that influenza has occurred at intervals among our forces in France, and that a serious epidemic occurred in the spring of this year. The known facts bearing on the position of Pfeiffer's influenza bacillus as the cause of the epidemic are well summarised in this report. This bacillus cannot be said to have established its position, nor can it be disregarded; for even if some other organism be the essential virus of influenza, the Pfeiffer bacillus is probably one of the chief sources of the damaging complications of this disease.

From this country, from France, and from America there is evidence that occasionally influenza kills rapidly by toxæmia, but more often by pulmonary complications; and that in producing these complications hæmolytic streptococci have been predominating organisms, the Pfeiffer bacillus and the pneumococcus also being found in a varying proportion of cases. The increase in virulence in streptococci in animal passage is well known. There can be no doubt that all these bacteria, often acting in conspiracy, have contributed greatly to the recent mortality from influenza, but whether there is in addition a hitherto undiscovered virus to which influenza is primarily due is still a moot point.

The occurrence of such mixed infections is well known in other diseases; it is a chief source of mortality in measles, and success in the sanatorium treatment of tuberculosis depends largely on the elimination of secondary infections; and this points to oral, naso-pharyngeal, and dental hygiene and life under improved sanitary conditions as at present among the most hopeful lines of action in diminishing the mortality from bronchitis, pneumonia, and influenza in the general population.

[1] Brit. Med. Jour., Nov. 9th, 1918.

INFLUENZA AS A CLINICAL ENTITY.

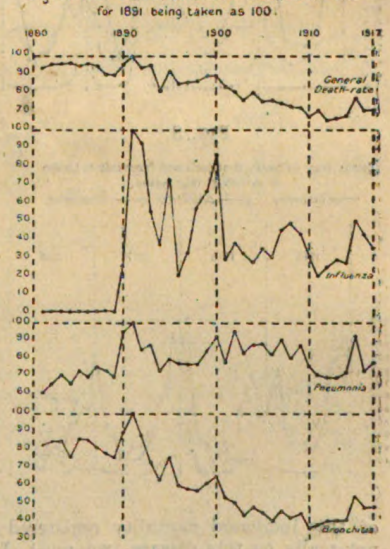
In view of the uncertainty in the bacteriological diagnosis of influenza, can this disease be recognised as a clinical entity? In typical cases it can, but certainly not in a very large proportion of atypical and modified attacks. In France, for instance, it has been found difficult to diagnose influenza from trench fever when the latter is unaccompanied by relapses. The main diagnostic evidence of the presence of influenza is its occurrence epidemically or pandemically. Diagnosis by this means is not helpful in prophylaxis, and there is the further possibility that other catarrhal infections may—though there is little evidence of this—take on transcontinental travels. This probably happens with the meningococcus, causing in most recipients little or no evidence of disease.

But the facts remain that influenza is a specific disease recognisable in severe outbreaks, and that it is a disease which, with the exception of plague and cholera, has on occasion travelled further and more rapidly over the world than any other recognised disease. It differs from these two diseases in that their pandemic course can be stayed by organised measures which are well within human capacity. I know of no public health measures which can resist the progress of pandemic influenza. It is noteworthy that the relative failures of preventive medicine and public health to secure control over disease have been concerned with diseases in which infection is received by the respiratory tract—especially influenza, bronchitis, pneumonia, measles, and whooping-cough.

DEATH-RATES FROM CHIEF CATARRHAL DISEASES.

We need further knowledge—epidemiological, pathological, and bacteriological—of all these diseases before they, and especially before influenza, can be brought within the scope of preventive medicine. Acute respiratory diseases, chiefly bronchitis and pneumonia, cause approximately one-sixth of the deaths from all causes; and this does not include the deaths in measles and whooping-cough chiefly caused by respiratory complications, and the deaths under the heading of other diseases in which respiratory complications turn the balance against recovery.

FIG. 1.



In Fig. 1 is shown the general course of the death-rate in this country since 1881 from the three chief fatal catarrhal diseases. The death-rates are given as relative figures, all the rates being reduced to the same magnitude so that a comparison may be made of the percentage variation under each heading.[2] The variations in the death-rate from influenza are evidently greater than those for pneumonia and bronchitis, though in nearly every instance they are in the same direction in any given year. The decline of the death-rate from bronchitis without corresponding increase of pneumonia points to the conclusion that much of the decline under the first heading is real and not due to changing fashion in certification.

In Figs. 2 and 3 this comparison between deaths in London from influenza, bronchitis, and pneumonia is pursued further,

[2] It should be noted that even in years in which influenza is epidemic bronchitis and pneumonia cause several times as many deaths as this disease. Probably many of these deaths are secondary to influenza.

the four-weekly incidence of mortality from each of these diseases being shown on the graph, for the four years 1889–92, in three of which influenza was epidemic, and for the four years 1915–18, in each of which some rise of the influenza curve occurred. In three of these last years the rise followed the almost universal rule of winter or spring incidence, the exception being the larger peak of July, 1918, and the still higher present peak. Several important points may be gathered from these graphs. Pneumonia and bronchitis nearly always have their maximum mortality in the winter months. In 1891 excessive mortality from both bronchitis and pneumonia was prolonged into the late spring, coincidently with a spring epidemic of influenza. In 1918 the summer outbreak of influenza was not associated with marked increase in the pneumonia death-rate, though it is likely that the excessive pneumonia mortality characterising the whole of 1917 and 1918 was associated with fairly widespread prevalence of influenza.

MORTALITY FROM INFLUENZA SINCE 1847.

The course of influenza in this country from 1847 can be gathered approximately from the annual death returns as displayed in Fig. 4. A preliminary remark is required. Our national death statistics are the least imperfect in the world; but the accuracy must always necessarily be limited by the extent to which medical certification of the cause of death is satisfactory. In the earlier epidemics of influenza, including the outbreaks of 1890–93, there is strong reason for concluding that deaths from influenza were certified under the heading of the pneumonia or bronchitis secondary to influenza in a much higher proportion than in recent years. This probability is increased by the large mass of endemic influenza revealed in Fig. 4 from 1890 onwards, but almost absent in earlier years. The difference in part is probably a real difference, though probably not entirely so. Although much of this increased mortality registered from influenza may not really be this disease, we must, I think, assume that conditions since 1890 have become more favourable than in earlier years for the continuous prevalence of influenza endemically on a considerable scale.

FIG. 2.

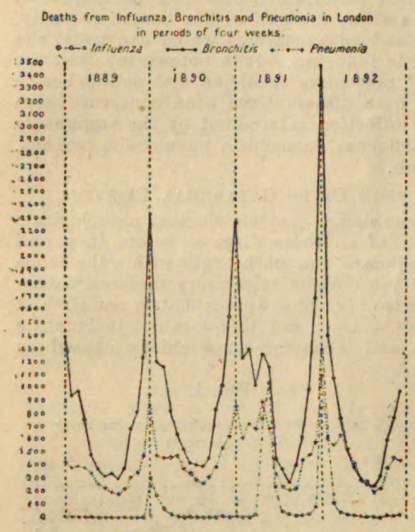
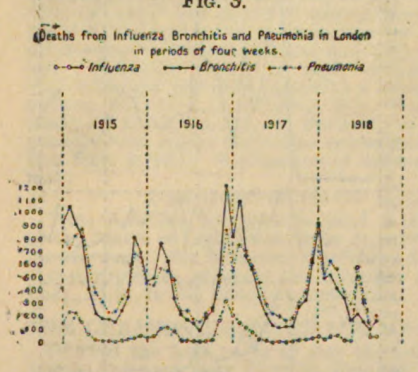


FIG. 3.

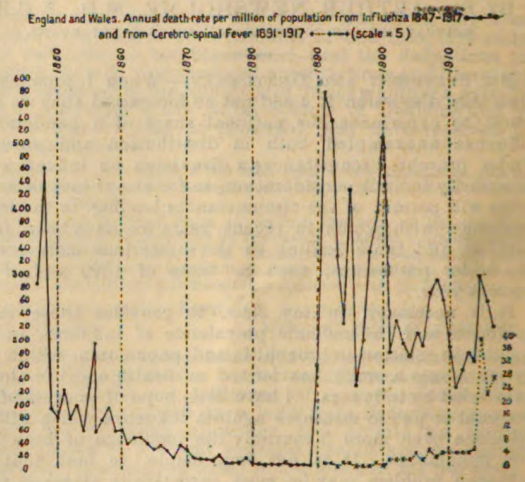


INFLUENZA, CEREBRO-SPINAL FEVER, AND PNEUMONIA.

I have introduced into Fig. 4 (scale five times that for influenza) a further curve showing the annual death-rate from cerebro-spinal fever since 1881. It is suggestive that this disease scarcely maintained a footing in England during 1881–1914, but since then has prevailed each winter epidemically, although each case as a rule occurred sporadically, in the sense of not being traceable to any other case of the same disease. This difference in the annual curves of influenza and cerebro-spinal fever does not appear to support the seductive hypothesis of Dr. Hamer that both these diseases may be diverse manifestations of the same virus.

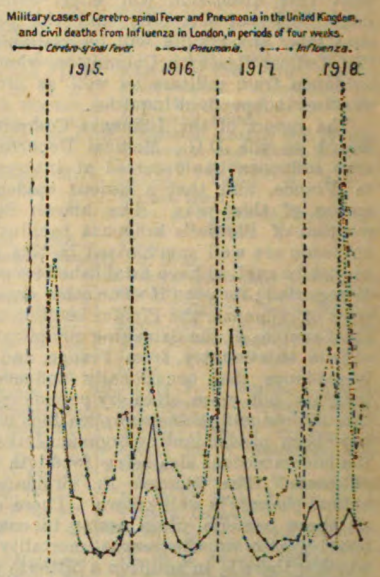
On the other hand, Fig. 5 may be examined. This gives a comparison between the four-weekly incidence of cases of cerebro-spinal fever and of pneumonia in the British Army in the United Kingdom during the four years 1915–18. This curve is introduced by permission of the Director-General of the Army Medical Department. The two diseases are plotted out on the same scale, the scale being omitted. The cases are enumerated as first notified without subsequent correction, but this does not detract materially from the general value of the curves for comparative purposes. On the same diagram I have plotted the number of deaths from influenza in four-weekly periods in London. The two sets of figures, although derived from different sources, may be regarded as roughly comparable.

FIG. 4.



There is shown a close correspondence in the curves of these three diseases during three out of the four years and there can be little doubt that the same winter and spring conditions favour excess under all three headings. The experience of 1918 is instructive. In this year influenza had an epidemic peak in July, and the deaths from pneumonia in the Army showed a corresponding peak. Cerebro-spinal fever, however, did not follow the two other diseases.

FIG. 5.



COURSE OF INFLUENZA MORTALITY IN LONDON.

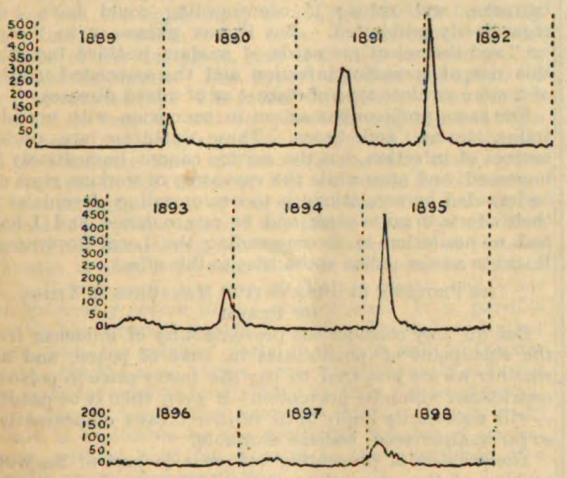
The course of influenza in this country from year to year has been shown in Figs. 1 and 4. Its weekly course, judged by weekly deaths from influenza registered in London, is shown in Fig. 6. Prior to 1890 deaths from influenza scarcely

figured in the death returns. From this year the course of events may be briefly summarised thus:—

1890.—An epidemic culminated in the third week of January. The epidemic peak occupied about five weeks, the excess of influenza gradually tailing off subsequently in this and in the later epidemics shown in Fig. 2. Between the peaks of this and of the next epidemic 70 weeks elapsed.

1891.—An epidemic occurred culminating in the twentieth week of the year. The epidemic peak occupied eight to ten weeks. Between the peaks of this and of the next epidemic 35 weeks elapsed.

FIG. 6 A.



1892.—An epidemic occurred culminating in the third week of January. The epidemic peak occupied six to eight weeks.

1893.—No great epidemic occurred, but some excess of mortality from influenza for several weeks in the early spring. A smart epidemic culminated in the fiftieth week of the year, the epidemic peak occupying about seven to nine weeks.

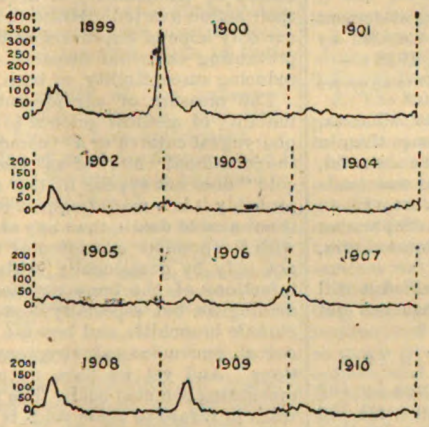
1894.—No epidemic, except the one beginning in 1893.

1895.—A large epidemic culminated in the tenth week of the year, the epidemic peak occupying 6–8 weeks.

1896.—No epidemic.

1897.—No considerable epidemic.

FIG. 6 B.



1898.—An epidemic occurred which reached its rather low maximum in the fifth week of the year. Its duration was somewhat protracted.

1899.—A somewhat similar epidemic to the one in 1898 culminated in the eleventh week of this year.

1900.—An epidemic occurred in December, 1899, and January, 1900, the greatest mortality occurring in the second week of January, 1900. The peak of this epidemic occupied six weeks, the mortality slowly tailing off. The interval between this and the preceding peak was 42 weeks.

1901.—No epidemic.

1902.—A small epidemic reaching its maximum in the eighth week of the year. The epidemic lasted six to eight weeks. An interval of over two years had elapsed between this and the last previous epidemic.

In 1903, 1904, and 1905 no epidemic of influenza occurred, though occasionally the weekly deaths from this disease rose slightly above the usual inter-epidemic level.

1906-7.—An epidemic occurred in December, 1906, and January, 1907, of low magnitude and somewhat protracted duration.

1908.—A smarter epidemic of influenza occurred, culminating in the ninth week of the year. Its duration was six to eight weeks, the tailing off commonly seen in other epidemics being shown in the curve.

1909.—An epidemic occurred with its maximum in the twelfth week of the year, similar in course and duration to the epidemic in 1908. The interval between these two epidemic peaks was 55 weeks.

1910, 1911, 1912.—No epidemics.

1913.—An epidemic of low range occurred with a maximum mortality in the twelfth week of the year.

1914.—No epidemic.

1915.—An epidemic similar to that of 1913 occurred, the low maximum being reached in the eighth week of the year.

1916–17.—A considerable low ranged increase of mortality was visible in the early part of 1916, followed by a relatively small epidemic, culminating in the last week of the year and terminating early in 1917.

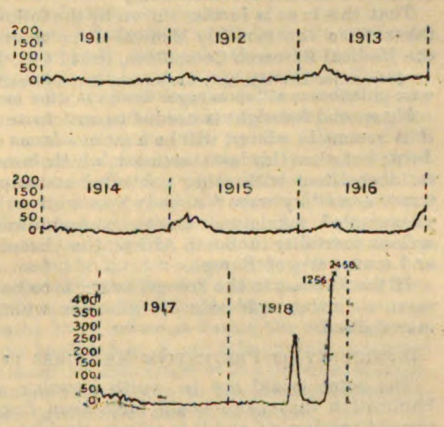
In the previous statement deaths only are dealt with, and I have selected the metropolis because for it we have an uninterrupted statement of weekly deaths from various causes for a long series of years. It will be noted, however, that London is a densely populated province, and that its epidemic curves represent the smoothed-out results of many local outbreaks which have rapidly become general.

The Pandemic in 1918.

Reference to Fig. 6 C shows that influenza during this year has followed a course never previously experienced. Until towards the end of June the London curve showed scant mortality from influenza, the number of weekly deaths between the eighteenth and twenty-fifth weeks varying from 5 to 10. There is evidence that prior to this influenza had been fairly widely prevalent, as it could not fail to be, inasmuch as during the spring of this year influenza prevailed seriously among both the Allied and enemy troops, and in Spain the epidemic of influenza had got well ahead in May. In July influenza was widely prevalent and was causing excessive mortality (see Fig. 5) not only in England, but also all over Europe, in the United States, in the great cities of India, and elsewhere.

I have not found another instance of a widespread epidemic culminating in the summer months (i.e., after June 22nd). The London curves, with this single exception, show that

FIG. 6 C.



since 1881 epidemic peaks have always occurred in winter or spring. Even in the epidemic culminating in July last streptococcal infection had been noted by various observers; and it is noteworthy that in American accounts of outbreaks of influenza in camps and in the civilian population of America during both 1917 and 1918 there were reports of this same preponderant occurrence of hæmolytic streptococci in the lesions and secretions. During the spring and throughout the summer of this year the usual endemic influenza probably was being almost constantly replenished by more virulent infection on a very large scale from overseas from both the American and European continents.

The further course of influenza in this year presents altogether exceptional, if not unique, features.

The curve shows clearly that in London after an epidemic causing excessive deaths during some six weeks in July and August—weekly deaths from influenza 10 (25th week), 67, 218, 287, 192, 86, 38 (31st week)—the weekly deaths declined, the deaths in each of the following weeks being 21, 20, 12, 12, 12, 14, 9, 17, 17.

In the 41st week occurred a sudden increase of deaths to 80, and then in following weeks the deaths numbered 371, 1256, 2458, and 2433.

Reference to Fig. 6 C shows that this experience, as already stated, is different from the experience in any preceding year.

The interval between the peak of the July epidemic of 1918 and of the smaller epidemic in 1916–17 was 80 weeks; the corresponding interval between the July and the October to November epidemic peaks in this year was about 16 weeks. This last-named interval is less than half of the interval elapsing between any two previous epidemic peaks of influenza in the metropolis, the nearest approach being 35 weeks' interval between the epidemic peaks of 1891 and of 1892.[3]

THE QUESTION OF A SECONDARY WAVE.

The Secretary of the Medical Research Committee in the *British Medical Journal* of August 10th, at the end of an annotation headed "Bacteriology of the Influenza Pandemic," asked bacteriologists in this country to send results of their observations during the epidemic—

"In order that the results gained here may be collected, with a view to the organisation of such coördinated work as may be found possible for the study of the secondary waves of infection that are to be expected."

This statement was, I fear, overlooked by many bacteriologists as it was by myself; otherwise many who did not know would, I am confident, have sent contributions for the common stock. But in some journals an attempt has been made to show on the strength of the above quotation that public health authorities, central and local, did not take all possible steps in anticipating and mitigating the present major epidemic of influenza.

Furthermore, in an answer to a Parliamentary question, the above cautious statement has been asserted to have included also a forecast that (*a*) the secondary waves would occur *in the autumn*, and (*b*) they would be more severe in character than the "primary wave of last spring."

No such forecast as (*a*) was made, and it would have been a foolishly wild guess, inasmuch as the present secondary wave occurred more than twice as early as any previous "secondary wave" recorded in the history of the metropolis. (I know of no other place for which equally minute and accurate statistics are available.)

That this is so is further shown by the following statement taken from the monthly Medical Supplement compiled by the Medical Research Committee, dated Oct. 1st, 1918:—

"It is, unfortunately, only too certain that a second and more severe wave of influenza will spread over Europe in a few months."

No special foresight is needed to anticipate that influenza, if it recurs in winter, will be a more serious disease than in July; but when this last statement, which, it may be observed, is inconsistent with other published statements, was made the "secondary wave" already was well on its way to an unexampled maximum, having caused during September serious mortality in South Africa, the United States, India, and some parts of Europe.

If the forecast in the last quotation is to be verified it will mean a further epidemic of influenza which has not yet materialised.

DIFFICULTY OF PREVENTIVE MEASURES IN WAR TIME.

The point would not be worth pursuing, except for the implication that more could have been done to avert the present pandemic; and it is only to elucidate this point that I make a further observation. Warnings of possible "secondary waves" in the presence of much endemic influenza, or immediately after a superadded epidemic has declined, would be useful if a prophylactic were available (none except one in the early experimental stage has been suggested), or, if by issuing advice the progress of an epidemic could be stayed. Neither of these conditions can be fulfilled. We are at present unable to prevent the spread of influenza by communal means, and the experience of every family invaded by influenza demonstrates the difficulty, amounting almost to impossibility, of preventing the spread of infection in the domestic circle.

Notwithstanding this, I did in my official capacity prepare in July last a memorandum for public use, but on the balance of considerations its distribution was not considered expedient at that time. There are national circumstances in which the major duty is to "carry on," even when risk to health and life is involved. This duty has arisen as regards influenza among the belligerent forces, both our own and of the enemy, milder cases being treated in the lines; it has arisen among munition workers and other workers engaged in work of urgent national importance; it has arisen on a gigantic scale in connexion with the transport during 1918 of many hundreds of thousands of troops to this country and to France from overseas. In each of the cases cited some lives might have been saved, spread of infection diminished, great suffering avoided, if the known sick could have been isolated from the healthy; if rigid exclusion of known sick and drastic increase of floor-space for each person could have been enforced in factories, workplaces, barracks, and ships; if overcrowding could have been regardlessly prohibited. But it was necessary to "carry on," and the relentless needs of warfare justified incurring this risk of spreading infection and the associated creation of a more virulent type of disease or of mixed diseases.

The same problem has arisen in connexion with crowded trains, trams, and buses. These doubtless are prolific sources of infection, but the service cannot immediately be increased, and meanwhile the vast army of workers must not be impeded by regulations as to overcrowding of vehicles in their efforts to go to work and to return home, and I have had no hesitation in recommending the Local Government Board to advise police authorities to this effect.

THE PROBLEM OF PREVENTIVE MEASURES IN TIMES OF PEACE.

But we may consider the preventability of influenza from the standpoint of possibilities in time of peace, and ask whether we are prepared to pay the heavy price in personal restrictions which its prevention—if even then it be possible—will necessarily imply until further means of prevention, so far undiscovered, become available.

The problem of preventing influenza is part of the wider problem of the prevention of the entire group of catarrhal diseases, with the added problem as to whether the occult causes of pandemicity of influenza can be discovered and their action averted. Hitherto we have no clue to these, and our only hope of improvement lies in means to be devised for preventing catarrhal diseases, by diminishing infection, by reducing susceptibility, or both.

The measure of our present impotence is given by the inability of medical science to ensure us against acute nasopharyngeal catarrh or a "common cold." I do not overlook the occasional "hits" of autogenous inoculation. A "common cold" does not appear in our national death statistics; but probably it is a more frequent cause of diminished efficiency, if not also of death, than any of the acute infectious diseases, with the possible exception of measles and whooping-cough, not only by occasionally initiating ear abscesses, purulent infections of the bony cavities of the skull and face and meningitis, but especially because of its common ending in chronic bronchitis, and because it opens the way for meningococcal, pneumococcal, streptococcal, and tuberculous infections. And yet we have no entirely trustworthy means of preventing common colds. The nearest approach to a general truth in regard to these colds is that life continuously in the open air secures relative immunity from attack.

An initial practical difficulty in such prevention is that the patient for several days may not fully recognise his condition, and it seems likely that infection is chiefly spread during these earlier stages. It remains true, however, as stated in my recent official Memorandum, that—

"If every person who is suffering from ..... catarrh ..... took all possible precautions, the present disability and mortality from catarrhal epidemics would be materially reduced."

UNKNOWN CAUSES OF PANDEMICS.

I have referred above to the unknown causes which, for instance, in 1803, 1833, 1837, 1847, 1890, and again this year, have been responsible for world-wide spread of influenza, limited in its rapidity only by the speed of human travel, and multiplying so rapidly as to create the illusion of almost simultaneous origin in many countries.

One somewhat improbable hypothesis is that nearly simultaneous enhancement of the potency of endemic influenza virus occurs throughout the world. A fair working hypothesis is to regard influenza as a specific infectious disease which is always present sporadically in urban communities, widespread epidemics of it only occurring when a more exalted strain of the same virus is introduced from without.

The source of the more exalted virus can only be guessed. If we were to confine our outlook to the present pandemic it

[3] I notice that Captain Greenwood, in THE LANCET of Nov. 9th, quotes the solitary experience of a small agricultural district in Weardale in 1891 as a further example of a July epidemic followed by an October outbreak. The scattered character of this district is more consistent with the view that two independent outbreaks occurred; furthermore, we are not concerned with village outbreaks, but with the general trend of national events.

would be easy to blame the vast meeting of men of different nations under circumstances of overcrowding in large masses in this and other countries, some of whom had had no previous opportunity of acquiring even temporary immunity. But such an explanation fails to explain the earlier pandemics, which spread apart from exceptional world movements.

In the 1890 epidemic foreign origin and rapid spread of imported infection undoubtedly occurred in this country; it is highly probable that in the present year events have pursued the same course.

It has been surmised that the accidental contact of the hypothetical influenza virus with a native population which has not had the opportunity to acquire relative immunity from attack or death leads to an enhancement of the virulence of the contagion, and that it is thus enabled to commence its travels. This hypothesis does not appear to me to be satisfactory. The initial experience of the Fijians in regard to measles will be quoted in support; but those who re-read Dr. Corney's original account of that outbreak, as I have recently done, will note that the early cases in this first outbreak in the islands of Fiji were mild in character, and that among portions of the population who were under hygienic and medical control the fatality was low at other stages of the devastating outbreak. Experience of measles in armies is that it is sometimes as serious as on "virgin soil." It was so in the war of North *v.* South, and it has been extremely severe in the present war. It is possible that this has occurred especially in New Zealand and other troops from the remoter parts of Britain and of Greater Britain; but the same troops were simultaneously suffering from massive invasion by Pfeiffer's bacillus, by streptococci, and by pneumococci. The excessive fatality of measles in warfare is explicable by the combined invasion of several viruses, without need for recourse to the hypothesis of a specially unprotected population.

The measles problem is very similar to the influenza problem. In both, so far as our present knowledge goes, the chief hope of saving life lies in preventing, or in diminishing, the mortality from the streptococcal and pneumococcal pneumonia in these diseases, and research work in these directions is greatly needed.

It is evident that we are ignorant of the causes of pandemics of influenza at irregular intervals, and their occurrence has never, so far as I know, been anticipated.

We are still obliged to think of unknown factors; and I can repeat the admission of similar ignorance in regard to cerebro-spinal fever made by me elsewhere:[4]

> In epidemic times "strains make their appearance which possess greater intrinsic capacity for invading the tissues than the strains current in non epidemic seasons. As epidemics are intermittent, this emergence of more virulent strains must be due to intermittent causes; and it is still necessary to assume the action of some unknown influence, telluric, climatic, or other, which becomes operative under conditions of which we remain ignorant."

Influence of the War.

But although no satisfactory explanation is known of the causes exciting either the minor or the major epidemics of influenza, there can be no doubt that the movements of the recent war have been responsible on a large scale for its increased virulence. During the summer months of this year migration from country to country, from America, Canada, Australia, New Zealand, and South Africa to England and France, was occurring each month to an extent of several hundred thousand persons; and migrations in the opposite direction were also taking place on a large scale. The voyages of these troops occurred at a time of submarine dangers with a necessarily limited supply of ships; furthermore, influenza and streptococcal pneumonia were previously prevalent in oversea camps; and it would have been surprising had not this marvellously rapid and successful transportation of troops been carried through at a heavy cost in communicable disease. There is no reasonable doubt that through these months contagia possessing enhanced virulence were being brought into this country. The circumstances, in fact, bear a close resemblance to those under which cerebro-spinal fever first became considerably epidemic in this country in 1915

In attempting to trace the course of influenza in the present year it must be noted that the story cannot be told completely until Army and Navy statistics and civilian statistics for many countries become available, and any views now stated may need revision as the result of further national and international information.

Increasing Control of Disease.

It will be evident that we have a long road to travel before acute catarrhal affections can be brought within human control. The list of preventable and curable diseases has steadily lengthened. A first group of these comprises typhoid and typhus fevers and small-pox, which are entirely controllable and in large measure controlled. Dysentery, cholera, malaria, and plague also have their place in this group. A second group of partially controlled diseases comprises diphtheria and scarlet fever, although, like rheumatic fever, these diseases are subject to cyclical changes in distribution related to years of relative drought. Tuberculosis and syphilis are in the same group, and there is no adequate reason against their early transfer to the first group.

Measles, whooping-cough, acute poliomyelitis, and cerebro-spinal fever form a group in which infection appears to arise similarly to that of ordinary catarrhs and influenza, and their prevention so far similarly is only possible to a limited extent. For measles, whooping-cough, catarrhs, and influenza the chief present hope consists in attempts to diminish attack by or death from pulmonary complications.

Desiderata.

I may in conclusion indicate a few early desiderata in the investigation of influenza.

1. It would greatly facilitate further investigation if epidemic catarrhs, whether influenzal or other, were studied bacteriologically, especially in their early stages in selected populations—e.g., of institutions—and if a similar study were made of cases of bronchitis and of pneumonia in different localities and for a series of years. The work already begun by the Medical Research Committee will doubtless be of great value in this and other directions.

2. If such collective information is to have its maximum utility it will be necessary to ensure that observations by different bacteriologists are made by comparable methods.

3. The study of the epidemiology of influenza during the present war has been hampered by the necessary secrecy as to military and naval outbreaks, and by the failure of the ordinary international information coming into our official possession from consuls, foreign journals, &c. It will be possible partially to piece together the story of the present outbreak from the reports which medical officers of health have been requested to prepare; but information from the services will be needed to furnish a less incomplete story.

The civilian reports from different districts, so far as they have reached me, show a remarkable change in the age incidence of deaths from influenza during the present year; so much so as to have led to a not infrequently expressed opinion that we must be concerned with a different disease. Dr. Stevenson, in his contribution to the present discussion, will throw further light on this and other points.

Possibilities of Control.

The control of epidemic catarrhs may be considered from the point of view of the prevention of attack, or the prevention of complications. The possibilities of prevention of attack pending further medical discovery are limited; but under peace conditions the avoidance of aggregation of large units, especially for sleeping, are among the obvious indications. Whether persons affected with catarrh will in the future submit to wear veils or respirators is doubtful; but nurses of influenza patients should adopt this precaution. The utility of prophylactic vaccines remains to be demonstrated.

The prevention of pneumonia by vaccines is a more hopeful possibility; and it is possible that greater attention to the hygiene of the mouth and naso-pharynx both before and during attacks of influenza would have good effect. The gentle irrigation of nose and throat with a weak saline or antiseptic solution appears to have succeeded in diminishing pulmonary complications in measles, and might be equally beneficial in influenza.

The present pandemic will not have been suffered in vain if intensive investigation is pursued on catarrhal diseases in general, and if these great causes of national disability and mortality are brought more nearly under control.

4 Preface to Reports on Cerebro-Spinal Fever (Local Government Board, N.S., No. 114).

GENERAL PRINCIPLES IN THE TREATMENT OF INFLUENZA,

WITH SOME DETAILS APPROPRIATE TO TYPES OF CASES OCCURRING IN THE PRESENT EPIDEMIC.

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THE treatment of influenza by specific inoculation, by immune sera, and by specific drugs is very much a matter of *tot homines tot sententiae*. Time alone can adjudicate upon the claims made for a variety of remedies that are on trial during the present epidemic. I am not here concerned with any discussion or advocacy of these measures. More important for the time being, probably, than any one or any number of them is the promptness with which the general conduct of the case is established and the thoroughness with which it is carried out. Not only may these things be of vital importance to the individual patient, they are also of great importance to the uninfected public. *Every case of the disease treated upon sound general principles is a contribution to preventive medicine.* And every case in which these principles are neglected is a threat to public safety. In so far as the individual case is concerned, promptness and thoroughness do more than meet the actual indications of the moment; they give the patient confidence that he will "win through," and they often prevent by anticipation those dread complications, shorn of which the disease is not really alarming in its nature. The treatment of influenza, despite specific efforts at aborting the course of the disease, must be regarded as an "expectant" treatment. But in medicine expectancy should not connote inactivity nor an attitude of "wait and see." The line of treatment advocated in this short article claims no originality. It is merely an attempt to put in writing the actual plan of campaign resulting from an individual experience gained entirely at the bedside of a considerable number of patients, concerning whose treatment the writer has deliberated jointly with a number of colleagues. It is obviously open to much criticism, but it may be useful to some, not because their experience has been less, but because they may like to know the practice of someone else and compare it with their own. The dogmatic mode of setting down some of the points in the scheme of treatment is adopted merely for the sake of brevity and precision.

With the mild cases and, whether mild or not, with the cases running a brief and favourable course of two or three days, I shall not concern myself. Inasmuch as no one can possibly foretell which cases are going to follow this benign course, the treatment of the more severe type covers them. And it is well to enforce the warning that wisdom lies in considering any case at its period of invasion potentially a severe one, not to say potentially a desperate one. If this principle were followed, both by the patient before he seeks advice and by the doctor after he has first given it, the disease would lose much of its terrors. Handicapped as the practitioner is just now by great dearth of efficient nurses, and overloaded himself by work owing to the paucity of doctors left in charge of civilian practice, it must needs be that treatment is much less adequate than is desirable. It is all the more important to give precise directions to the friends, and to such nurses as may be available, including definite instructions as to what they should *not* do. I shall consider the principles of treatment and some details under four heads which are, I think, sufficiently clear not to require explanation.

(i.) *Severe Cases without Pulmonary or other Serious Complications.*

With the first symptoms of the disease order the patient to bed and keep him there until a week after his temperature has become normal, and only allow him to get up then if examination of the heart and lungs reveals no signs of disease. Choose the largest available room that is provided with good-sized windows and clear out of it all superfluous furniture. If the patient is found to have gone to bed in a very small room and a larger room near by can be used as the sick-room move him into the latter as soon as possible. Open the windows widely day and night, bad atmospheric conditions notwithstanding. Dispense with blinds and curtains. Disregard "light restrictions." Fortunately the authorities have now waived these. Despite this fact, however—so hard a thing is habit—it is quite common to find the benefits of an open window largely neutralised by a blind, and perhaps by a heavy curtain as well. Regard all screens with distrust, and arrange the bed near the centre of the room, far away from all cul-de-sacs. Aim at a room temperature of 60° F., obtained by an open fire if central heating is not employed. If the ideal of free ventilation with warmth cannot be secured, then warmth must be sacrificed rather than ventilation. *Not only does the neglect of proper aerotherapy seriously prejudice recovery in the event of pulmonary complications, it undoubtedly tends much to induce these. It is the most important point in the treatment of all cases.* Adjust the bed-clothes to the patient's temperature. Use sheets and blankets only; disallow down quilts and counterpanes; it is wise not to tempt the nurse or friends by leaving such things in the room.

Confine *the diet* to hot fluids, given frequently, and do not aim at "feeding up" the patient. Avoid meat extracts and strong broths. Thank the friends for their offers of turtle soup, advise acceptance of the gift, but keep it in reserve for the period of convalescence. Do not give alcohol during this early stage of the disease; in a simple febrile attack it is not required at all unless the patient is elderly. See that *the bowels* are well opened by a double dose of the patient's customary aperient; if he has none, give calomel gr. ½ every hour for four doses and follow this by a hot saline. Sponge the patient all over with warm water twice daily. Put no faith in *drugs* as specific measures, whether quinine, salicin, or what not. Give aspirin and Dover's powder, āā gr. x., as early as possible, and repeat in six or eight hours. Follow this by a simple diaphoretic mixture. If *headache* is severe in spite of this treatment, give phenacetin gr. v. with caffein gr. ii. four-hourly for four doses. If *the stomach* gives trouble and the tongue is foul, order sod. bicarb. and sod. sulphocarb., āā gr. x., with glycer. acid. carbol. ♏ x. and aq. menth. pip. ad ℥i. six-hourly, and be sure that the feeds are well diluted. For *vomiting*, when this is a feature of the case, reduce all feeds to a minimum, or abstain from them altogether for 48 hours, give minim doses of tr. iodi in one drachm of water hourly for six doses, and inject a pint of normal saline into the rectum twice or three times during the period of starvation.

The *distressing and ofttimes ceaseless cough* is generally the most difficult problem. A host of remedies is in use; the fact that they are legion is the best proof that none of them is very useful. Do not forget that local applications to the chest (*vide* (ii.)) are often of service in allaying cough. Remember also that when the origin of the cough is irritability of the upper air-passages inhalations of tr. benzoini co. (4 parts) with menthol or eucalyptus (1 part) are useful. Failing this a spray containing chloretone and menthol, āā 2 per cent., in liquid paraffin, may be used to the nose and throat. But these local measures are of little avail in the essential cough of the disease. I have found syr. coccillanæ co., syr. codeiæ, and linct. terp. heroin co. of some value. In the most intractable cases I prescribe syr. chloral ℥ss., ammon. brom. gr. x., ext. glycyrrhiz. liq. ♏xx., &c., four-hourly for four doses.

Sleeplessness calls first of all for a general review of the programme of treatment: ventilation of the room, control of pyrexia, posture in bed, the question of stimulants, &c. If none of these points seems capable of better adjustment, try a sedative draught containing ammon. brom. gr. xx. and tr. valerian. ammon. ♏ xx. If not successful, I use paraldehyde in drachm doses twice or three times during the night to secure a good sleep. The best cloak for its unpleasant taste is tr. quillaiæ and tr. aurantii āā ♏ xx. with water to one ounce. If vomiting is present, give the paraldehyde ℥ii. in normal saline solution ℥ii. as a rectal injection. As a last resort I use chloral hydrate gr. xx. (with ammon. brom.), believing it to be of less prejudice to the heart than any members of the veronal group and more efficacious than either trional or sulphonal. I avoid morphia for the treatment of sleeplessness or delirium; and the result of hyoscine, upon the only occasion I saw it used for the control of these troubles, was such as to put the drug wholly out of court as a therapeutic agent of service in this disease.

If, now, defervescence takes place, by crisis or by lysis, further treatment resolves itself into taking care to avoid relapse and into measures designed to restore nerve and heart

strength. These will not be discussed here. But there are two other possible types of case, over and above (i.), both of which tax the practitioner to the utmost. In some cases the two types are superimposed.

(ii.) *Intensely "Toxic" Cases, Tending to, or Actually Exhibiting, Hyperpyrexia.*

All the emphasis laid upon free ventilation must now be redoubled. Cradle the patient, as was formerly customary in typhoid fever with persistently high temperature. Failing this, insist upon very little bedclothes. *Remember*, and teach the nurse or friends, *that the thermometer, and not the patient's sensations, is the true guide to the amount of bedclothes and the presence or absence of hot-water bottles.* Sponge the whole body frequently with tepid water, and if the temperature is unaffected by this, use water at room temperature, or cooled below this point. Prevent the piling on of blankets after the sponging, because it is during the first hour or two *after* the sponging that the chief fall in the temperature occurs. Even good nurses often fail to understand this, and will complain that the sponging was ineffectual, the while one finds the patient's complaint of chilliness has led to the use of several blankets and some hot-water bottles. Should the temperature be obstinate yet—and in every case where it is 106° or higher—proceed direct to the cold pack, which must, if necessary, be prepared with ice-cold water, and repeated as often as is indicated by the thermometer. Do not fear "shock to the heart"; there is probably no shock to the heart so great as a continued state of hyperpyrexia. Even if pulmonary congestion is present, which, indeed, it usually is in all these severe cases, this treatment is not contra-indicated. Hot drinks are given frequently during these processes, and volatile stimulants including brandy or whisky. *Aspirin and all so-called febrifuge drugs must be rigidly excluded from the treatment during this phase of the disease.* Perseverance with these hydro-therapeutic measures, whose virtues have unfortunately been lost sight of to a great extent by the present generation of practitioners, will often be rewarded by great improvement in the facies, pulse, and nerve tone of the patient; it is certain that one of the gravest dangers in the disease may be largely averted by their means. Most of these cases require brandy or whisky to counteract circulatory failure, and nearly always they suffer from troublesome insomnia, which should be met as advised under (i.). Should the state of the heart give anxiety, the measures referred to under (iii.) in connexion with this organ must be resorted to. This type of influenza, occurring quite frequently during the present epidemic, responds in most encouraging fashion to prompt and careful handling.

(iii.) *The Pulmonary Type.*

The treatment of those complications of influenza which affect the respiratory organs—catarrh of the upper respiratory tract, bronchitis, lobar pneumonia, and pleurisy—follows in the main the usual practice when these diseases occur independently of influenza. By the "pulmonary type" of case I mean that class of patients in whom there develops quite early in the disease, even from the invasion stage in fulminating cases, intense acute congestion of the bases of the lungs, with cyanosis, persistent cough, the spitting of pinkish frothy mucus (it may be in large quantity), and cardiac embarrassment. So soon as the beginning of this trouble is detected it is well to use large local applications which combine moist heat with counter-irritation. If nursing help is available nothing is better than linseed meal and mustard poultices (linseed meal 8 parts, mustard 1 part), renewed every four to six hours until the skin is reddened. Choose the most congested part for the application, but ensure freedom of respiration by avoiding tight bandaging. Antiphlogistine is also good, as are equivalent preparations now obtainable at the chemists. The well-known Gamgee jacket thoroughly deserves its popularity, and, if properly made and fitted, it enables the patient to remain in a full current of air without fear of "chills." Requiring less skill than poultices, but not to be despised, are stimulating liniments, like camphor, chloroform, and turpentine, diluted with an equal quantity of oil, and used liberally. Do not wait for the arrival of signs of consolidation of the lung before embarking upon these local measures. In this type of case volatile stimulants, sedative expectorants, and diaphoretics are the most helpful drugs. Such are sp. ætheris co., the iodides in small amount, bromide and chloride of ammonium, tr. senegæ, tr. belladonnæ, and liq. ammon. acetatis. Avoid drugs that are apt to be depressing, such as antimony and ipecachuana. In most of these cases brandy or whisky is indicated in small and periodic doses. All feeds must be warm, despite the desire that patients sometimes show for cold drinks and for ice. The use of ammon. carb. is a vexed point; in any but small doses it sometimes tends to increase cough, and when there are little or no sputa the drug is of doubtful value. The treatment of cough has been considered already (*vide* (i.)). Oxygen should be given in all severe cases of this type of the disease, warmed by passage through hot water or alcohol.

The condition of the heart must be estimated more by the general state of the patient (facies, cyanosis, dyspnœa, delirium, posture) than by the pulse frequency. If unsatisfactory the volatile stimulants already employed must be supplemented by strychnine (gr. 1/30) and by camphor in oil (gr. iii. in 15 minims), injected alternately, the former subcutaneously, the latter intramuscularly, every six, four, or even two hours, according to the severity of the condition. If still further supplementary measures are needed the best appears to be strophanthin, gr. 1/500 in 15–20 minims of sterile normal saline solution, injected slowly into a vein of the ante-cubital fossa. This may be repeated in 8–12 hours.

In both of these severe types of the disease, (ii.) and (iii.), reliance must not be placed upon aperients to ensure good evacuation of the bowels. Enemata should be used daily, with as little disturbance of the patient as possible, and avoiding injections of large bulk. In this way the intestine, often in a state of paresis, is cleared of much toxic material and the patient's heart is relieved from the strain of an ordinary stool.

(iv.) *The Stage of Exhaustion.*

The fever having subsided and the acute symptoms passed, there is seen in many cases a state of extreme cardiac and nervous fatigue. This state requires great caution. If the patient attempts to overcome the condition by effort he risks either a relapse of his disease or an attack of heart failure, either of which may be very serious. Strict recumbency, perseverance with stimulants, and gradual increase in the quantity and quality of the food are the only measures needed to ensure complete recovery; at least, so far as the dangers of the disease are concerned. For even in the cases of extreme bradycardia that are occasionally seen (and the writer has met with a pulse of 30 persisting for five days in a boy of 17 years) the prognosis does not appear to be other than favourable.

THE INCIDENCE OF *BACILLUS INFLUENZÆ* (PFEIFFER) IN THE PRESENT INFLUENZA EPIDEMIC.

BY JAMES McINTOSH, M.D. ABERD.*

(*From the Bacteriological Laboratory of the London Hospital*, Professor W. BULLOCH, F.R.S.)

SINCE the discovery of the bacillus of influenza by Pfeiffer in 1892, towards the end of the 1889–92 panepidemic, there has been a considerable amount of discussion as to whether this bacillus is or is not the etiological agent of acute influenza. This controversy has continued during the present epidemic owing to the failure to demonstrate the organism in typical cases.

Cause of Conflicting Results.

An able and elaborate review of the investigations in this direction has appeared in the Medical Supplement to the *Daily Review of the Foreign Press* for October, 1918,[1] which clearly shows the widespread failure to demonstrate the bacillus of Pfeiffer with any degree of constancy. In fact, so numerous have been the failures that grave doubts are cast on the part played by the influenza bacillus as the causative agent of the present epidemic. Out of a large number of workers few found the bacillus with any degree of constancy. Matthews,[2] however, isolated the bacillus in every case (12) examined; Dietrich found it in his first seven post-mortem examinations; Bergmann isolated it in 15 out of 20 sputa examined. Since the above review was written, however, Eyre and Lowe[3]

* Working on behalf of the Medical Research Committee.

[1] Medical Supplement (compiled by the Medical Research Committee) to the Daily Review of the Foreign Press, Oct. 1st, 1918.

[2] THE LANCET, July 27th, 1918. [3] THE LANCET, Oct. 12th, 1918.

isolated it from 12 out of 14 sputa, while in Germany Neufeld and Papamarku,[4] Pfeiffer, Gotschlich, and Uhlenhuth report that in the more recent cases they have found the bacillus not infrequently. There are two possible factors concerned in the production of the negative results; either the bacillus of influenza is not present in the majority of cases or the methods and media used for its isolation are at fault. From the results given below we can at once dismiss the first contention; for the second there is more to be said, as the *B. influenzæ* belongs to the delicate group of hæmophilic bacteria which require special media for their isolation. Up to the present it has generally been supposed that ordinary laboratory media to which some blood had been added were sufficient. In fact, Davis stated that as small a quantity as 1 in 180,000 of hæmoglobin was all that was necessary.

Characteristics of B. influenzæ.

The bacillus of influenza is one of the smallest microbes visible, measuring 1 to 2μ in length; it possesses a considerable degree of "pleomorphism." At times it appears as a short thin rod with rounded ends, while at others it is so short that its appearance is that of a small coccus. The bacillus is Gram-negative and does not stain well with the majority of bacterial stains, best results being obtained with carbol-fuchsin. The bacillus will not grow on ordinary medium until blood or hæmoglobin has been added, and if the medium has been made slightly alkaline good growths can be obtained. In sputum large numbers of the microorganism may be present and at times almost uncontaminated with other bacteria. Often the bacilli are arranged in small groups, which are very characteristic. But a microscopic diagnosis of *B. influenzæ* is far from satisfactory, and in my experience only possible on a few occasions. At times the bacillus may present a bipolar appearance owing to the centre part not having taken up the stain properly. The colony on suitable medium may vary from a fraction of a millimetre to 2 or 3 millimetres in diameter. It is circular, flat, and translucent, in subcultures the growth is often confluent, and on trypsinised blood medium possesses a brown appearance. On pigeon blood agar the growth is much whiter. Then, unless the strain is subcultured at least every second day, there is a great tendency for it to die out.

I have thought it necessary to mention the above characteristics of the *B. influenzæ* in order that it may be seen what I have considered as its criteria. Forms which do not come up to the above standards have been rigorously excluded, and on this account it is quite possible that some of the larger forms rejected are really the so-called pseudo-influenzal forms of the *B. influenzæ*.

Present Investigation.

In the early summer of 1918 when the disease first assumed epidemic form in London material from a small number of cases and from post-mortem examinations was examined with unsuccessful results as regards the presence of *B. influenzæ*. In these investigations ordinary blood-agar (human blood) was employed. From this it was concluded, perhaps rather rashly, that *B. influenzæ* did not play an important part in the causation of the epidemic, and the matter was not pursued further. No single type of bacterium was found with any degree of constancy; in some it was streptococci, in others Gram-negative bacilli similar to the *B. bipolaris equisepticus*, and in a few a pleomorphic micrococcus morphologically and culturally identical with the coccus which Rosenow has described as constantly present in poliomyelitis. With the recrudescence of the epidemic this autumn, and bearing in mind the results achieved by Matthews with trypsinised blood, it was resolved again to investigate the condition. The successful results obtained with this medium are detailed below.

Media Employed.

For the isolation of the bacillus I have used exclusively trypsinised blood-agar made according to the formula supplied by Captain S. R. Douglas. The directions are as follows: In a series of test-tubes, containing 8 c.cm. of sterile normal saline solution to which has been added 0·25 per cent. of anhydrous sod. carbonate, is placed 0·5 c.cm. of sterile trypsin (Allen and Hanburys). The tubes are incubated to test sterility, and, if sterile, 2 c.cm. of blood are added to each. The tubes are then placed in the incubator and shaken from time to time until the blood is completely digested and of a brown colour. This will take at least 48 hours. The trypsinised blood-agar is then prepared by adding 1–2 c.cm. of the digested blood to 5 c.cm. of 3 per cent. agar.

For the purpose of growing the *B. influenzæ* in subcultures this medium is excellent, but for the purpose of isolation the blood must be digested for a longer period, as it is only after 10–14 days incubation that the medium will be found to have developed its full inhibitory properties as regards the growth of other bacteria. This inhibition of other bacteria, as pointed out by Matthews, is, in my opinion, one of the most useful features of the medium. In fact, without this property the isolation of the *B. influenzæ* from post-mortem material on ordinary blood-containing media is almost impossible owing to its overgrowth by the other bacteria present. The selective power of this medium must be regarded as comparable to that of Löffler serum for the bacillus of diphtheria or milk for the bacillus of Welch.

Trypsinised blood medium has the disadvantage, however, that the influenza bacillus tends to die out on it very easily. For the purpose of keeping the strains going I have found pigeon's blood-agar most suitable. Pigeon's blood is added to sterile distilled water in the proportion of 1 to 10 and then 1 c.cm. of a sterile $\frac{1}{4}$ per cent. solution of anhydrous sodium carbonate added. The agar is prepared by adding 1 c.cm. of this laked blood to 5 c.cm. of melted agar.

Technique of Isolation.

For the isolation of the *B. influenzæ* from sputum, pus, or other pathological exudate a small platinum loopful of the material should be spread over a couple of trypsinised blood-agar slopes. In the case of throat swabs, the swab should be rubbed gently over a plate or a couple of tubes. The tubes or plates are then examined after having been incubated overnight, and the likely colonies picked off and subcultures and film preparations made. On this medium the young isolated colonies have a characteristic appearance and so can be picked off with considerable facility. For the purpose of identification the appearance of the bacillus, its size, the lack of affinity for stains, and the inability to grow on non-hæmoglobin-containing media were considered sufficient.

Types of Material Examined.

In this paper I have considered it unnecessary to give full descriptions of the individual cases examined, as it is proposed to do so later when a full acount of the investigations is made. A résumé of the main features of the types dealt with is given below.

(1) *Broncho-pneumonic cases.*—(*a*) Post-mortem material: In the first instance, examinations were confined to material obtained from post-mortem examinations. Samples for bacteriological investigation were taken from bronchial pus and from the affected lung tissue. In the majority of instances the lungs showed extensive changes. They were greatly congested and showed numerous broncho-pneumonic areas. The bronchial mucous membrane also showed considerable changes, while the smaller bronchi usually contained a certain amount of pus. The most striking feature is undoubtedly the great congestion of the lung tissue, and the areas of actual hæmorrhage. In fact, the whole appearance might be in most instances regarded as a hæmorrhagic broncho-pneumonia.

(2) *Acute broncho-pneumonia.*—In these cases the sputum was examined when obtainable and also any pathological exudate such as pleuritic fluids. The sputum from the different cases showed considerable variation, in some being thin and watery, although in the majority it was thick, mucoid, and tenacious, only in a few was it muco-purulent. In a large number it was distinctly rusty in colour. From a certain number of these cases blood cultures were made. The material was collected only from those cases which had a temperature varying between 100° and 103° F.

(3) *Acute uncomplicated cases.*—In this article the results given are limited to those cases where the posterior naso-pharynx was examined. Swabs were taken and incubated on hæmoglobin-containing media. The great majority of these cases were in the acute stage of the disease, before any definite pulmonary complications had developed. There was fever varying from 101°–104° F., great prostration, flushed face, suffusion of the eyes, but in no case was there coryza, although some had an irritating cough.

Results of Bacteriological Examinations.

(1) *Broncho-pneumonic Cases.*—(a) *Post-mortem material.*

Case No.	1	2	3	6	9	12	13	14	15	16	20	23	25	26	30	31	33	34	60
Result...	+	+	+	+	0	0	+	+	+	0	+	0	+	+	+	0	+	0	+

Total = 19 cases examined, positive 13 (68·3 per cent.).

\+ = Positive as regards the demonstration of *B. influenzæ*.
0 = Negative as regards the demonstration of *B. influenzæ*.

[4] Deut. med. Woch., Oct. 24th, 1918.

(b) *Sputum.*

Case No.	4	5	7	17	18	19	21	22	24	27	29	32	47
Result...	+	+	+	+	0	+	+	+	+	+	+	+	0

Case No.	48	49	50	51	52	53	55	56	57	58	59	62
Result...	+	0	+	+	+	+	+	+	+	0	+	+

Total of 25 cases examined, of which 21 cases were positive, making a percentage of 84·0.

(c) *Blood Cultures.*—Blood cultures were done on some ten of the above cases, and all proved negative as regards the presence of *B. influenzæ*. In two cases done shortly before death bacterial growths were obtained—in the one a streptococcus and in the other a Gram-negative coccus.

(2) *Acute Influenza.*—In this instance the posterior naso-pharynx only was examined.

Case No.	...	35	36	37	38	39	40	41	42	43	44	45	46
Result	...	+	0	0	+	+	+	+	+	0	+	+	0

Total 12 cases, of which 8 gave positive results (66·8 per cent.)

Altogether 56 unselected cases have been examined to date, and from these the bacillus of influenza was cultured on 42 occasions (75·0 per cent.).

Discussion of Results.

As regards the mere association of the bacillus of influenza with the cases examined the results speak for themselves. The percentage of positive results over the whole series was 74·5, although in the different groups the figures vary somewhat. In the case of the sputum from broncho-pneumonic cases the percentage was 84·5; in the post-mortem material obtained from a similar series of cases it was 68·3, while in the naso-pharynx of the acute uncomplicated cases the figure was 66·8. With more prolonged investigations I am sure the number of positive findings of the bacillus of influenza could be increased, as under the conditions of the present time one could only spare the minimum amount of time and labour necessary. In addition, there is the probability that a number of the clinical diagnoses may have been at fault as well as the pathological, which would tend to lower the percentage. The later error, however, can be adjusted when histological examination of the post-mortem material has been completed.

Relative Frequency of Other Bacteria.

In this article it will be sufficient to indicate the relative frequency of the other bacteria found in the cases. On the whole, film examinations have given the impression that Gram-negative bacteria have a tendency to predominate in a good number of the cases, and cultural examinations have confirmed this. Gram-negative diplococci were present on numerous occasions; while cultures showed that some of these belonged to the meningococcus type, more frequently these cocci were of the *Pharyngis siccus* type. In others large Gram-negative bacilli belonging to the coliform group were present, some of which proved to be the *Bacillus proteus* and others the *Bacillus pneumoniæ* (Friedländer). In addition, especially in the naso-pharynx of acute cases, a small Gram-negative bacillus rather larger than the influenza bacillus was isolated. This bacillus was identical with one isolated during the summer epidemic, and was distinctly bipolar in type, with rounded ends. At times the stained bacillus presented an appearance not at all unlike that of the *Bacillus pestis*.

Of the Gram-positive bacteria, the most frequent were staphylococci, both aureus and albus, then streptococci, and lastly pneumococci. In this series a marked feature has been the absence of pneumococci in the various sputa examined, and in not more than two cases were they present in such numbers as to lead one to infer that they played an important part in the process. Of four pleuritic fluids examined two gave growths of a fine streptococcus, one a pure culture of pneumococcus, and one a pure growth of *B. influenzæ*. The slimy condition which the lungs develop in many cases after a short exposure to the air is apparently due to the *B. proteus*.

The Rôle of the Bacillus in Etiology.

Unlike the influenza bacillus, these various other bacteria do not predominate with anything like the same degree of constancy. These results, however, do not in themselves prove that the *B. influenzæ* is the cause of influenza, but only that this bacillus is present in the majority of the cases. One must bear in mind that the mere association of a micro-organism with a particular disease does not entitle one to describe it as the cause. For the purpose of illustration it is sufficient to mention the *Bacillus suipestifer* and hog-cholera, or *Bacillus proteus* (Strain X.) and typhus fever. The constant presence of the bacillus of influenza is suggestive that it plays an etiological rôle in the production of the condition known as influenza. Conclusive evidence can only be produced as the result of further experimental work.

In acute influenza there is probably an invasion of the respiratory tract by the influenza bacillus, their growth is accompanied by the production of toxic bodies, which injure the mucosa and on absorption produce a general malaise. In the more severe cases the fine bronchi and the alveoli of the lungs are affected. In the latter the walls of the capillaries, as well as the walls of the alveoli, are injured, with the result that a serous exudate takes place. In parts this exudate completely fills up the alveoli, and on this account sections of the affected lung produce a picture strikingly like that produced by phosgene poisoning. The second stage of the disease consists of an infection of the damaged tissues and serous exudate, with one or several of the pathogenic bacteria which are to be found normally in the respiratory tract. Thus a secondary septic broncho-pneumonia is set up.

In conclusion, one must admit that the almost constant presence of the bacillus of influenza is suggestive of an etiological rôle, and that prophylactic inoculations against this organism might be successfully employed to combat the disease.

Further, I wish to express my indebtedness to Professor Bulloch for his interest and advice on many points.

PROVISIONAL NOTES

ON THE PATHOLOGY OF THE PRESENT EPIDEMIC.

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THE arrival and progress of the influenza pandemic in London appears to have been unexpected among the population and to have caused a certain extent of dismay. The curious isolation of different communities due to the difficulty of travel and the absence of press facilities has put back the distribution of common knowledge to what it was a hundred years ago. It is possible to read about occurrences in South Africa or Bombay, but news from towns in this country only filters through gradually and often in a distorted form. Thus, while the influenza epidemic has been proceeding sporadically or acutely in Portsmouth for months, the fact has hardly been referred to outside.

Here in Portsmouth the disease has been more or less endemic since the outbreak of "Spanish influenza" in the spring. Pneumonia since that time has been prevalent in the Navy, but since that time it has been certainly more prevalent than usual, and has been the subject of considerable inquiry and study. The number of cases of empyema was remarkable. In these were found not only pneumococci, but also in many cases hæmolytic streptococci, which gave all the ordinary reactions of *Streptococcus pyogenes*.

The general opinion at that time was that the cases were due primarily to either of these organisms or, indeed, to other "respiratory" organisms, since *Streptococcus viridans* and *Streptococcus mucosus* were sometimes met with. It was the general impression that "respiratory" bacteria had taken on an increased virulence, owing to the somewhat unsatisfactory weather and the presence of large numbers of young "new entries" in the barracks. The cases were very largely confined to these young "new entries."

The question of influenza as a factor in the disease was discussed and studied, but owing to the complete absence of bacteriological support the causative importance of this bacillus was discredited.

At the end of August, however, an acute alteration took place in the aspect of the disease. The cases among "new entries" became more and more numerous and the clinical aspect more and more acute. It became obvious that a serious epidemic had broken out. Large numbers of cases of acute pneumonia were admitted to hospital, and among these the death-rate was very high. Localising signs such as empyema became less frequent; indeed, death occurred before these could develop. The outstanding feature of the disease was an acute septicæmia of a particularly fulminating type.

At that time the epidemic was very largely confined to the young naval "new entries," and this fact, together with the unusual symptoms, led to all manner of curious suggestions as to its origin. It was even suggested that the disease might be pneumonic plague, while, of course, the foolish seized upon "vaccination" or "inoculation" as the cause, without considering whether either of these protective measures had been already carried out or not.

As the epidemic progressed the age-incidence became widened and all types of men became affected, and finally, as was inevitable, the civil population came under its influence. Clinically, it became more obvious that the acuter symptoms were nearly always preceded by "catarrh," and the question of influenza as the initial infection again came into prominence. Bacteriologically, however, we were unable to obtain any evidence of this; neither in the sputum nor in throat swabs could we find influenza bacilli. Large numbers of cultures and microscopic examinations, post mortem, were equally unsuccessful. In the trachea, lungs, and blood we now found almost exclusively the same hæmolytic *Streptococcus pyogenes*.

We were therefore inclined to the view that this must be a primary streptococcal pneumonia, although it was obvious that the objections to such a view were serious. On the other hand, we were conscious of the fact that the demonstration of influenza bacilli is at all times difficult, and particularly so under the septic conditions which were before us, and therefore when Dr. John Matthews [1] published his technical method for growing *B. influenzæ* we at once went into the question further.

Among the first cases examined with a digested blood medium comparable to Matthews's, we obtained cultures of *B. influenzæ* mixed with large numbers of streptococci from the tonsil after death. In subsequent investigations, using a medium founded upon that of Levinthal (which we refer to as "K" medium) we have found influenza bacilli in so many men suffering from influenza without pneumonia, and in the organs of men dying from pneumonia, that we are of opinion that it is unnecessary to look further than this organism for the cause of the epidemic, the streptococci and the other organisms which have been mentioned being only secondary infections upon lungs already affected by *B. influenzæ*.

The difference in the bacterial flora obtained by the use of these media is so remarkable that we are prepared to admit that our earlier conclusions were incorrect, and that *B. influenzæ* was probably the real cause in most of the cases of pneumonia which have been occurring during the last six months. Under these circumstances it may be an assistance to those who still implicate various streptococci or who are discussing the possibility of an "invisible virus" to have our tentative results so far as they can be carried when half our staff is sick.

Ante-mortem Findings.

We have examined the naso-pharynx in 15 cases of influenza in whom there were no obvious signs of pneumonia, and in 12 have isolated *B. influenzæ*. Several of these patients later developed a fatal pneumonia, but, unfortunately, no autopsy was permitted. In each case we have made only *one* culture, and the number of positive results would, undoubtedly, have been much higher if we had made several examinations or if we had been working the whole time with a satisfactory medium. Sometimes the growth has been profuse, but more often a few colonies only develop among the numerous Gram-negative cocci, pneumococci, and streptococci.

We have also examined the naso-pharynx of 71 men who were apparently healthy and obtained 15 positive cultures This finding has an epidemiological interest.

Single samples of *sputum* have been examined from 106 cases and *B. influenzæ* has been found in 45.

[1] THE LANCET, 1918, ii, 104.

Influenza bacilli can often be cultured from sputa in which it is difficult or impossible to recognise them microscopically. In a small number, however, bacilli were so numerous and pure that they could hardly be missed even by Gram's stain, and we are satisfied that we did not overlook cases of this type in the earlier months of the epidemic. In the great majority of the sputa, including those in which copious growths are obtained, the microscopic picture is inconclusive so far as *B. influenzæ* is concerned, but pneumococci and streptococci abound as usual. It is true that with a very intense stain, such as that which we call "multicolour blue," a few minute bacilli may be found, often in clumps, but we very seldom get a picture which convinces us that influenza bacilli are present, and the subsequent copious growths are often surprising.

We have made *blood cultures* from a number of men with pure influenza with negative results, and similar negative results have been obtained with the *urine*.

Post-mortem Findings.

(*a*) *Macroscopic pathology.*—The post-mortem appearances of a rapidly fatal case will best indicate the type of disease with which we have been dealing here.

Externally: The body of a well-developed muscular young man, aged 18; marked cyanosis of lips and finger-nails; a quantity of blood exuding from mouth. *Thorax:* 200 c.cm. of deeply blood-stained watery fluid in left pleural cavity. A trace of similar fluid in right chest. The parietal pleura on both sides is injected and shows scattered purpuric patches. The *pericardium* contains a little clear blood-tinged fluid. The *heart* shows nothing remarkable beyond hæmolytic staining of the endocardium; the heart-muscle is firm and appears in good condition. *Left lung:* The lower lobe is a dark purple colour and shows a fine fibrinous roughening in places; it retains its shape on removal and is heavy; it feels soft and jelly-like, with several firmer areas 2 or 3 cm. in diameter scattered about in the lung substance. The upper lobe is similarly affected in its posterior part, but in the anterior portion it is spongy and feels aerated. On section the lower lobe is dark-red colour and airless, being full of a thin hæmorrhagic exudate which flows out from the cut surface. In the places corresponding to the firmer portions described above there are found solid, dark-red, rather dry areas. Some of these extend to the surface of the lung and resemble infarcts in appearance; others, however, are more or less spherical masses situated centrally in the lung. The lower part of the upper lobe is similarly infiltrated by a thin hæmorrhagic exudate, but the upper part is aerated and shows a congested spongy lung substance. The *right lung* is less affected than the left, the upper lobe being aerated and showing a red spongy surface. The bronchial tree throughout the lungs is intensely injected and contains bloody fluid which pours out into the trachea. The naso-pharynx, pharynx, larynx, and trachea are much injected. This injection is most marked in the trachea, especially in the lower part, which is a dark purple colour. The tonsils are prominent and injected and contain a few beads of pus. The cervical and paratracheal glands are injected, the latter being a dark purple; the gland below the tracheal bifurcation is enlarged and very soft and hæmorrhagic, as are the glands at the hila of the lungs. *Abdomen:* Peritoneum and intestines appear normal. Spleen not enlarged. On section, slightly swollen red pulp. *Kidneys:* Cortex rather opaque in appearance, slightly swollen, no hæmorrhages or other abnormalities detected. *Suprarenals* show dark plum-coloured medullæ, the left being the most affected. *Bladder, &c.:* Nothing remarkable. *Brain:* Some injection of smaller vessels upon the cerebral cortex. No signs of meningitis. No hæmorrhage.

The above is a rapidly fatal case showing no reaction to the infection. The patient appears to have been drowned by the exudate into the lungs rather than killed by the septicæmia.

In cases of longer standing there has been, in addition to the hæmorrhagic condition, a marked broncho-pneumonia with pus in the smaller tubes, and sometimes areas of grey hepatisation, as seen in lobar pneumonia. In several cases there has been a purulent bronchitis and peri-bronchitis, the lung presenting a marbled appearance owing to the purulent infiltration of the bronchial walls; the purulent infiltration can also be seen on the surface of the lung as a white peri-lobular network. Empyema is very common, there being, as a rule, a thin yellowish opalescent fluid with a sediment of thicker pus in the most dependent part. Pyopericardium is frequent. The spleen shows evidence of reaction, being enlarged and having a swollen, often diffluent, creamy or dark-red pulp. The kidneys often show severe parenchymatous degeneration, but in only one case

has there been an obvious nephritis. In a few cases dying ten days or so after the onset of the disease the heart muscle appeared considerably affected, being very flabby and having the appearance of parenchymatous degeneration.

(*b*) *Bacteriology*.—The organism which is immediately responsible for the above pathological picture is a hæmolytic streptococcus; it does not ferment inulin, and grows in long chains as a sediment in broth. It is found in enormous numbers in the lungs and in the pleural and pericardial pus when this is present. From the blood it can be obtained post mortem, usually in pure culture. The coccus, though forming long chains in fluid exudates, often shows diplococcal forms in the tissues, so that it cannot always be recognised as a streptococcus in films. At the beginning of the epidemic this streptococcus was the only organism of importance which could be recovered from the tissues or blood of the cases examined; when, however, the new media became available for the investigation of the cases it was possible to prove, what had already been suspected, that the influenza bacillus was the real cause of the disease.

Previous to the adoption of these media much time was spent examining films from the lung exudates, scrapings from the trachea, &c., without obtaining any evidence of the presence of the influenza bacillus In the first case in which the bacillus was demonstrated it was found in pus from the enlarged tonsils, and in this it could be seen, with appropriate staining as described elsewhere, in large numbers, chiefly intracellular. Although in this case films from all parts of the respiratory tract were examined, the bacilli could not be detected anywhere else and streptococci in enormous numbers dominated the picture. At the present time we are obtaining cultures of *B. influenzæ* from every post-mortem examination upon these pneumonia cases. In the lungs the bacilli are obtained with certainty only from the most healthy parts; the obviously diseased portions are so full of cocci that the bacillus has apparently been exterminated and its detection has generally been impossible. It is obtained fairly constantly from the trachea and bronchi; in the case of the bronchi those in the healthier parts of the lungs yield the best results. Pus from the deeper parts of the tonsils gives on culture scattered colonies of *B. influenzæ* amongst innumerable streptococci. In one case a culture from blood taken from the jugular vein yielded a few colonies of *B. influenzæ* and a copious growth of streptococci.

When now these bacteriological findings, ante- and post-mortem, are reviewed as a whole, taking into consideration the essentially superficial nature of many of the examinations and the difficulties met with in the preparation of a very delicate medium, it appears justifiable to us to suggest that *B. influenzæ* is very frequently present in the respiratory passages before death, and is present in the lungs and sometimes the blood after death so frequently as to suggest that the disease is constantly associated with and due to a *B. influenzæ* infection.

The Cultivation of B. influenzæ.

The classical blood-agar medium for the growth of influenza bacilli has been practically useless to us under the conditions met with.

We have already mentioned that we first used a digested blood medium akin to Matthews's, but we gave it up in favour of Levinthal's, which is simpler to prepare. We have had no opportunity to study the original description of this medium, but have worked entirely upon the reference to it in the Medical Supplement to the *Daily Review of the Foreign Press* (Oct. 1st, 1918) compiled by the Medical Research Committee. The principle of this medium is the addition of fresh blood to a flask of melted agar in a proportion of 1 in 20. The medium is brought to the boil and the coagulum aseptically filtered off "through gauze or paper."

There are factors in the preparation of this medium which are still obscure. We have several times made up batches which are entirely useless; indeed, we have made up two batches from the same materials and at the same time, and one has been excellent and the other useless. We are almost satisfied that the factor in these cases is the filtration through "gauze or paper." Neither of these substances should ever be used, but *glass-wool only*, presumably because the paper absorbs the essential "vitamins" (Jordan Lloyd).

We have not yet decided whether the blood must be *fresh*. We use citrated ox or sheep blood and find this to be satisfactory if collected once a week. Whether a "stock" citrated blood, laked with distilled water and sterilised with chloroform, according to the technique of one of us, is suitable we are not yet certain.

The technique of preparation of "K" medium is simple.

A flask of ordinary 2 per cent. meat agar is melted and reduced to 55° C. The agar need not have been "egged" or cleared in any way. One part in 20 of whole blood is then added and the flask placed in a water bath at about 60° C. The flask is constantly shaken while the water rises to the boil, and when this occurs it is left at rest for 10 minutes at the boiling point. In the meantime a flask carrying an ordinary filter funnel lightly packed half full with glass wool has been autoclaved. The boiled agar-blood mixture is poured through this wool without shaking and, if necessary, left in the steamer. Usually the filtration takes only a minute or two and the medium is then poured aseptically into a number of sterile tubes and sloped. No contaminations need arise during these manipulations.

The effect of this medium upon the growth of *B. influenzæ* is very remarkable. This bacillus is familiar to us as producing characteristic pin-point colonies on blood agar. The colonies grow no larger and seldom coalesce. On ordinary agar, the bacillus does not grow at all, but merely by adding the soluble products of a small quantity of boiled blood the growth on agar becomes as profuse and as confluent as the growth of typhoid. The size of the colony depends entirely upon the spacing. The common size is 2 mm., but when colonies are well isolated they often attain no less than 5 mm. The growth recalls that of meningococci on serum agar, but is more transparent. Against a dark background the colonies are also somewhat bluer. They are very easy to distinguish from streptococci or pneumococci. The growth is very readily emulsified to form a stable suspension.

The Identification of B. influenzæ.

The microscopic appearance of *B. influenzæ* upon "K" medium is very characteristic. It is very small and thin. The bacillus is usually so short that it resembles a coccus. The longer bacillary forms which are familiar upon blood agar do not develop on "K" medium. Films made from the larger colonies a few days old show a curious degeneration of the bacteria. They have largely broken up into an amorphous débris in which individual bacteria are hardly recognisable, but subcultures from such colonies yield normally profuse growths. The viability of these bacteria appears to be quite prolonged. Even on slope cultures on "K" they live for several days, sometimes for as much as a week, and in capped "stab" cultures in "K" all our strains survive 15 days at least.

The affinity of *B. influenzæ* for stains is feeble, and this constitutes one of the chief difficulties in its demonstration. It is, of course, negative to Gram, but the affinity for the counter stain is so feeble that this method is useless for its detection in pathological material. The stain which we have found most satisfactory is a methylene blue preparation akin to polychrome-methylene blue, which we call "multicolour blue." We made this stain by dissolving 10 g. of methylene blue in a litre of 1 per cent. sodium bicarbonate solution and steaming for two hours. A few drops of this stain are placed upon the slide and this is then heated until steam arises. In the case of a pure culture the stain is then rinsed off and the slide dried, but when dealing with a pathological exudate the slide, after rinsing, should be momentarily placed in alcohol which contains one drop of glacial acetic acid per 100 c.cm. It is then rinsed and examined.

There are at present no specific tests which can be applied to identify *B. influenzæ*. We rely upon the morphological appearance and the growth on blood agar, with an absence of growth on ordinary agar. Most strains grow with the typical discrete, pin-point colonies on blood agar, but some develop rather larger confluent colonies up to 1 mm. The bacillus is, of course, non-motile. Fermentation reactions are now being studied and attempts are being made to prepare agglutinating serum. Rabbits will tolerate very large doses, even two slope cultures of living bacilli.

Prophylaxis of Influenza.

It appears to us that the only practical measure which is likely to be effective to control the present epidemic is a prophylactic vaccine treatment. In instituting such a measure it is necessary to decide whether it is more profitable to attempt to prevent the onset of influenza or to

prevent the complications which are the cause of death. On all grounds we consider that the former is the more satisfactory aim, since if the influenza can be prevented the complications will not arise. Therefore, we consider that *B. influenzæ* should be the main basis of the vaccine. We have already prepared large quantities of this vaccine and have experimented with it on volunteers.

The question of the dose to be employed must be governed by several factors. It must not be so large that a danger of a pronounced negative phase will arise, because this would be dangerous when the epidemic is already present and sources of infection are universal. Neither must it be too small to be effective. Further, it is undesirable to produce marked local reactions, since these would create too much dislocation in the carrying on of employment. We are not in favour of giving two doses only, because if these are large enough to be effective a negative phase may follow. We therefore subdivide the first dose into two and give three.

The spacing of doses which we have adopted for the moment is fairly short. The first dose is given on the first day and the others on the fourth and eighth. The quantities given are 50 million, 166 million, and 500 million. The second dose gives rise to some local reaction, and it is possible that the third will have to be reduced.

It has been decided that these vaccines shall be used only upon volunteers, and, since the allegations which have already appeared in certain sections of the press will probably militate against men coming forward, we wish the immediate effects of the vaccine to be as mild as possible; otherwise we are afraid that this process, which may well be followed by excellent results, will be discredited and never receive an adequate trial.

THREE CASES OF MALIGNANT DISEASE OF THE UPPER EXTREMITY.

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THE following cases of malignant disease in the region of the shoulder present, I think, some points of interest.

Case of Berger's Operation.

The first case, one in which several limited operations had been performed for an epithelioma of the hand, where ultimately the disease had extensively involved the axillary glands and lymphatic vessels, demonstrates the advantages which Berger's operation gives in sweeping away, without a difficult, tedious, and possibly incomplete dissection of the axilla, all possibly infected tissues.

CASE 1.—Patient aged 43. In 1894 suffered from abscesses about both ankles, presumably tubercular. Various operations were performed at different hospitals, and in 1898 a sore formed on the back of the left thumb, which he attributes to a scratch becoming infected whilst dressing his foot. In 1902 the left foot was amputated at Bristol by Mr. R. G. P. Lansdown, and he has had no further trouble with the lower extremities. The sore on the thumb refused to heal, and in October, 1907, X ray treatment was begun and continued at the various places where he resided for over a year. In all, some 50 exposures were given. In February, 1909, he consulted me, and as far as I remember now, there was an indolent ulcer with smooth red surface on the terminal phalanx of the left thumb on its dorsal aspect, the surrounding skin showing numerous minute telangiectases. The sore healed under applications of scarlet red ointment. In October, 1913, it again broke down, and in May, 1914, as it showed no signs of healing, I amputated at the interphalangeal joint by a palmar flap. He had no further trouble until October, 1916, when a blister formed at the end of the stump. Early in 1917 it showed the obvious appearance of the epitheliomatous ulcer, and was amputated through the carpo-metacarpal joint. Recurrence promptly followed in the scar, and a hard cord was found running up the lower part of the palmar aspect of the forearm on the radial side, which on examination was found to be a lymphatic vessel filled with carcinoma cells. The original ulcer on examination was a squamous-celled carcinoma. I then amputated the forearm just below the elbow, removing all the fat and the epitrochlear gland. Glands from the axilla and the cephalic gland, removed for examination, showed no signs of malignancy. In May, however, glands were felt in the axilla. He was admitted to the King Edward VII. Hospital and operated on with the intention of clearing the axilla, but as soon as an incision was made it was obvious that this was impossible. There was an extensive glandular involvement and a large thrombosed lymphatic vessel the size of a large crow-quill was found running by and adherent to the axillary vein. His consent to amputation had not been obtained, and the wound was closed. I felt that a Berger's operation held out the best chance of a radical operation and I decided to perform a fore-quarter amputation.

Three days later, under open ether, and after a preliminary injection of morphia, I made an incision over the clavicle and resected the middle third with a Gigli's saw. The pectoralis major was separated and the subclavius divided and the neuro-vascular bundle exposed. The artery was ligated at the junction of the axillary with the subclavian (this was lower than it should have been). The arm was elevated to empty it of blood, and the vein secured at the same level. The three cords of the brachial plexus were

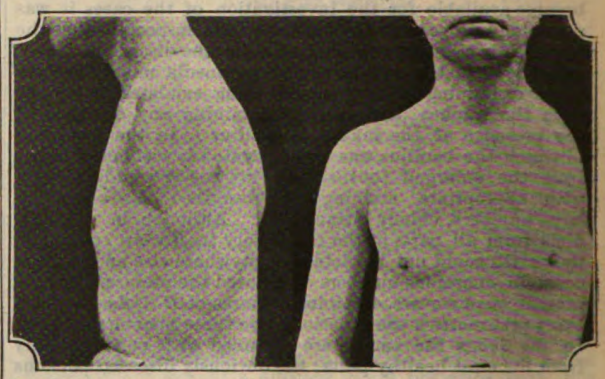

FIG. 1.—Shows smooth rounded outline of shoulder with almost linear scar, well on front of chest owing to absence of pectoro-axillary flap.

injected with a 4 per cent. solution of novocaine, and after a few minutes divided. The original incision was carried out along the acromion and spine, and then down to the posterior axillary fold. This was joined by another passing from the mid-point of the clavicle in a curve with the concavity outwards so as to leave practically no anterior flap, the object being to get as far away as possible from the infected axillary contents. Similarly, the pectorals were divided well inwards and reflected with the fascia over the serratus magnus, which was divided a little further out. The cervico-dorsal flap was then reflected, the trapezius, levator anguli, and muscles attached to the posterior border of the scapula divided, the transversalis cervicis and supra-scapular arteries secured, and the limb removed. In spite of the absence of the pectoro-axillary flap there was ample skin covering. There was very considerable shock, which was treated by continuous rectal saline and the usual methods, and the next day his condition was very good. The wound healed by first intention.

A month later, glands having been found in the neck, an incision was made from the mastoid to the clavicle and outwards to the trapezius, which was partially reflected, and the whole of the fat and glands removed *en bloc*. These showed evidence of infiltration with carcinoma. At the end of August a small lump was found near the anterior border of the trapezius and was removed. From June to the present date he received 25 exposures to X rays. So far no further signs of the disease have manifested themselves, and he has been for the past six months carrying on his ordinary duties. Fig. 1 shows his appearance.

Case of Amputation at the Shoulder.

About the same time I had the following case in hospital.

CASE 2.—Patient had a very extensive carcinomatous ulcer arising in the scar of a large burn involving the greater part of the skin of the right upper arm. I amputated at the shoulder, having to make irregular flaps extending on to the chest, as the scar trenched on the axilla and chest wall. The skin covering was not adequate, and part of the wound healed by granulation. The difficulty of feeling sure the axilla was completely cleared in this case afforded a marked contrast with the last, where everything was swept away *en bloc*, without a tedious dissection. Here one had to think about getting flaps to cover the stump of the scapula and acromion. The shock was certainly not so great, but I feel that Berger's operation would have been the better procedure.

The man received seven exposures to X rays in as many months, the limited number being due to the distance at which he lived. He reports that he is in perfect health at present.

Berger's Operation.

In Berger's operation fat, glands, and muscles with their fascial lymphatic network are swept away in one piece, and this entails the minimum risk of cutting through infected tissues, and therefore fulfils the principal canon in the surgery of malignant disease. The cosmetic result (which, as a matter of fact, should not enter into consideration) is, I think, at least as good as in amputation at the shoulder-joint, and retention of the shoulder-girdle is of no functional importance. In either case if an artificial limb is worn it is for appearance only.

The operation itself, a somewhat formidable one, has, according to Keen, a mortality of 6 per cent. The indications given by Jacobson and Rowlands and in other works are (1) certain cases of malignant disease too extensive for amputation at the shoulder; (2) certain cases of injury; (3) gangrene and infections. In the latter two I should imagine the operation mortality would be very much higher. I have not seen records of its use in military surgery, but conceivably it might be indicated in spreading gangrene as a very heroic measure.

As regards the steps of the operation, these are fully described in the text-books, but certain points are worthy of note.

1. A free removal of the clavicle facilitates finding the subclavian artery and vein, and also assists in securing the transverse cervical and suprascapular arteries with their veins, which may give considerable trouble. Le Conte disarticulates at the sterno-clavicular joint for this reason, but one would imagine this procedure, laying bare the great vessels at their emergence from the thorax, a more dangerous procedure.

Sir F. T. Chavasse divides both pectorals near the chest, turns them outwards, and uses the loop of the anterior thoracic nerve as the guide to the axillary artery. By this means and by dividing the serratus magnus close to its origin from the ribs, and later the latissimus dorsi, the axilla can be removed with its contents intact.

2. Methods to diminish shock. Blocking by Crile's method each cord of the brachial plexus with a 0 5 per cent. solution of cocaine as soon as they are exposed and before ligation of the vessels is of great value. It might also be worth while to block the descending branches of the cervical plexus by injecting them at their point of emergence at the middle of the posterior border of the sterno-mastoid. This would render the whole skin incision anæsthetic.

3. Farabeuf's pectoro-axillary flap seems unduly full, and baggy flaps favour sepsis. With no anterior flap in this case there was abundant covering.

Case of Removal of Scapula.

The third case is one of a round-celled sarcoma of the scapula.

CASE 3.—Patient, aged 29, in September, 1916, commenced to have pain in his left shoulder, which he thought was rheumatism. Later a swelling the size of a golf ball appeared, which gradually increased in size. Dr. R. Cameron, under whose care he was, found the Wassermann test negative, and sent him to the hospital with the diagnosis of sarcoma. An aspirating needle only drew a little blood.

On March 30th, 1917, under open ether, I made an incision in the axilla with a view to ligature of the subscapular artery as the first step in removal of the scapula, when numerous small glands of a dusky purple colour were encountered. These were removed as high up as practicable without division of the pectorals and the subscapular vessels were ligated.

A T-shaped incision, one limb passing along the acromion and spine, the other along the vertebral border of the scapula, was made, and the corresponding flaps reflected. In exploring the growth with a view of seeing whether a partial removal was practicable, in separating the infraspinatus from the spine, the finger passed through an opening in the venter into the subscapular fossa. The trapezius and deltoid were separated from the attachments to the spine and the base of the acromion sawn through with a Gigli's saw. The muscles attached to the vertebral border, the scapular muscles, and the long tendon of the biceps with the capsule were divided, and the base of the coracoid cut through with bone-pliers, thus preserving the origins of the short head of the biceps and the coracobrachialis. The scapula was then removed after dividing the teres major and subscapularis. The trapezius and deltoid were sutured together.

There was considerable shock, and he was placed on continuous saline and the usual measures. Stitches were removed on the ninth day and primary union was obtained. An attempt was made to keep the limb in abduction on a Jones's abduction splint, but he could not be induced to keep this on, unfortunately, or he would have retained much more power of abduction.

On May 18th he was readmitted, a large mass having formed in the axilla, and two days later the axilla was cleared with division of the pectorals, which were subsequently sutured.

On June 13th, glands having appeared above the clavicle, a further operation was performed. The posterior triangle was exposed by an incision from the mastoid to the clavicle along the posterior border of the sterno-mastoid and outwards along the clavicle, and the whole of the fat from this space, from the mastoid to the clavicle and from under the trapezius, which was partially reflected, to the carotid sheath, was removed.

From April 30th he had received daily injections of Coley's fluid, starting with ¼ minim and increasing by ½ minim until with 3½ minims he had a fairly severe reaction. It was intermitted for a few days and then resumed. In all I think about 15 injections were given, but I have not the record by me. Prophylactic X ray exposures were given by Captain Owen Ll. Rhys at weekly or bi-weekly intervals, and up to the present date he has received 25 exposures. His present condition is shown in Fig. 2, and so far he appears in perfect health and shows no signs of recurrence. He has a very useful arm, except that voluntary abduction is limited to about 45°, and there is some limitation of both antero-posterior and rotatory movements. In view of the known malignancy of round-celled sarcoma of bone and the extensive invasion of glands that occurred, I cannot but think that the combination of Coley's fluid and X ray exposures had something to do with freedom from recurrence up to the present (November, 1918).

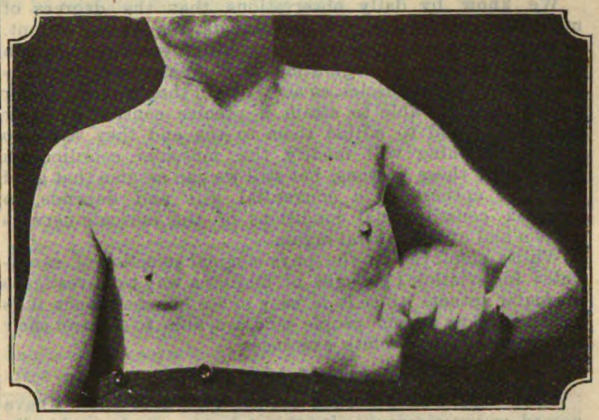

FIG. 2.—Showing full amount of voluntary abduction at false joint between head of humerus and chest wall. Range of active movement 45°.

I have had several other cases where I adopted this combination of post-operative treatment, but the time that has elapsed has not been sufficient to warrant any conclusion being drawn, although so far the results have been hopeful.

As regards the steps of this operation, which entails considerable shock, the following points may be noted :—

To use all ordinary measures for preventing shock, and possibly blocking the descending branches of the cervical plexus, might be worth trying, although this would only affect the skin incision. Preliminary ligature of the subscapular vessels should be done, and if there is any reason to suspect glandular involvement the pectoral muscles should be divided and the whole axilla cleared, as in a breast operation, with subsequent suturing of the muscles. Sarcoma of bone is prone to affect the glands, and if it is possible this should be done in all such cases.

Ligature of the suprascapular and posterior scapular vessels as soon as they can be exposed by reflecting the trapezius will save hæmorrnage in the later steps of the operation.

It can seldom be safe to leave the glenoid process, and it is doubtful if any better functional result will be secured by so doing, as all the surrounding muscles are divided and adhesions would form. It is, however, most important at an early stage to adopt some means to keep the arm in abduction to a right angle.

Cardiff.

THE ERGOESTESIOGRAPH:

AN APPARATUS FOR THE GRAPHICAL REPRESENTATION OF THE MUSCULAR APTITUDE OF CANDIDATES FOR AVIATION.

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IT is well known how much uncertainty still exists in regard to the senses (muscular, articular, tendinous sense, and more generally deep sensation) that allow us to appreciate the amount and strength of our movements so as to regulate them according to the intended aim. This uncertainty includes the fundamental scientific points of view as well as the method of investigations.

We know by daily observations that the degrees of muscular coördination of individuals are very different. Some people can execute with great adroitness and perfection all their movements, regulating in a precise way the contractions of their muscles, so as to attain their object. Other people are not able to attain a precise control of their movements and to adjust them to the end they strive to attain. Training will modify the muscular coördination capacity of these persons, but still we can assume that good muscular aptness is a congenital gift and depends on complex constitutional conditions of the musculo-nervous system and of the central organs.

Whilst employed in the physiological selection of candidates for aviation I thought of finding a way to investigate muscular aptness, since it is easy to see how necessary it is to select pilots among people who are able to control their movements with absolute exactness.

Description of the Apparatus.

To this end I have worked out the apparatus which I have named *ergoestesiograph*. Its object is to record graphically the individual manipulative ability in counterbalancing variable resistances.

The instrument is shown in Fig. 1. On a strong low table is pivoted a lever with unequal arms. On the long arm, A (60 cm. length), there slides a sleeve, B, which carries a hook, to which is attached a weight and a rod, C. The rod

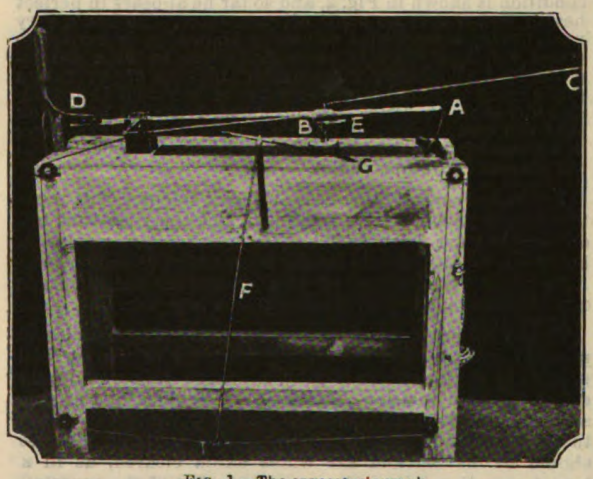


FIG. 1.—The ergoestesiograph.

serves to slide the sleeve and weight along the arm. On the short arm of the lever another small rectangular lever works, to which a handle is attached. A glance at the figure will show how, by pushing the handle forward, the arm A of the principal lever will rise. To this lever is attached a writing style, E, which traces on the revolving cylinder the oscillations of the lever. Another style, G, is attached at right angles to the rod F; this oscillates, and by means of a wire-and-pulley transmission traces on the same cylinder, according to the movements of the sleeve B, the displacements of the weight, and therefore the variations of the resistance.

The candidate and the observer are situated as shown in Fig. 2. The observer, by means of the rod C, slowly slides the sleeve B. The candidate, blindfolded, holds the handle, and *feeling* the variation in resistance, due to the sliding of the weight, tries to oppose it, and so to regulate his own muscular force as to keep the lever A always horizontal.

On the cylinder the writing styles trace two curves: one with large regular oscillations, which represent the variation of the resistance, and this I name *resistance curve;* the other represents the vibrations, uncertainties, and jumps of the muscles which attempt to compensate the variations of resistance; this curve may be called the *muscular curve.*

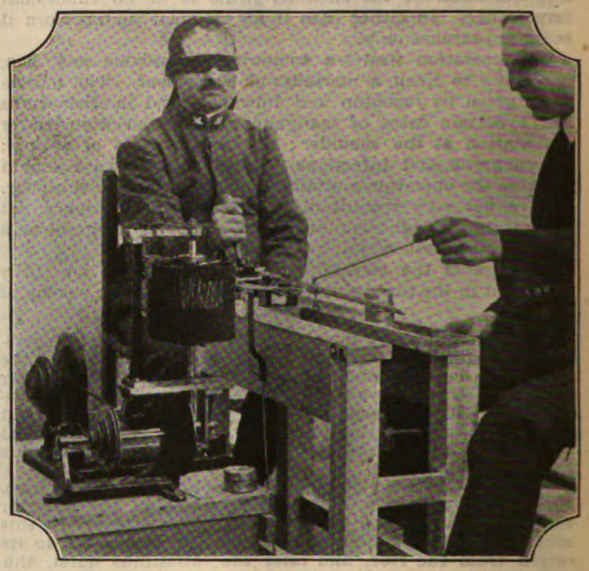


FIG. 2.—An experiment with the ergoestesiograph.

The experiment is usually conducted in two ways.

(1) The candidate places himself as shown in Fig. 2, and the slight movements he makes with his forearm are in the same plane of the lever A. I have named this *first position.*

(2) The candidate places himself laterally to the table; the plane in which the lever A moves is perpendicular to the forearm. I have named this *second position.* In this way the aptitude for forward and back movements, as well as for side movements, can be recorded.

In the first position the experiment is easier for the candidate, and the muscular curves are always more regular than those obtained in the second position.

Other data regarding these experiments are the following: The weight is 2 kg. for the first position and 1 kg. for the second. The variation of the resistance goes from 12 kg. (lowest apex in the curve of the resistance) to 2 kg. (highest apex in the same curve) in the first position; from 6 kg. to 1 kg. in the second. The displacing of the weight is so done that each oscillation has a period of about 10 seconds.

Results of Observations with the Instrument.

With this instrument I have already obtained a great number of tracings, and it may be said that these tracings have a personal type, like the ergograms obtained with Mosso's instrument.

I have experimented with various people—with individuals not accustomed to any kind of muscular work, with persons accustomed to various sports which require skill and exactness of movements, e.g., with horsemen, motor cyclists, automobile drivers, and aviators. Naturally, I specially concentrated my attention on the latter, and I have been able to experiment on a certain number of pilots. I have ascertained with satisfaction to myself that the best curves have been given by aviators who have shown the best records in flying, while curves not so good were obtained from untrained pilots and candidates still under instruction. I have also obtained quite good tracings from good riders, probably because they are trained to keep the reins in a state of correct tension by an adequate contraction of the muscles of the arm and forearm.

Thus, in this respect the instrument has shown itself to correspond to the aim for which it has been constructed—viz., to place on record evidence of the good or bad muscular coördinations of the individuals subjected to the experiment.

Theoretically, from an individual with perfect neuro-muscular mechanisms—that is, from a man capable of com-

pensating at every instant the variation of the resistance by an adequate contraction or relaxation of his muscles—a horizontal line should be obtained. But in practice that does not take place, and each subject will follow somewhat the oscillations of the resistance, so that even a very good muscular curve shows an undulating aspect.

Types of Curves Obtained.

The collected material, although not quite sufficient for allowing definite conclusions to be drawn, permits me, however, to give some hints on various types of curves obtained with my instrument. In these curves it may be noticed :—

(*a*) In the best cases the muscular curve maintains itself in a middle zone of the tracing ; that means that the person subjected to the experiment can appreciate and maintain the horizontal position of the lever. In other cases some people make curves which regularly and continually descend ; these persons do not feel that the tension of their muscles is gradually giving way ; other people instead make curves which continually rise—that is, they react to the variation of the resistance with an increasing muscular effort. Generally, the descending or ascending type remains with the same person, even if the experiment is repeated many times.

(*b*) The best curves are those in which the principal oscillations are uniform and not very high. Moderately good curves are those in which the principal oscillations, though uniform, are rather high ; this means that the candidate follows the variations of the resistance too easily—that is, he is not able to compensate them in a quick and exact way. Bad curves are those in which the oscillations are not uniform and vary very much in height.

(*c*) The presence of notches and jumps is the most important point to be considered. In very good curves the notches are very small and there are no jumps of the lever. This means that the candidate can augment and diminish in a uniform and steady way the contractions of his muscles. When he cannot do this there are vibrations and sudden strengthening and collapsing of the contractions —that is, the individual does not regulate his muscles evenly, and we have then those very irregular tracings which are characteristic of awkward persons.

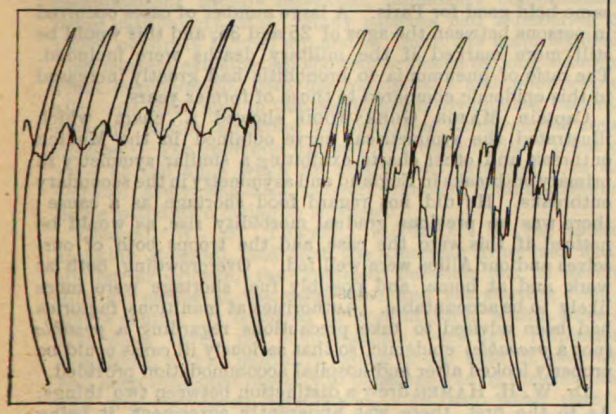


FIG. 3.—A good curve obtained from a famous aviator.

FIG. 4.—A bad curve obtained from an individual with poor muscular coördination.

These conclusions may be summarised as follows :—

(*a*) Good curves which show excellent muscular coördination : the curve remains in a middle horizontal zone ; principal oscillations are uniform and low, with few small notches and no jumps.

(*b*) Moderately good curves : ascending or descending curves ; curves with principal oscillations rather high and not uniform ; curves with many and pronounced notches.

(*c*) Bad curves, which show poor aptitude to regulate the muscular activities : uneven, irregular curves, with large notches and jumps.

As an example, in Fig. 3 a very good curve is reproduced, obtained from one of our best pilots, and in Fig. 4 a very bad curve, made by a person who possesses neither precision, skill, nor agility of movement, and therefore would never be able to become a safe aviator.

NEURASTHENIC AND HYSTERICAL CASES IN GENERAL MILITARY HOSPITALS.

BY R. H. TROTTER, M.D. MANCH.,
MAJOR, R.A.M.C. (T.C.); OFFICER IN CHARGE, MEDICAL WARDS, HUDDERSFIELD WAR HOSPITAL.

BY Army Council Instruction 712 of 1918, paragraph 4—

"Cases which it may not have been possible to send to one of the special hospitals mentioned in para. 2, and all other cases occurring in other central and auxiliary hospitals, will be transferred to one of those special hospitals as soon as the necessary accommodation is available."

Hysterical and neurasthenic patients, therefore, should only be found in the wards of a general hospital when they are awaiting transfer to a special hospital, or when they are suffering from some physicopathic condition which so far overshadows the psychopathic element in the case as to cause this element to be readily overlooked, or, if it is recognised, to be relegated to a secondary place.

Importance of Early Diagnosis and Treatment.

The object of the present contribution is to enforce the importance of being constantly on the look-out for such symptoms in patients admitted for physical disease, and, in cases admitted as neurasthenia, of adopting such treatment as is possible in a general hospital pending transfer, instead of leaving the patient untreated.

A vicious neuropathic habit speedily becomes fixed, and few cases coming within the scope of medical treatment partake more of the nature of those pathological emergencies which are usually supposed to be the exclusive property of the surgeon. It is, indeed, but a mild exaggeration to assert that early treatment in the psychoneuroses of war is as important as prompt surgical interference with the course of acute appendicitis. Yet there is a tendency, as soon as the diagnosis of neurasthenia or hysteria is made or confirmed after reception of a case so diagnosed overseas, to mark the patient for transfer to a neurological centre, and then to take little further interest in him, even though the interval before transfer takes place is occasionally extended to several weeks. There is also, perhaps as a part of the recent disposition throughout the profession to exalt surgery at the expense of medicine, an inclination in the surgical wards of all hospitals, both civil and military, to lose sight of the patient in striving after the extension of the field of surgery and the attainment of perfection in technique.

Though for continued treatment and complete cure of most of the motor, sensory, and visceral psychoneuroses, and of nearly all the psychical neuroses, the mental atmosphere and the facilities for subsequent open-air employment found in the neurological centres may be essential, the essentials for emergency treatment should be at hand in every general hospital. These essentials are accurate diagnosis, confident prognosis, understanding sympathy, and inexhaustible patience. Given these, many cases developing hysterical conditions whilst under treatment may be cured at once (a common example being hysterical aphonia and photophobia after gas poisoning), and other patients definitely hysterical may be transferred to the neurological centre when the vacancy is notified already on the high road to recovery.

Method of Treatment.

In the treatment of motor psychoneuroses I have followed lines similar to those suggested by Major A. F. Hurst.

The patient is subjected to partial isolation in a special case ward, but any irksome restriction is avoided. The nature of his ailment is explained to him in accordance with his capacity for understanding such an explanation, an exhaustive examination having preceded the diagnosis of a pithiatic condition. He is confidently assured of an early and complete recovery. If the motor psychosis takes a spastic form passive movements are performed until relaxation of the muscles is secured. If the "palsy" is flaccid the manipulation is carried on until a flicker of muscular contraction is elicited. During the manipulation the patient is assured with monotonous reiteration that recovery is about to take place and that it is a matter of absolute certainty, and any objections and difficulties are met and answered. At the least sign of muscular contraction he is urged to resist the passive movements, and often hours elapse before the muscular resistance becomes powerful enough to retain the "palsied" limb in a momentary rigidity. The manipulation is then suddenly interrupted, and the man, taken by surprise, maintains the limb for a second or two in the posture in which it has been suddenly abandoned

by the manipulator. From this point further progress is rapid, as the least intelligent subject can now be readily convinced of the unreality of his supposed paralysis. The principal danger if he has to wait some time before being passed to a neurological centre is the development of one of the fantastic habit gaits so easily acquired by recovering pithiatic paraplegics, but this is readily avoided by a little supervision. Exercise and such employment as is available should be resorted to at once, for to leave the patient with an idle brain is to court a relapse or a psychical neurosis.

Psychical neuroses are frequently amenable to a psycho-analytical talk, resolving doubts and difficulties and leading the sufferer back to a normal outlook upon life. Mild degrees of this condition are very common in the medical diseases of war. The patient confined to bed with an ailment which does not eliminate his neuropathic potential by overwhelming it with pain has time to think over his war experiences, and in this instance Cowley's lines—

> "Things which offend when present and affright
> In memory, well painted, move delight"—

are very far from the truth.

In the surgical injuries of war, on the other hand, the pithiatic symptoms are frequently determined by the surgical lesion, and tend to develop along the lines of motor and sensory psychoneuroses. It is an interesting speculation how far the reflex contractures of Babinski and Froment would be prevented by early neuropathic treatment. Certainly unceasing vigilance is called for in the surgical wards of a general military hospital to prevent development of neuropathic conditions.

Visceral neuroses are often aggravated by essays in abdominal surgery, though sometimes a temporary improvement may follow the operation.

Illustrative Cases.

The following cases recently coming under observation are illustrative of some of the foregoing remarks :—

1. S. E., aged 34. *Pleurisy and acute rheumatism with endocarditis.* In bed four months for this condition. Walked badly on getting up, and when at an auxiliary hospital fell on uneven ground and became paraplegic. When I undertook treatment of the paraplegia he had been in bed a further four months. After two and a half hours of manipulation combined with vigorous persuasion he got out of bed unassisted, and with some education recovery of walking power ensued. The V.D.H. necessitated his discharge from the Service.

2. E. H. R., aged 45. Transferred from France after attack of *acute gout in foot.* Diagnosis, "myalgia." Mother was paraplegic two and a half years, and man was confident that his condition resembled hers. Had been in bed five weeks when treatment undertaken, and recovery of walking power was effected after three-quarters of an hour.

3. V. W., aged 31. Sent home from India with *debility and chronic intestinal obstruction following dysentery.* Had trench fever in France before going to the East and had "terrible pains in the legs" ever since. The shin pain was a typical algia and disappeared almost at once under vigorous persuasion. He had been in bed nine months and believed that he would never walk again, but recovered the use of his legs after the usual treatment, and was walking about unaided 14 days after admission.

4. C. H., aged 23. *Paralysis* (unable to flicker a toe) *of both lower limbs and left arm.* Ankles supported by stirrups from thighs and air-cushion in use to prevent bed-sore. Passed as permanently unfit by a board in the East and disability estimated at 100 per cent. Been in bed eight months. As there was no immediate vacancy at a neurological centre I undertook treatment at once, and after some hours' treatment, as described, he was able to stand and walk, and within 14 days of admission was going out alone on pass.

5. T. S., aged 22. Sent home from the East diagnosed "*effects of heat,*" with history of severe sunstroke, but opinion expressed that part of the condition was functional. Total flaccid paraplegia and paralysis of left upper limb; athetosis-like movements of left side of eight months' duration; absolutely bedridden for six months. There being no immediate vacancy in a neurological centre treatment was undertaken five days after admission. In half an hour the athetosis had disappeared, in an hour the left upper limb was moving normally, and in three hours the patient walked into the hospital grounds with me.

6. B. H., aged 21. *Fractured pelvis* seven months ago. Never walked since, save with crutches, and then with difficulty. Performed all movements of limb and walked with stick after half an hour's treatment.

7. J. L., aged 35. *P.U.O.* Complained of depression and had marked tremor when under observation. Elicited that after being bombed when carrying comrades to a place of safety this incident had remained as a painful impression, repressed during waking, but recurring nightly in dreams. Urged to familiarise himself with every detail of the incident in his waking hours and to discuss with other men. In a fortnight all psychasthenic symptoms had disappeared. This case is typical of many.

8. W. L. M., aged 19. *Mutism.* Eight days before admission from overseas a shell burst close by when he was lying down waiting to attack. He remembers nothing further until he found himself in a trench with three wounded men of his company who had carried him thither. Has never spoken since. No external injury. Communicates by signs and writing. Treatment undertaken day after admission. Explanation, manipulation, and persuasion. Speech restored in half-an-hour.

The list could be extended, but I have said enough to show that by simple methods early cases developing in hospital can be cured at once, and established cases awaiting transfer need not necessarily be allowed to drift.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

Presentation of the Diploma of Honorary Fellowship to Sir Alfred Keogh, G.C.B.

A GENERAL meeting of the Fellows of the Royal Society of Medicine was held on Nov. 14th, Sir HUMPHRY ROLLESTON, K.C.B., the President, being in the chair, when the President presented the diploma of Honorary Fellowship to Sir Alfred Keogh, G.C.B., late Director-General of the Army Medical Service.

In presenting the diploma the PRESIDENT gave a brief sketch of Sir Alfred Keogh's career, pointing out his connexion with the R.A.M. College, his organisation of the Territorial R.A.M.C., and his truly Herculean task of creating an efficient medical service on a war basis, showing his wisdom by the free utilisation of available civil talent in the form of consultants and experts, successfully blending them with the Regular Service. Sir Alfred Keogh was the fifty-seventh British Honorary Fellow, there being but 146 Honorary Fellows since the establishment of the Medical and Chirurgical Society in 1805.

Discussion on Influenza.

Sir ARTHUR NEWSHOLME, K.C.B., opened the discussion on Influenza. His paper will be found in full on p. 689 of our present issue.

Epidemiology.

Dr. T. H. C. STEVENSON exhibited charts showing the difference in the age distribution in this and the earlier epidemics, in the July and September 1918 outbreak a very small proportion of cases occurring amongst old people. The same held good for Paris. A large number of cases occurred in persons between the ages of 25 and 35, and this would be still more marked if the military deaths were included. The ratio of pneumonia to bronchitis had greatly increased in this epidemic compared to those of former years.

Captain MAJOR GREENWOOD showed a chart which illustrated the symmetrical curve obtained in the Munich outbreak and other charts exhibiting a similar symmetry in primary outbreaks in England and asymmetry in the secondary outbreaks. He did not regard food shortage as a cause; there was no previous gradual morbidity rise, as would be noticed if this were the case, and the troops both of ourselves and our Allies were well fed. Overcrowding, both at work and at home, and possibly fuel shortage were more likely to be accountable. Authorities at munitions factories had been advised to take precautions regarding a *possible* (not a *probable*) epidemic, so that seriously ill cases could be properly looked after and hospital accommodation provided.

Dr. W. H. HAMER drew a distinction between two things. As to the first, there was apparently agreement, it being now admitted that there was a close relationship between outbreaks of cerebro-spinal fever, poliomyelitis, and polio-encephalitis, and outbreaks of influenza, bronchitis, and pneumonia. As to the second, there was not, perhaps, the same general consensus of opinion. It was claimed not only that these diseases prevailed in the same communities, either concurrently or in closely related sequence to one another, but also that two or more of them might, in certain phases of epidemicity, simultaneously affect members of the same household or other associated groups of persons. Work which had been done on the subject (of which he gave a brief review) pointed to a common cause operating in the epidemic diseases in question, but whilst some held that this cause was the same living organism, others maintained that the nexus which bound cerebro-spinal fever, poliomyelitis, polio-encephalitis, and encephalitis lethargica together with influenza, bronchitis, pneumonia, and epidemic catarrh was merely predisposing (telluric, climatic, &c.) and not an actual causal influence exerted by one and the same infecting agency operating in all of them. Sir Arthur Newsholme had added measles and whooping-cough to the group, but distinction should be made between these two diseases and those just enumerated; detailed evidence as to a very remarkable association of outbreaks in respect of their time distribution and of the presence of the several disease types in households and in groups of associated persons had been adduced in

the case of the former, but no similar intimate interrelationship between them and measles and whooping-cough had been demonstrated. He called attention to the fact that an important argument in favour of a *common infecting agency* in the first-named influenzal group of diseases was forthcoming in applying the principle known as the law of parsimony. The hypothesis that there was *one common infecting agency* fitted the facts and greatly simplified the necessary assumption. He pleaded for the application of William of Occam's razor—*Entia non sunt multiplicanda praeter necessitatem*—to the present case. The use of this instrument would not only reduce by some millions in London alone the number of carriers of the causal agent, many or all of whom were regarded by whole-hearted supporters of the healthy carrier doctrine as persons who should be segregated, but it would also enable a consistent workable theory of the case to case spread of influenza to be formulated. It would, by focussing attention upon one single cause instead of upon a congeries of secondary invaders, give research workers and statisticians a chance of studying the laws of influenzal epidemicity, and at the same time relieve preventive medicine of the need of carrying on its shoulders an impracticable working hypothesis.

Colonel SOLTAU said that influenza had been present in the Armies in France all during the war on a small scale. True bacteriological influenza was always present in the winter. The epidemic broke out in the first week in April in the Army in Northern France and spread to other areas. The spread was most marked amongst men who were sleeping or messing together. It was a mild form, there were no fatalities, and no cases had to be evacuated. It continued during May and broke out afresh in June, and continued during June, July, and August. This epidemic was very severe numerically, virulence increased steadily from the middle of June, and the proportion of respiratory complications rapidly increased, pulmonary complications being particularly fatal. Many patients had slumbering or latent nephritis lighted up, and of these the majority died. Post-mortem examination showed evidence of long-standing renal degeneration, both macroscopically and microscopically. Of 3000 men in Captain Charters Symonds's casualty clearing station admitted for influenza, 22 developed renal disease.[1] The epidemic was serious from a military point of view at the time when an attack was expected, but the German Army was also severely affected, whole divisions being withdrawn owing to sickness.

General W. S. THAYER, U.S M.C., of the Johns Hopkins Hospital, said that the American Army had had a similar experience, the epidemic bursting out at several different camps at the same time, and not starting from a single centre. It occurred in a mild form, with a three or four days' fever, no complications, very few respiratory symptoms, and no mortality except in the case of men who had been subjected recently to phosgene gas by the Germans, and who developed pneumonia. In the latter part of September a more severe type broke out, with severe respiratory complications, almost entirely pneumonia, and a pneumococcus pneumonia almost universally. There was a simultaneous outbreak in camps in America, and many men developed the disease on board ship on their way over.

Surgeon-Lieutenant E. L. STURDEE, R.N., gave his experiences at a naval depôt. From July to September the epidemic never quite stopped, and about Sept. 27th there was a sudden rise in the numoer of cases. Deaths almost entirely occurred amongst men of 18 to 20. The pneumonia in the second epidemic seemed to be a secondary and entirely epidemic infection, coming on while the men were recovering, and rapidly spreading from one to another.

Bacteriology.

Surgeon-Captain P. W. BASSETT-SMITH spoke of the Plymouth epidemic, which was associated with pleuro-pneumonia as a secondary infection of a very virulent type, that and empyema being very frequent. Examination of the sputum showed the presence of the Pfeiffer bacillus, the pneumococcus, and streptococcus. The streptococcus was the most virulent organism in that particular locality at this time, but the pneumococcus had been obtained in relatively large numbers from the blood in cases occurring at another port, and either the streptococcus or the pneumococcus might be the cause of death.

[1] THE LANCET, 1918, ii., 664.

General THAYER gave the results of studies of the disease which were collected at the Central Laboratory. In some instances the influenza bacillus was present in the nasal secretion, and in these there were few respiratory complications. Later, as respiratory symptoms became more common, the influenza bacillus was discovered in a larger number of cases than at first. The organism was found in the upper part of the respiratory tract and less commonly in the lung. In certain early cases a small Gram-negative diplococcus had been found. The complicating organism varied. With regard to the respiratory complications, he said that the pneumonia which followed influenza had been with the American Army pneumococcus pneumonia, though isolated instances of streptococcus pneumonia had been seen. In other instances streptococci had occurred in connexion with pneumococci—mixed infection—but in the majority of cases it had been a pure pneumococcal pneumonia. The pneumococcus as found in the camp hospitals was, for the most part, Types 4, 3, and 2; there were relatively few cases of Type 1. There was a great rise in the number of cases of meningococcal meningitis associated with the outbreak, and in several different points in connexion with the pneumonia observed, meningococci had been cultivated from the lung tissue. The general feeling had been that it was a secondary factor.

Investigation of Cases at Royal Herbert Hospital, Woolwich.

Sir KENNETH GOADBY gave an account of the study of a number of acute cases of the prevailing epidemic of influenza in the wards of the Royal Herbert Hospital, Woolwich. About 1000 cases were admitted, with a mortality of about 5 per cent. The majority of the cases were characterised by acute onset of malaise, with pain in limbs and frontal headache. Some of the cases had practically no lung symptoms, but a large number developed an acute broncho-pneumonia, commencing at the base of the lung and associated with blood-stained sputum of a salmon-pink colour; very few showed the rusty sputum common in lobar pneumonia. Epistaxis was a common feature, and a proportion of the cases showed a cyanosis of a curious type not directly attributable to consolidation of the lung. He had made a bacteriological examination of 30 cases at various periods after the onset from the first to the seventh day. Seven cases had consolidation of the lung, 27 had epistaxis, and 27 had broncho-pneumonia with red-stained sputum. A short diplo-bacillus had been found, but not in pure culture. It grew on blood agar only, was Gram-negative, non-motile, extremely short, and showed a tendency in individual cultures to considerable alterations in morphology. Streptobacilli containing 7 or 8 elements and even threads had been noticed, as well as shorter, somewhat swollen forms of an oval clostridial type. The organism corresponded with the description and characters originally given by Pfeiffer, was present in the films of the sputum in 27 cases, and was isolated in pure culture in 18. In addition the pneumococcus and streptococcus occurred with considerable frequency. Gram-positive diplococci with capsules were found in 22 of the sputa examined microscopically, and were isolated in 21. The streptococcus was seen in 14 of the sputa examined microscopically, and was obtained in pure culture in 19; it was strongly hæmolytic. Various types of the Gram-negative cocci of the *Micrococcus catarrhalis* group were observed, and in the last series of cases examined a few showed the presence of Gram-negative bacilli of the Friedländer type. The Gram-negative bacilli of the influenza class were present in greatest numbers in the sputa examined in the early stages of the disease, especially when blood staining first appeared. Blood culture was attempted in 6 cases, 2 of which proved positive, the organism isolated being in both cases the streptococcus of strongly hæmolytic type. No Gram-negative bacilli were found. In the 30 cases examined the bacteriology of the fatal and non-fatal cases appeared similar. The hæmolytic streptococcus was recovered from the sputum of 6 of the 10 fatal cases, and was not present in the remaining 4. A blood examination was made in 8 of the cases, 3 of which were fatal. The outstanding feature was a leucopenia. In no case was leucocytosis observed. In the differential count there was a relative polymorphonuclear leucocytosis in 3 cases, 2 of which were fatal. The recovering case was an extremely grave one, in which a vaccine was used, which might possibly have complicated the issue. A differential count of Arneth's type showed a large increase in the

horseshoe and rod-shaped nuclear cells and a diminution in the trilobed nuclear. There was no appreciable increase in the quantity of large mononuclear or small mononuclear cells, except in 1 fatal case. The high relative proportion of rod-nuclear and horseshoe-nuclear cells appeared of decided prognostic significance. The fact of the occurrence of plasma cells was also striking. Whatever its pathological significance, he thought there was no doubt that a short Gram-negative bacillus was associated with the early acute stage of the present epidemic in all the cases which he had examined.

Account of Another Investigation.

Captain H. E. WHITTINGHAM, R.A.M.C. (T.), attached R.A.F., gave an account of investigations which were undertaken by him and Dr. Carrie Sims to ascertain whether the present October "influenzal" epidemic and the July "Spanish plague" were due to one and the same micro-organism or group of organisms. That the causal organisms were not the same in both cases was suggested by the distinct difference in the signs and symptoms. Pharyngitis and laryngitis, with marked nervous prostration, distinguished the earlier epidemic; bronchitis and broncho-pneumonia, with septicæmia, the plague now with us. Over 100 cases were examined as regards the micro-organisms present in the posterior nasal swabs and sputa. The urine of these cases was also examined on several occasions. Blood cultures were performed on the first 50 of the cases admitted to the two hospitals in which he and Dr. Sims worked, and they had based all their figures on these 50 cases; but taking each case as admitted, whether mild or severe, would give as fair a picture as possible of the pathological findings of the disease. *Blood cultures* were performed on 50 cases. Positive results were obtained in 7 (or 14 per cent.), and of these the streptococcus was found in 5, the pneumococcus in 1, and a Gram-negative diplococcus in 1, this organism being isolated by them twice in the July epidemic. Three of these streptococci hæmolysed distinctly and 2 slightly. Death occurred in 6 of the 50 cases, 4 of the deaths (or 57 per cent.) occurring amongst those patients with a positive blood culture, the other deaths being due to purulent bronchitis and cerebro-spinal meningitis respectively, in which cases blood cultures proved negative. The death-rate among the patients with a negative blood culture was 4 per cent. The day of disease on which the various blood cultures were taken and the results of culture were shown in a table, the percentage of cases showing positive blood cultures increasing as the disease progressed, all cases showing positive cultures on the sixth and seventh days. *Throat swabs and sputum.*—Posterior nasal swabs were examined from the 50 cases, and the sputum of 23 of these. The chief micro-organisms present were as follows: Streptococcus was found in 80 per cent., pneumococcus in 66 per cent., *M. catarrhalis* in 72 per cent., staphylococcus in 54 per cent., *B. influenzæ* in 48 per cent., *B. septus* in 20 per cent., pneumo-bacillus in 16 per cent., and meningococcus in 8 per cent. of the cases. Captain Whittingham then gave a detailed description of the micro-organisms found. Streptococci were the predominant organisms in 30 per cent. of the cases, pneumococci predominated in 26 per cent., *M. catarrhalis* in 34 per cent. (being very similar to those isolated so frequently in the previous epidemic), *B. influenzæ* in 1 case (though found usually in small numbers in many of the cases), staphylococcus in 8 per cent. (most frequently *Staphylococcus aureus*). Meningococci were isolated from the posterior nares in 4 cases; 2 of these developed typical cerebro-spinal fever, 2 failed to show meningeal signs, and were apparently carriers.

Post-mortem examination.—Of the 50 cases dealt with, there were 6 deaths, or 12 per cent. Post-mortem examinations were performed on 5 cases, the pathological findings being more marked in those who died later in the course of the disease. The principal findings were as follows. The trachea showed acute congestion, more marked in the lower part, and in 2 of the cases greenish-yellow pus filled the lumen of the tube. The bronchi were congested, and pus filled them in the 2 cases in which it was found in the trachea. *Lungs.*—In the 2 cases which died on the fifth day there were marked congestion and œdema of both lungs; in the other cases there was double lobar pneumonia. The pleuræ showed inflammation. In 2 cases blood-stained inflammatory exudate was found in both pleural sacs; left unilateral empyema was present in 2 other cases. *Pericardium.*—Sero-fibrinous pericarditis was present in 1 case. In the 4 other cases the pericardium was normal. *Heart.*—In all cases there were more or less dilatation of the right heart, ante-mortem clot in the right auricle and ventricle, and pallor of the cardiac muscle. The *bronchial lymph glands* were enlarged, soft, and congested in 3 of the cases. *Peritoneum.*—Petechial hæmorrhages were found in all the cases; fibro-purulent peritonitis was present in 1. The *liver* showed early fatty changes throughout. The *spleen* was somewhat enlarged, congested, soft, and pulpy in 4 cases. *Kidneys.*—Slight fatty changes occurred in 1 case, 2 showed marked congestion, and 2 distinct toxic nephritis. Stomach and intestines showed submucosal hæmorrhages in 2 cases. *Brain.*—Distinct congestion of meninges and grey matter of the cortex was present in 2 cases. Ventricular fluid was normal in all.

Bacteriological examination of material taken at the post-mortem showed that the *B. influenzæ* was present in the bronchial discharges and lungs of 1 case only. Pneumococci were present in the bronchial discharges, lung smears, and pleuritic fluid of all cases, in every instance accompanied by streptococci and in 2 cases by *Staphylococcus aureus*. On one occasion pneumococci were isolated from the pericardial sac. Streptococci were present in the bronchi and lungs of all cases, in the pleuritic fluid of 4, in the heart's blood and spleen of 3, and peritoneal fluid of 1 case. The cocci conformed to the hæmolyticus type in all except 1 case. Pneumo-bacilli were isolated from the lungs of 2 cases and *Streptococcus aureus* was found in the bronchi and lungs of 2 cases.

Urine.—As in the July epidemic, albumin was present in a high percentage of cases, 100 per cent. on the second day of the disease. Casts and renal epithelium undergoing granular degeneration were present in 50 per cent. on the third to fifth day. Granular casts and renal cells were the commonest, hyaline casts were frequently present, and in some of the more severe cases epithelial and even blood casts were found. On the whole the kidney changes were greater in the present outbreak. The albumin continued to be present over a longer period, in some instances not clearing away before the twenty-first day, and where it had disappeared it often returned when the patient was given an increase of diet or was allowed out of bed. Patients had even returned to duty only to relapse, with distinct albuminuria and œdema of the eyelids. It was of the utmost importance that all influenza cases should be free from exposure to the elements and hard work for at least three weeks after the acute symptoms had subsided.

Leucocyte count.—Daily total and differential leucocyte counts were done on 12 cases over a period varying from 4 to 21 days. The results obtained showed three distinct types of leucocytic curves in the present "influenza" epidemic: Type 1, influenza uncomplicated; Type 2, pneumonic form; and Type 3, the lethargic form. The influenza type showed a total leucocyte count a little below normal in the early days of the disease and a leucocytosis of moderate degree (10,000 to 15,000 per c.mm.) from the fifth to the seventh day. In the pneumonic type there was a distinct leucocytosis (from 15,000 to 30,000) from the onset, and the total white count never fell below the normal unless death occurred, when either a leucocytosis or leucopenia might supervene. In the lethargic form there was an absolute decrease in the leucocytes (2000 to 3000 per c mm.) from the first, which lasted 7 to 12 days. With convalescence the total number of white corpuscles increased (10.000 to 15,000 per c.mm.), but in cases where death took place the leucopenia became more and more pronounced; all the normal varieties of white corpuscles showed an absolute decrease in their numbers during this leucopenia.

The Epidemic at Aldershot.

Captain HALLOWS spoke of his experience of the epidemic at Aldershot, where there were a number of mild cases in June of this year. In these cases he had found a diplo-streptococcus, and from wet swabs of the posterior nares in about 50 per cent. he had found the *B. influenzæ*. During the present phase of the epidemic he had examined about 35 to 40 cases post mortem with Colonel French's help, taking cultures from the spleen, blood, kidneys, and in some cases from the internal ear, and from any other local lesions which presented themselves, and in about three out of four cases got a positive culture from the heart blood. Those cultures were usually a diplo-streptococcus, in a very few cases the pneumococcus, and in fewer still the pneumococcus and the diplo-streptococcus. In 10 per cent. only of cases had he got a culture from the spleen. He had

got no growth from the kidneys or urine, even though albumin, casts or transitional epithelial cells had been found. He regarded the diplococcus as a pathogenic streptococcus, as the dominant organism in causing the complications of this disease—those complications which we regard as being septicæmic, such as capillary broncho-pneumonia or capillary bronchitis. The fact that it was grown from the heart's blood, from the spleen, and from the lung, and many other parts of the body, he regarded as proof of its being septicæmic. He had found in some cases a very definite collection of pus in the sphenoidal sinus, the growth there giving in some instances the *B. influenzæ*, and in all cases the diplococcus. He thought the initial infection was due to *B. influenzæ*, but the diplococcus soon got a hold and became septicæmic, and gave rise to other conditions of the body, the lung condition being purely secondary to the general septicæmia.

Cases on a Transport.

Captain J. G. HOPKINS, U.S.M.C., gave an account of a number of cases which came in entirely from one transport and were divided among a number of different hospitals. As the epidemic went on the pathological findings presented a different picture. In the autopsies on the first series of cases the influenza bacillus was found alone in 13 cases, mixed with other infections in 24, the pneumococcus in 15. Later, in two widely separated hospitals, out of 55 cultures the *Streptococcus hæmolyticus* was found in 33 per cent.; in another hospital, out of 22 autopsies the pneumococcus, Type 4, was found in 22, or 100 per cent., and the streptococcus in 4 per cent. In other words, though the original infection was in all cases the same, yet in one hospital there was a preponderance of cases infected with *Streptococcus hæmolyticus*, whereas in another there were 100 per cent. of cases with the pneumococcus. They concluded that the pneumococcus, the streptococcus, the staphylococcus, and meningococcus were probably secondary infections. Whether the influenza bacillus was the primary cause or also a secondary invader it was difficult to determine, but we had to bear in mind that these bacterial infections were superimposed on one another.

Major LITTLE, Surgeon-Lieutenant G. ROCHE LYNCH, R.N., Captain ARCHIBALD MALLOCK, C.A.M.C., and Captain W. E. CARNEGIE DICKSON also spoke on the bacteriology of the disease.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

A MEETING of this section was held on Nov. 7th, Mr. J. D. MALCOLM, the President (and later Dr. AMAND ROUTH), being in the chair.

Presidential Address.

The PRESIDENT, in his address, reminded his audience of the methods of the followers of Lawson Tait, who administered purgatives soon after the operations and forbade the giving of opium, but who scoffed at the germ theory and the use of carbolic acid. Their fatalities, he said, were chiefly from septic peritonitis. If they had brought their new methods into harmony with Lister's teaching they would have advanced almost at a bound to our modern technique and would easily have shown a superiority over the methods practised by the followers of Lister. But they missed a great opportunity. In 1884, said Mr. Malcolm, operations were hardly ever undertaken when acute inflammatory conditions existed, but now a great part of our work was essentially preventive. Operations anticipating complications were extraordinarily successful, especially in connexion with intestinal work. The principle of anticipating trouble had been introduced into the war surgery of the abdomen with great advantage to the patients. The death-rate from abdominal operations at the Samaritan Free Hospital had been reduced from 14 per cent. in 1884 to less than 4½ per cent. in 1916 (the last year available), and this although the area of operative work was much larger and more dangerous in recent years. Finally, it was urged that as hostilities would soon cease the section should endeavour to throw off the inertia which had overtaken its work as a consequence of the war and should resume its meetings regularly every month.

Treatment of Ante-natal and Post-natal Syphilis.

Mr. JOHN ADAMS said that the Local Government Board had made an order that the Metropolitan Asylums Board should arrange with the City of London guardians to receive and treat parturient women suffering from venereal disease, the actual cost being made a charge on the metropolis generally; and, as a result, the Thavies Inn Venereal Centre for Pregnant Women was equipped and opened on Sept. 1st, 1917, and a matron, sister, nursing staff, and himself as medical officer in charge were appointed. The institution provided for 20 beds, and contained an accouchement-room and an operating theatre; it was managed by the guardians of the City of London, who took a keen and progressive interest in its working and results. Since its opening 30 cases of pregnant syphilitic women had been admitted. He gave a detailed account of each case, including the details of the treatment before and after delivery, the treatment of the baby, and the results, as far as they could be ascertained, during the short time the centre had been opened.

On admission a Wassermann test is made by Dr. A. E. Stansfeld, of St. Bartholomew's Hospital, on the blood of every patient suspected of suffering from syphilis, and recently he had had the test made in every case admitted. Immediately on the birth of the child the Wassermann test is done on the blood of the mother, and on that obtained from the vessels of the divided umbilical cord, and a portion of the placenta is examined for spirochætes. As soon as syphilis is diagnosed in the mother weekly doses of the salvarsan substitutes are administered intravenously, beginning with a small dose and increasing till nearly the maximum dose is reached; intramuscular injections of grey oil, 40 per cent. B.P.C. emulsion, are given in 1 g. doses on the same day as the salvarsan. Galyl and novarsenobillon are used, galyl in glucose solution exclusively for the babies. He considered mercury extremely important for the cure of syphilis, and thought that administration by the mouth (as a pill of hyd. c. cret. with equal parts of pulv. ipecac. co., as advocated by the late Sir Jonathan Hutchinson) was the most convenient method, especially in the case of patients who could not be under continual supervision. He preferred galyl to novarsenobillon, and had once had a case of severe dermatitis whilst using the latter drug. He calculated the dose of galyl for a baby by comparing the babies' weight with that of the mother, of which it is about 1/17, so that he gave the babies an intramuscular injection of galyl in doses beginning at 2 cg. and increasing to 5 cg., and mercury in doses of ¼ to ½ gr. or more. The intramuscular injections were given anywhere along the middle third of a line drawn from the anterior superior spine of the ilium to the commencement of the gluteal fold, and the mercury and galyl could be given the same day on opposite sides and repeated after an interval of a week to 10 days.

Reviewing the cases, he said that out of 30 cases 6 babies had been born free from any evidence of syphilis, having a negative Wassermann reaction at birth which continued on future examination of the blood, although the mother had still given a positive reaction for a considerable time after delivery. It had been found that those babies who had at first a positive reaction generally yielded a negative reaction after treatment sooner than their mothers. Up to the present he had not found any case in which a baby who had become negative had later developed a positive Wassermann reaction. The average number of doses of galyl required to bring about a negative reaction had been 6·5, and the amount per case 30·15 cg. In every instance it had been found that the child gained regularly in weight and showed no further signs of syphilis. Owing to the limitation of accommodation at Thavies Inn cases could not be admitted before the sixth month of pregnancy. He was of opinion that with a large hospital and earlier treatment fewer syphilitic children would be born dead, a larger proportion of them would go to full term, and if not free from syphilis at birth they could by treatment soon become so.

Mr. Adams's conclusions were as follows: 1. Syphilitic pregnant women could be treated with salvarsan, even up to the day of their confinement, with every advantage. 2. A mother whose blood gave a positive Wassermann reaction might, after treatment, be delivered of a child whose blood gave a negative reaction. The child might continue to thrive and give a negative blood test. 3. Syphilitic children could safely be treated by salvarsan immediately after birth. 4. Salvarsan, combined with treatment by mercury, had a more certain and quicker action in producing a negative Wassermann reaction in the child than in the mother. 5. In nearly all syphilitic children born

alive, treatment could convert a positive Wassermann reaction into a negative, and such children appeared to become healthy and showed a regular weekly gain in weight. Between a syphilitic mother and a child who gave a negative Wassermann reaction at birth the placenta appeared to act as an intercepter of syphilitic virus, probably brought about by the chorionic ferments, as shown by Dr. Amand Routh.[1]

Discussion.

Dr. AMAND ROUTH said that according to the Johns Hopkins Hospital reports, apart from deaths at labour due to complications, 25 per cent. of stillbirths were due to syphilis, and amongst illegitimate babies double that number. He was struck by two important things: (1) how it was that any child infected at fertilisation was born alive; and (2) that a number of cases of children of syphilitic mothers stood a good chance of being born healthy. It seemed that there must be some force controlling pregnancy, and from the beginning of pregnancy to childbirth he believed that the chorionic ferments did produce something which could control the situation to some extent. They were no doubt scattered throughout the mother's body and rendered her immune from active propagation of spirochætes during pregnancy. Women after many pregnancies might become cured of syphilis. He had seen cases of this kind in which a mother had first a miscarriage, then a stillborn baby, then a full-term infected child, and later children who showed infection some time after birth.

Mr. W. G. SPENCER remarked on the value of in-patient treatment, which should be increased so that very active treatment could be given in a way which was impossible in out-patient practice. The two medicines must be used, the one which got rid of the manifestations, and the other which got rid of the disease.

Dr. M. HANDFIELD-JONES asked what care should be taken of women in subsequent pregnancies. He had known of a case in which the woman had given birth to a macerated fœtus. She was treated with mercury during the second and third pregnancies. At the fourth pregnancy she was considered cured and was not treated, but at the eighth month movements stopped.

Captain W. GIRLING BALL said that the great difficulty was to get syphilitic mothers early enough. Cases were treated from the sixth month, but more prolonged treatment ought to have better results on the child. A negative Wassermann reaction was produced after 12 doses of salvarsan and mercury in the majority of cases, and in many after six doses. We could never get rid of syphilis if out-patient treatment only were available. Men were more irregular than women in attending. It was waste of these expensive drugs if treatment was not carried out as advised. A large central institution was needed.

Dr. W. H. KELSON said it was necessary to follow up results, especially as regarded future pregnancies.

Dr. A. E. STANSFELD drew attention to the short time in which the Wassermann reactions changed from positive to negative in Mr. Adams's cases. This was not noticeable in older children, and showed a good case for prolonged treatment of babies after birth.

Mr. ADAMS briefly replied, and remarked that if babies were treated early enough (at the latest on the second day) there was no secondary eruption.

SECTION OF ELECTRO-THERAPEUTICS, CLINICAL SECTION, SECTION OF MEDICINE, AND SECTION OF SURGERY.

Examination of the Vermiform Appendix by X Rays.

A MEETING of these sections was held on Nov. 15th, Mr. CECIL R. C. LYSTER, the President of the Section of Electro-Therapeutics, being in the chair.

Dr. E. I. SPRIGGS read a paper on the Examination of the Vermiform Appendix by X Rays, and showed photographs and drawings by Mr. O. A. Marxer, radiographer, Duff House. After a summary of the literature of appendix radiography, in which indebtedness to American workers was acknowledged, a description was given of the methods found of value. The patient was prepared with castor oil and given a meal, similar to that recommended by George and Gerber,[2] consisting of ¾ of a pint of buttermilk and 150 g. or less of barium sulphate. Careful screening with suitable manipulation was needed to observe the mobility of the appendix and the presence or absence of active movements or of tenderness. Photographs must also be taken freely, as the chief points which helped to decide whether the appendix was healthy or diseased—namely, the filling and emptying of the appendix, its position, and its outline—are observed best on the photographic plates. The manipulations which had been found most useful were detailed. The following figures were given. The first hundred cases in which was observed the passage of an opaque meal through the alimentary canal were left out of account, as the ileo-cæcal region was not examined with such care as is now given to it. Of the next two hundred cases, with a standard meal, in many of which castor oil was also used, the append x was seen clearly in a few. Then was begun the use of the barium and buttermilk meal after preparation by castor oil. In the fourth hundred cases the appendix was seen 24 times; in the fifth hundred 35 times; then 54 times; then 72 times; and in the eighth and last hundred 86 times. An account was next given of the radiography of the normal appendix, and photographs were thrown on the screen. The paper then described the examination of cases of appendicitis. In acute appendicitis the patient was not usually fit to be X rayed, neither was such a method of diagnosis needed. In chronic appendicitis X ray examination had been found of great value, especially in the subjects of vague abdominal symptoms of unknown cause. In 36 cases a diagnosis of chronic appendicitis had been made and confirmed by operation. Radiograms of many of these were shown, accompanied by coloured drawings of the appendixes after removal. The chief points to which attention should be paid were: 1. The filling and emptying of the appendix; delay. 2 Shape; constriction and dilatation. 3. Fæcal concretions; vacuoles. 4. Mobility. 5. Hyperactivity; spasm. 6. Tenderness. 7. Position. These features were placed in the order of their importance in a series of cases. Each was illustrated by lantern slides and clinical details. The signs of present inflammation were, in addition to pain and other clinical symptoms: a tender point (though tenderness required care in its interpretation) and varying dilatation of the lumen from hyperactivity and spasm; whilst evidence of former disease, recent or remote, was given by concretions, abnormal outline, delay in filling or emptying, adhesions, severe kinks, and, in certain cases at least, by the absence of a shadow. The proportion of cases in which no barium sulphate entered the appendix was small when the methods described were used; but it was not thought justifiable in the present state of our knowledge to assume that an appendix was abnormal because it did not fill, though it should be regarded with suspicion, especially if the observation were repeated. The paper was founded on the study of the photographs of about 300 appendixes.

Mr. A. C. JORDAN discussed the paper briefly, and showed some photographs of appendixes in a few of his own cases.

[1] THE LANCET, 1918, i., 47.

[2] George and Gerber: Surg., Gynec., and Obstet., 1913, xvii., 418.

A CLINICAL meeting of the North London Medical and Chirurgical Society was held at the Great Northern Central Hospital on Nov. 14th, Mr. Arthur Edmunds, the President, in the chair. Dr. Alexander Morison and Mr. Fred. Stoker presented medical and surgical matters for discussion. There was a considerable attendance of North London medical practitioners.

IRISH OPHTHALMOLOGICAL SOCIETY.—The opening meeting of this society was held in Dublin on Nov. 8th, after the Montgomery lecture by Dr. Euphan Maxwell, Mr. James Craig (Belfast) being in the chair.—The rules were drawn up and adopted and the following were elected to hold office for one year:—President: Mr. A. W. Sandford, Cork. Council: Mr. J. B. Story, Mr. L. Werner, Mr. J. A. Craig, Mr. H. C. Mooney, Mr. F. H. Crawley. Honorary secretary and treasurer: Lieutenant-Colonel T. H. Delany, I.M.S. (retired), 29, Upper Fitzwilliam-street, Dublin.—Mr. Werner exhibited lantern slides of a case of Cysticercus published in the Transactions of the Ophthalmological Society of the United Kingdom, vol. xxiii., p. 193, and Mr. Story exhibited charts of Fields of Vision in Glaucoma.—Next morning patients were shown at the Royal Victoria Eye and Ear Hospital, amongst others, a patient whose case was published in the Transactions of the Ophthalmological Society, 1891, p. 127, of detachment of the choroid; also two cases of fat implantation, one in Tenon's capsule and the other in the sclerotic after evisceration, the eye in each case being buphthalmic.

Reviews and Notices of Books.

War Surgery from Firing Line to Base. By BASIL HUGHES and H. S. BANKS. London: Baillière, Tindall and Cox. 1918. Pp. 623. 33*s.* net.

A BOOK such as this will serve as an excellent record of the work as carried out by the men who wrote it and of the method that they have chosen as the best for dealing with the wounds of war. The authors have had a considerable experience in war surgery both in France and Salonika, and as a result thereof have come to the conclusion that the best method of obtaining a rapid sterilisation of wounds is by the Carrel-Dakin method, thus allowing of the performance of secondary suture with the consequent early restoration of function of the part affected. They are insistent, and quite rightly, that in order to obtain good results the method should be rigidly carried out after the fashion originally described by the originators. The authors have been fortunate in being able to organise their methods in a given area from the firing line to the base, and thus maintain a continuity of treatment which is not often possible in many of the theatres of war. Under these conditions it is interesting to find that the results that they have obtained correspond to those of others who have adopted the same methods; there are so many difficulties in carrying out the treatment efficiently, combined with the large amount of bacteriological investigation necessary, that the authors are to be congratulated on the results of their efforts. It is with these methods, as applied in their hands to lesions in various parts of the body and in different areas of fighting from the firing line to the base, that this book is largely occupied, and the description is done well.

It is a little disappointing to find, however, that so little attention has apparently been paid to the methods of primary and delayed primary suture, which have so largely supplanted the necessity of secondary suture during the last two years of the war. These methods are coming to the fore as results become better known, and in a book such as this the newest line of treatment should be encouraged. There is also a tendency to decry the value of certain drugs, such as flavine and bismuth-iodoform paste, which in the hands of many have met with considerable success. These are details, however, as compared with the general principles which are laid down and well described in this book. Considering the great difficulties under which the authors must have laboured, far away from books of reference and skilled artists, the production of this work has many remarkable features.

The illustrations, mostly photographs, are numerous and topical; it is a little difficult to account for the comic element displayed in certain coloured drawings, unless it is to remind the surgeon of the wonderful manner in which the soldier puts up with the manipulations that he is compelled to undergo at our hands and the trials that he has to pass through in tropical climates. We should add that the humorous effect is happily obtained. The experience of the authors is emphasised by the description of the methods of treatment of all kinds of wounds in the various fields of warfare, firing line, field ambulance, C.C.S., and base hospital. And to those accustomed to work in France the completeness of the experience with regard to wounds in all parts of the body as embodied in the text will seem remarkable. Not only is the general technique of the treatment of wounds by the Carrel-Dakin method carefully detailed with regard to wounds in general, but its application to wounds of the head, chest, abdomen, bones, and joints (the latter an excellent article) is minutely gone into. Naturally the effort is unequal, but for the most part the principles are sound. Was it necessary to include in the volume a condensation of a text-book on bacteriology? This section, however, will serve a purpose in making complete a book which is the only volume of its size dealing with surgery such as we know it in this war, and will complete a *vade mecum* to those unfamiliar with the methods described.

The Canadian Medical Week. Published under the auspices of the Ontario Medical Association. Toronto: The Macmillan Company of Canada, Ltd. 1918. Pp. 338. $3.00.

THIS stately volume is a worthy record of the Canadian Medical Week, held at the beautiful city of Hamilton, on Lake Ontario, from May 27th–June 1st last. It is dedicated to the graduates and undergraduates in medicine of the Canadian universities who have fallen during the war, and on the frontispiece is printed Colonel John McCrae's haunting poem, "In Flanders' Fields." Physicians from every part of Canada and from the United States attended the gathering and discussed many of the burning issues of contemporary medicine. Dr. L. F. Barker's address on the Significance of Heart Murmurs in Recruits, Dr. R. A. Bolt's paper on the Education of the Medical Student in his Relation to Child Welfare, and Dr. T. H. Ames's contribution to the Prevention of War Neuroses, as well as others in the volume, merit a wide circulation. It is noteworthy that the book only contains advertisements "censored by a Special Committee appointed for that purpose."

Anatomy: Descriptive and Applied. By HENRY GRAY. Edited by ROBERT HOWDEN, M.A., D.Sc. Twentieth edition. London: Longmans, Green and Co. 1918. Pp. 1324. 37*s.* 6*d.*

"Gray's Anatomy" maintains its popularity in the hands of its present editor, only 18 months having elapsed since the appearance of the previous edition. About 60 new illustrations have been added and the text is carefully revised. To remind readers of the original author, a short biography of Henry Gray, F.R.S., F.R.C.S., 1827–1861, is given, as well as the names of later collaborators: Timothy Holmes, T. Pickering Pick, and, finally, Professor R. Howden, with his two associates, A. J. Jex-Blake and W. Fedde Fedden. The new terminology, introduced in 1913 with the eighteenth edition, is retained presumably until a terminology satisfactory to English-speaking anatomists has been formulated. To this end coöperation with anatomists of America and of the Dominions is most desirable. In the meantime, for the sake of the perplexed student, the old terminology is inserted in brackets and both sets of names are indexed.

JOURNALS.

Military Surgeon (Washington, D.C., U.S.A.).—The issue for September has the first instalment of an article on Communicable Diseases in the U.S. Army, by Colonel V. C. Vaughan and Captain G. T. Pratt of the U.S. Army. The principal acute diseases which occurred last winter in the Army in the United States, in the course of which respiratory symptoms were seen, were pneumonia, meningitis, measles, scarlet fever, and diphtheria. Pneumonia stands out with a sinister pre-eminence. It caused 60 per cent. of the total deaths, meningitis 12 per cent., measles 1·1 (but many of the pneumonias followed measles), scarlet fever ¾, and diphtheria ½ per cent. Deaths from pneumonia were more frequent than usual among the civil population during that hard winter, but the death-rate in the Army (ages 20 to 30) was ten to twelve times that in civil life at the same ages. Men from rural communities and men from the South were found to suffer most, because, it is suggested, they are less immune to "crowd" bacteria, which flourish among the denser populations, who therefore grow up with an acquired immunity, a theory which gains support from the accurate observations of Dr. J. W. H. Eyre and Captain C. E. Lowe on New Zealand troops in THE LANCET of Oct. 12th. As to prevention, vaccination is asked for, and no reference is made to Colonel Munson's report on the prophylactic value of ventilating tents in the preceding winter amongst the U.S. troops in Mexico. "Baith is best" is an old Scots proverb, and though we trust antityphoid vaccination, we yet strive to give men always clean water.—There is a long paper by Captains W. E. Lee and W. H. Furness, U.S.M.C., on the Evolution of Dichloramine-T as an Antiseptic in Wound Treatment. At the beginning of the war, they say, aseptic primary closure of wounds was attempted, but gas gangrene and other infections occurred so frequently that that procedure was forbidden. Then surgeons tried antiseptics of all sorts—salt packs, flavine, the Reading bacillus, "last and least of all, soap and water," and all this time military arrangements were improving, so that the wounded came more quickly under treatment and the technique of that treatment also improved, so results became wonderfully better. In 1916 wounds were being excised, for it had been realised how much tissue around a wound had been contused to death by the mechanical injury. Besides that, projectiles and fragments of clothing are apt to be infected, and must be removed to prevent harm, so also must splinters of bone or cartilage, severed from their blood-supply, dead, and now only a ready nidus for bacterial growth. Thus the gas bacillus lives and grows in dead muscle. Even with excision not all sepsis can be excluded. If an ordinary wound is treated within three hours so little bacterial growth has occurred that the wound may be safely closed, the tissues being able to deal with the few germs there are.

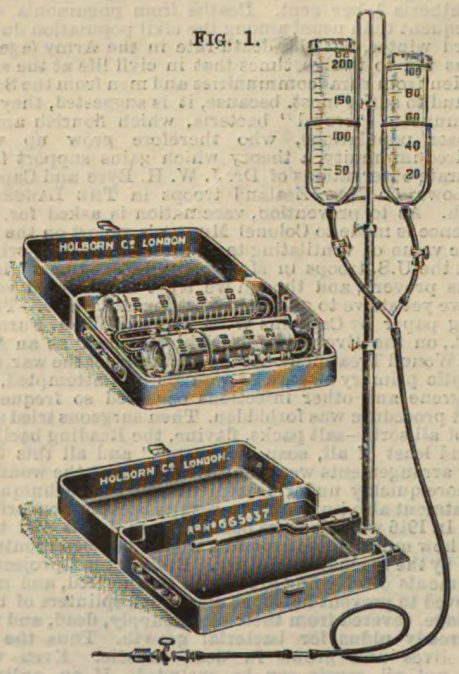
Hence the need for speedy first-aid organisation. After three hours the wound will require some antiseptic. The authors have worked with Dakin's solution introduced by Carrel, who found the extreme of surgical care insufficient unless assisted by an antiseptic. The original antiseptic being Labarraque's solution, it was found, however dilute, gravely to irritate the skin, so Dakin made a neutral solution with 0·5 per cent. chlorine equivalent, which did not irritate the tissue cells but inhibited bacterial growth. This neutral solution was very unstable, so had to be prepared daily. It had a weak antiseptic value, soon passing off, and had to be applied to the wound therefore in quantities frequently. Carrel and Dehelly devised the system of containers and tubes which require care, time, and money. In answering the question why the skin was irritated but not the raw surface, it was found that the chlorine with the proteids in the serum of the wound formed amines, which further research showed could be synthetically prepared, would act as well as the hypochlorite and would not irritate the skin. Chloramine-T was the first of these, a dichloramine from toluol. It is soluble in water and so becomes diluted in the discharge. Dichloramine-T, however, is only soluble in oils and persists longer in the wound as an antiseptic. A suitable oil solvent was hard to find; eucalyptol was used, chlorinated to prevent it from decomposing dichloramine-T, but chlorcosane (a chlorinated paraffin wax) makes a more stable solution, 5 per cent. to wounds, 2 per cent. for throat and nose sprays. It is decomposed by water or alcohol or exposure to light, but keeps well in dry brown bottles in the dark. 19,000 cases have been treated with this in the United States in the last 18 months with every satisfaction. Burns and open wounds are covered with a single layer of mosquito netting soaked in dichloramine-T paraffin wax, whose open meshes permit discharges to pass through into a couple of layers of sterile gauze laid over it. These are changed when required, the paraffined mosquito-net probably after a week. No bandages cover the surface, and cages keep the bedclothes off. But it is the first essential that the case shall be treated as an operation case from the first, and that no precautions of the antiseptic technique be omitted at subsequent dressings. Dichloramine-T is also recommended as a deodorant in malignant ulcerations, and so used gives great satisfaction in the Oncological Hospital in Philadelphia.

New Inventions.

A PORTABLE "606" OUTFIT.

FOR the administration of "606" outside an institution where this work is routine the usual apparatus is rather

FIG. 1.



inconvenient, being bulky and difficult to pack into a handbag. In addition to these disadvantages the setting up of the apparatus usually takes an amount of time which cannot well be spared, and for casual work of the kind mentioned the surgeon is apt to prefer "914," which can be given with a Record syringe but, given intravenously, is not so permanent in its effects. In order to overcome these disadvantages I have devised an apparatus that can be made much more portable on the lines suggested in Fig. 1, and the whole outfit is contained in two boxes which can easily be slipped into an ordinary surgical bag and set up at the bedside in a few minutes.

FIG. 2.

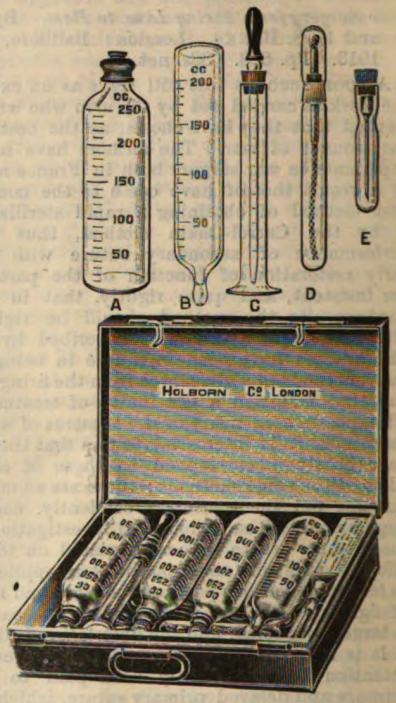


Fig. 1 shows a "6 6" and saline funnel, such as is used in military hospitals suspended on a frame carried on a telescopic stand which is screwed into the hinged end of the box. The funnels are set up at home with the straining gauze in position at the top of each and the rubber tubing attached. The stand is collapsed and the whole turned into the box, which is closed and sterilised in a steamer. At the bedside the box is opened and its hinged end carrying the apparatus turned down and fixed in position by two sliding bars in the bottom of the box. The telescopic stand is then extended to its full length and the apparatus is ready. The other box (Fig. 2) contains, A, three Soxhlet bottles of 250 c.cm. capacity fitted with Eyre's special rubber caps which are designed to permit of sterilisation without the necessity of opening and closing the bottle; one of the bottles is graduated and is used for mixing purposes, the other two are for saline; B, two spare funnels; C, a cylinder with foot, fitted with a graduated pipette and containing caustic soda solution; D, an iodine pencil as devised by Major C. F. White for sterilisation of the puncture site; and E, two needles in alcohol. In the remainder of the space are packed ampoules of "606," a small dressing, and a tourniquet. A, B, and C are sterilised in a steamer and, thanks to the special caps on A, these can be carried quite safely in the box provided. The "606" is mixed in the graduated bottle, which should contain about 50 c cm. sterile distilled water, the cap being removed, the powder poured into the water, and the cap replaced for shaking. The soda is then added to alkalise and the necessary amount of saline to bring to the required dilution, leaving enough saline for the saline funnel.

The apparatus is made by the Holborn Surgical Instrument Company, London.

L. W. HARRISON,
Brevet-Colonel, R.A.M.C.
Rochester-row.

GUY'S HOSPITAL: MEDICAL RESEARCH FELLOWSHIP.—A fellowship, to be known as the "Hilda and Ronald Poulton Fellowship," has been founded at Guy's Hospital in memory of the late Lieutenant Ronald William Poulton Palmer, B.A., Royal Berkshire Regiment, the International Rugby footballer, killed in action in Flanders on May 5th, 1915, and of his sister, the late Mrs. Emily Hilda Ainley Walker, who died in August, 1917. The object of the fellowship will be to investigate the origin, progress, treatment, and cure of obscure diseases in man; its annual value will be £150. It may be held simultaneously with a teaching post at the medical school, with the condition that the fellow devotes at least half his time to research.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 23, 1918.

The Work of the Medical Research Committee.

THE end of the war marks an epoch in the work of the Medical Research Committee set up under the National Health Insurance Act of 1911. The Committee did not actually come into being until September, 1914—that is to say, the end of the first month of the war—and its fourth annual report, which we have before us, therefore comes at the end of the fourth year of war. The Committee has so far lived under exceptional conditions. But, while the war has closed, the Committee's work goes on, and not the least interesting part of the report is its concluding paragraph in which the conditions of peace and war are compared. It is only long familiarity which has deadened our sense to the volume of avoidable suffering and economic loss arising from disease in civilian life, and the Committee justly counts this volume of suffering in the same order of magnitude as the appalling casualties and diseases of warfare. The Committee looks forward eagerly in the report to the ending of hostilities and to the opportunity which will then arise of bringing State resources to the assistance of medical science as a whole. But at the same time an optimistic note is struck in regard to the lessons learned during the four terrible years which are past. The violent disturbance of the peaceful course of scientific work has not been without compensation. Only during the war has the principle gained general acceptance that action to be effective requires guidance in the light of knowledge gained by scientific inquiry. The service of bacteriology to medicine was well recognised before the war, and it has continued throughout the war to rise in esteem, yet physiology during the same period may be said to have found itself—or rather to have obtained immediate and practical objectives. The physiologist has brought his knowledge to bear upon the urgent needs of warfare. The names and constitution of the various special committees, dealing with such wide subjects as shock, chemical warfare, air problems, industrial fatigue, which we take the opportunity of printing on another page, are the best testimony to this fact. These special committees have been largely in the nature of round tables at which discussion on methods has elicited mutual criticism and help. Defects have been promptly cleared up by frank discussion instead of by lengthy argument or polemic in print. Some may think that in avoiding the washing of dirty linen in public these committees have also concealed from their medical brethren the interesting stages by which results have been reached, but of the value of the final results no one can stand in doubt. The work of these committees is analogous to that of certain informal clubs composed of young medical men keen on problems whose pursuit was not bringing material reward. Such clubs were in existence before the war, and they have been too few among us.

But the research work planned by the Committee to bear upon the welfare of the civilian community has, of course, suffered, and suffered grievously in its four early years of existence. Nevertheless, in two directions at least—namely, tuberculosis and rickets—this work has gone on during the war, although in decreased measure. Dr. J. BROWNLEE'S study of the epidemiology of phthisis has recently been completed and issued as Special Report No. 18, and the work of the committee on the relation of phthisis to particular occupations has been taken up again, and will soon form the subject of a further report, of which Professor B. MOORE'S contribution to THE LANCET of Nov. 9th may be considered as an advance instalment. A report upon the influence of social conditions on rickets has already been summarised in our columns, while Dr. E. MELLANBY has continued his studies of the dietetic factors which play a part in its production. This work also is now ready for publication. We hope that the 1914 programme may soon be resumed in its entirety and in more favourable circumstances.

Even an incomplete summary such as this of the work of the Medical Research Committee cannot conclude without an expression of heartfelt satisfaction at the establishment of a *Centralblatt*. The Medical Supplement of the Official Review of the Foreign Press is its present cumbrous title, and the first number, which appeared on the opening day of the present year, was felt to supply a want patent to every scientific worker in medicine. Distributed at first among military hospitals and laboratories, the Medical Supplement was soon issued for sale by H.M. Stationery Office, and no one who has had an opportunity of comparing the abstracts with the original articles can fail to be struck by the fairness and the ability with which the work has been done and by the absence of that tendentiousness which is incompatible with the true scientific spirit and which has estranged so many from the *Centralblatt* on the German model. At the same time, the Committee permits itself to observe with satisfaction that no striking gains in our knowledge or in our methods appear to have come to us from enemy sources. Although we have been modestly willing *ab hosti doceri* the gain in alleviation of the sufferings of war seems to have been largely on the other side. Possibly the enquiry into the epidemiology and bacteriology of influenza, abstracted on another page of our present issue, may have its practical lessons for us. This work of the Medical Research Committee is, we think, likely to develop as time goes on, especially in view of the facts that under the terms of the Ministries of Health Bill the Committee's work will be carried on directly under the Privy Council and that the Committee itself proposes to work in close coöperation with the Advisory Council of Scientific and Industrial Research established in 1915.

The Medical Parliamentary Committee.

A MEETING of the medical profession was held at Steinway Hall, London, on Oct. 1st, having for its object the acquiring of more adequate representation of the medical profession in Parliament. The meeting, the proceedings at which were reported in THE LANCET, was summoned informally and was well attended. Sir HENRY MORRIS, who presided, set out the various arguments for believing that the time had arrived when the medical profession should take steps to show its corporate value to the public and the State through the presence in Parliament of competent members of the profession. Mr. E. B. TURNER followed with an eloquent exposition of the influence that the doctor must have with the public when setting out in plain terms the real meaning of medicine and the aims of scientific pathology. Dr. CHRISTOPHER ADDISON, Minister of Reconstruction, moved at the meeting a successful resolution to the effect that "in the interest of national health it is essential that the considered views of the medical profession should be voiced by representative medical men in the House of Commons." A desultory debate followed, when a committee was formed by the meeting, having a general mission to consider the claims of medical men for election to the House of Commons. It was agreed that this committee should report at a later stage to the whole constituency upon any steps taken. The constitution of the committee, as indicated in our report of the proceedings of the meeting, included representatives of the British Medical Association, but in deference to the views of the Council of the Association, such representation has now been withdrawn.

Several meetings of the committee have been held, the proceedings at which will be laid later before a general meeting of the medical profession; but it seems right that the gist of the work done should be published without further delay, having regard to the fact that a General Election is upon us. The committee, now known as the Medical Parliamentary Committee, has consequently provided itself with the names of medical men who are already willing to place themselves at the immediate disposal of the Whips in the unforeseen event that between now and Dec. 14th any one of these doctors may be adopted as an official candidate for a seat. It is, of course, extremely unlikely that this contingency should occur, as in those localities where elections are being fought the contesting parties have long ago chosen their champions. Moreover, it is easy to see that the names which the Medical Parliamentary Committee may be able to send in to the Whips must constitute a short list, for few medical men who could have a chance of being selected by the Whips to fight even an off-chance will be found able to lay their professional interests aside at a moment's notice and plunge into the whirl of a contested election. The work done by the Medical Parliamentary Committee must be considered merely preliminary, although the slight chance of some immediate accomplishment has been prepared for. What the Committee requires now is, first, adherents to the movement; and, secondly, a list of medical men who at future elections will be willing to place themselves at the disposal of Party Whips to contest constituencies. The introduction of the word "party" will make all medical men wince, but it should not make them stand aside from an effort to do public good, for the Medical Parliamentary Committee professes to make an organised attempt to give the opinions of the medical profession a right influence in public affairs. The medical profession agrees that it requires a louder and clearer Parliamentary voice; it must also agree to obtain that voice in accordance with prevailing customs. No man will get into Parliament on his medical claims. And from our point of view the ideal medical man in Parliament should not represent medicine only; he should be the interpreter of medical thought and aims to his fellow legislators. This he can easily be while assenting to a general party creed, provided that in every word that he utters, and in every idea that he supports, the predominant claims of national health are obvious. Such a legislator can conform to party politics and can keep his necessary pledges to his constituency and to his political organisation, while remaining faithful to ideals outside and above such pledges; and his presence in Parliament upon such terms might be a great destroyer of the evil influence of party. For granted that the health of the people is equally wanted by all political divisions and subdivisions, the medical man in Parliament who, while belonging to a party, was known to place the general weal above the party tactics would be an excellent type to imitate. The democracy of the future is sure to make increasing use of special knowledge directed to generally benevolent ends, while setting a decreasing value upon political machinations. The doctor in Parliament, as we have drawn him, fits such a picture exactly.

At the meeting at Steinway Hall Sir WATSON CHEYNE indicated how useful it would be to such members of the medical profession as happened to be in Parliament if a considered view of medical questions were placed at their disposal by an authoritative body. The Medical Parliamentary Committee by the strength of its adherents should grow into such a body, and we can conceive its utility to the nation as thus becoming something very large indeed. No individual Member of Parliament, even though a medical man, can possibly follow the operations of an elaborate Bill as it may affect the medical profession directly, and therefore as it may affect the whole of the country indirectly. He wants counsel, as Sir WATSON CHEYNE suggests, and a Medical Parliamentary Committee on which there sat men, medical Members of Parliament among them, who could assemble, codify, and articulate a real medical view upon general questions at issue, would be of the first value to the country. In an interesting article which appeared in the *St. Bartholomew's Hospital Journal* for September Sir WILMOT HERRINGHAM, himself a candidate for Parliamentary honours, speaks of the medical Members of Parliament forming themselves

into a private committee. Such an advisory board might be of no great weight scientifically—for no man, to repeat ourselves, can enter Parliament on his medical claims—unless reinforced from without. But from a Medical Parliamentary Committee, such as could be formed if all medical men would help in its promotion, the medical advice would be of the highest worth. Now to constitute a Medical Parliamentary Committee of this order will need the coöperation of all the medical profession, whose powers should be set in action from as many directions as possible. The Parliamentary Elections Committee of the British Medical Association will, we trust, be willing to join a movement whose main objectives must be identical with their own, and which by the elasticity of its constitution can enter into wide public relations while retaining the essential medical spirit.

Annotations.

"Ne quid nimis."

THE WAR CASUALTIES.

Mr. Macpherson, Under Secretary for War, made a statement on Tuesday last in the House of Commons concerning the British casualties in the war, including Dominion and Indian troops. The figures, which were up to Nov. 10th, 1918, are necessarily incomplete, but the totals for all theatres of war were given as follows:—

	Officers.	Men.
Killed (including died from wounds and other causes)	37,876	620,828
Wounded	92,664	1,939,478
Missing (including prisoners)	12,094	347,051
Totals	142,634	2,907,357
Grand total	3,049,991.	

An analysis of these terrible totals will be found in our Parliamentary report.

REHABILITATION OF THE DISABLED SOLDIER IN THE U.S.A.

A SYSTEMATIC attempt is being made in the United States of America to rehabilitate their soldiers who have been disabled in action in the European war "to the point of maximum functional restoration, both mental and physical." An educational section in the office of the Surgeon-General of the American Army supplies the means to enable every returned soldier to add to his knowledge, technical or general, so that on return to civil life he will have at his command the necessary mental equipment to carry on. The section is in close touch with the medical and surgical staffs of the general hospitals. The medical staff is able to indicate the muscular re-development desired and to supervise the restoration of function, so that excessive strain may not provoke harm. At the same time the educational director and his assistants fire the patient's ambition, show him what he can do, explain the means of doing it, and lead him step by step to the finished product of his mind or hand. There are four main groups in this Educational Service. One centres on the problem of preventing a disabled soldier from training for a job which his qualifications and aptitudes do not meet; it seeks to stop him from aiming too high or too low. Another provides instruction in elementary, high school, and professional subjects. In the third group are technical subjects, such as engineering, agriculture, and commerce. The fourth is concerned with recreation and physical training; it supervises games, prescribes military drill, and arranges entertainments in which the disabled men are actors as well as spectators. From simple games and light manual tasks the patient is gradually led to some form of effort demanding thought and care. Most of this preliminary work is under the direction of the reconstruction "aides," who are women specially trained for this work. Then in turn come tasks in the ward, followed by others in class-room, shop, or garden. The work is growing. At the present time more than 300 disabled men are taking bedside and ward occupations, and more than 1500 are busy in shops or learning trades. In not a few instances, when finally discharged from the Army, they will be found to have increased their previous earning capacity. The ground work is thus being laid on which to build an efficient economic unit.

SERGENT'S "WHITE LINE" IN SUPRARENAL INSUFFICIENCY.

Dr. E. Sergent was the first to draw attention to the presence of a white line on the skin produced by pressure as an indication of impaired function of the suprarenal capsules. He made this discovery by accident (*Presse Médicale*, Nov. 25th, 1903) while endeavouring to elicit the "red flush" in a case of meningitis, and he interpreted its occurrence as a condition of arterial hypotension with consequent dilatation of the peripheral capillaries, in which a mechanical stimulus to the skin produces local reflex vaso-constriction. The importance of the sign lies in its alleged appearance in suprarenal derangement, even when the melanodermia typical of Addison's disease is not present. The study of the phenomenon has led, in fact, to a recognition of the frequent occurrence of suprarenal insufficiency in various morbid conditions, especially in infective diseases and intoxications. A bronzed skin does not constitute in itself the whole suprarenal pathology; it is neither necessary nor sufficient to establish the diagnosis of a capsular lesion, while asthenia is of primary importance in the symptom-complex of suprarenal insufficiency, and this asthenia is usually associated with hypothermia and arterial hypotension. According to Dr. Sergent, the sign of the white line, when it is present in a characteristic form in the course of an infective malady or acute toxæmia, associated with asthenia and arterial hypotension, indicates changes in the suprarenal cellules; the greater the hypotension the more the line is distinct, broad, and lasting; and it is especially in cases of typhoid fever that these characteristics are most marked. The suggested cause of this sign finds its confirmation in the fact that adrenalin administered to the patient causes the disappearance of the white line, together with the hypotension. Further observations on Dr. Sergent's white line have called forth much criticism as regards its inconstancy or its absence in many cases of suprarenal insufficiency, or its true interpretation. Professor R. Massalongo,[1] of Verona, has done some service in investigating a large number of cases with a view to clearing up these points of difference. He studied the phenomenon of the white line, produced not by

[1] La Riforma Medica, August 24th, 1918.

scratching the skin with the nail, but by rubbing it lightly with the finger tip or some blunt rounded instrument. Out of 400 cases of various diseases he found the white line in an unequivocal form only in 30 cases, and even then often in a transitory and irregular manner; and of these, 22 were cases of typhoid and paratyphoid fever, which constituted 120 of the whole number. His observations led him to the conclusion that diminution of the angiotonic function and cardiotonic power may exist without the presence of the white line and of other symptoms of suprarenal inadequacy, and that arterial hypotension, asthenia, and collapse are not the exclusive function of this inadequacy, since they occur in the course of acute infective diseases independently of it. He found the presence of the line always associated with arterial hypotension and frequently with other symptoms attributable to suprarenal derangement, which, on the other hand, may exist without its presence. Hence by its rarity, inconstancy, and transiency, by its presence or absence in equal proportion in cases where changes in the suprarenal capsules were indisputable, the white line can only be credited with a relative diagnostic importance and significance and cannot be considered as pathognomonic. It has, however, some value from a prognostic point of view, since its maximum frequency is met with in cases of serious import with almost invariably a fatal issue.

HORMONES IN THE CLIMACTERIC.

THE work of Seitz, Wintz, and Fingerhut has led them to believe that ovarial extract is only potent in so far as it contains certain chemical bodies present in the corpus luteum. Two of these have been isolated, luteolipoid and lipamin, both of which have a specific influence on menstruation, the one acting as a hæmostatic, the other encouraging the flow of blood. The firm of "Ciba," in Basle, has put preparations of both of these drugs on the market in tablet form—"sistomensin" containing luteolipoid and "agomensin" containing lipamin. In the *Correspond.-bl. f. Schw. Aerzte* for Oct. 26th Dr. O. Burckhardt-Socin, of Basle, records his experience of sistomensin in five severe cases of climacteric disturbance—flushing, palpitation, sweats—and in two cases of excessive loss at the onset of menstruation in young girls. In each case the symptoms were rapidly relieved, and success in these led the author to try the drug in a case of bleeding fibroid which he would otherwise have sterilised with X rays. Bleeding and pain were both rapidly relieved, and Dr. Burckhardt-Socin recommends a trial of the hormone to his colleagues in similar cases. If further experience should prove the truth of these observations this method of treatment may prove of great value. It is important, however, to remember that there are many authorities who maintain that the internal secretion of the ovary is manufactured not only by the corpus luteum but also by the atretic Graafian follicle cells which have a structure identical with that of the lutein cells. For this reason it would appear probable that preparations made from the whole ovary are more likely to give constant results than those made only from the corpora lutea. As we are quite ignorant whether the secretion of the ovary acts directly on the organism or acts by balancing or influencing the secretion of other internal glands, any conclusions drawn from clinical experience possess many possibilities of error. A further serious drawback hitherto has been our ignorance of the chemical nature of the secretion of the ovary. If the bodies now isolated can be shown to have a fixed composition, and the results obtained are found to be constant, a very definite addition will have been made to our knowledge. It is interesting to note that some gynæcologists are in favour of ovarian extract from which the corpus luteum has been entirely excluded. Indeed, one of the difficulties in admitting the action claimed for the corpus luteum extract lies in determining in what degree of development the corpus luteum is at any given time, as it is impossible to tell by inspection whether a corpus luteum is in process of formation or of involution and disintegration. Many observers, in treating the symptoms of vasomotor disturbance following the removal of the uterus, have been struck by the conflicting results obtained in different cases by the administration of corpus luteum extract, a result which may be explained by the antagonism of the two substances now isolated if one or other happens to be in excess. We hope that other practitioners who have an opportunity of using these preparations will publish their results, so that further light may be thrown upon this interesting method of treatment.

THE OBSERVATION OF THE LIVING NERVE FIBRES OF THE CORNEA.

Dr. J. Strebel, of Lucerne, claims, in a recent number of the *Corresp.-bl. f. Schw. Aerzte* (p. 1442) that he can demonstrate the nerve fibres of the living cornea by means of focal illumination with a Nernst lamp and a corneal microscope. They appear as very fine, silver-grey, opaque, round little bundles in the depth of the corneal parenchyma, at the limbus; they run a wavy course, coming nearer and nearer to the surface as they extend into the cornea, until they end immediately under the conjunctiva. A certain number branch dichotomously at nodes, the branches forming an angle of from 40° to 50°. Occasionally the bundles are surrounded for the first millimetre or two of their corneal course by a sort of sheath-like appearance which is sharply separated from the nerve bundle. Strebel recognises this to be the medullary sheath. He therefore challenges the statement that the nerves always lose their medullary sheath before entering the cornea, and recalls the fact that in some cases the fibres of the optic nerve likewise retain their white sheath after entering the eyeball. The nerves cannot, he says, be mistaken for obliterated vessels by anyone who observes them carefully. Their opaque, silver-grey look, their wavy course, and their dichotomous branching, when it occurs, are all characteristic features. Although this observation dates back to 1913, no notice seems to have been taken of it in this country.

EXTENSIVE OPERATIONS ON THE UPPER LIMB.

IN our present issue Mr. J. W. Geary Grant records three cases in which he performed extensive operations on the upper limb for the removal of malignant disease. In one he performed Berger's operation, or removal of the whole upper limb with the scapula and half the clavicle. In the second case he amputated at the shoulder-joint, and in the third case he removed the scapula. Berger's operation, or interscapulo-thoracic amputation, is a very extensive procedure and the resulting shock is often extreme, though this may be mitigated to some extent by Crile's method of "nerve-blocking." All the modifications of the operation which have been introduced are intended mainly to diminish

the amount of shock. In disarticulation at the shoulder-joint there is much less shock, but the bony surfaces left, notably the prominences of the acromion and the coracoid process, present a very awkward shape. Excision of the scapula is of the greatest value only in cases where the growth is strictly confined to that bone, but in the case recorded by Mr. Grant the glands of the axilla were affected, so that not only at the primary operation but also at two subsequent operations glands were removed from the axilla and from the posterior triangle of the neck. The choice between these various operations is generally dictated by the extent and the limitations of the disease, which clearly show how much must be removed. Though the shock is great with Berger's operation, yet the clean sweep made of the contents of the axilla is in marked contrast to the slow dissection necessary when the axillary glands have to be removed without injury to the vessels and nerves. There is a further point in Mr. Grant's cases worthy of note, and this is that in each case a number of exposures to X rays were given to the affected part, either for the removal of recurrent nodules or for a prophylactic purpose. The benefit of the use of X rays in the prophylaxis of recurrence of malignant disease cannot be considered to be proved, but the method has logical reasoning behind it, and time will show its real value. Mr. Grant is to be congratulated on the results obtained in all of his cases.

GLANDULAR TUBERCULOSIS IN RELATION TO PHTHISIS.

Wallgren[1] has made an inquiry as to the fate of over 500 patients at the surgical clinic of Upsala, Sweden, operated on in the period 1885–1905 for tuberculosis of the lymphatic glands; the inquiry bore special reference to the subsequent occurrence of pulmonary tubercle. He was successful in getting particulars of 224 out of the 500. The number becoming tuberculous was found to be 62—46 from pulmonary phthisis, 9 from miliary tuberculosis, and 7 from tuberculous meningitis. This proportion—over a quarter—is obviously greater than the incidence of pulmonary tubercle in the general population. The disproportion must be discounted a little because 29 of the 224 had signs of tubercle in their lungs while in the clinic. This group showed very heavy after-mortality. But of another group in which the case-notes contained express mention of the lungs being healthy, 11 per cent. became consumptive. The writer concludes that, on the whole, individuals who have had adenitis are more likely than indifferent persons to get consumption, although he does not deny that occasionally, in particular cases, an attack of adenitis may even confer a certain amount of protection against the more serious disease, a species of immunity which has been invoked by Marfan and others. Lastly, those individuals whose adenitis recurred after treatment became consumptive oftener than did the rest. It is a pity that *enquêtes* such as the above are not made oftener, since they have an actuality, an *a posteriori* quality, which is denied to laboratory experiment. So far as the above investigation goes, it confirms the praiseworthy caution of the attitude which refuses to act on the assumption that tuberculosis in early life confers later protection, and builds rather on the obvious facts that infection with tuberculosis having once taken place is extremely likely to recrudesce even after long periods of apparent cure.

[1] Wallgren: Centralblatt für die gesamte Tuberkulose-Forschung, July 31st, 1918.

PUBLIC HEALTH IN EGYPT.

Appointment of Commission.

IN June, 1917, Sir Reginald Wingate, the Egyptian High Commissioner, took the prescient step of appointing a Commission to inquire into the Public Health Department of Egypt, for the present condition of this Department was, in his opinion, capable of improvement, while its future organisation offered problems of a difficult administrative and scientific character.

It was not, however, until June of this year that the preliminary arrangements were completed and the terms of reference settled, when the Commission was duly appointed, as was announced in THE LANCET, with the following composition: President, Lieutenant-Colonel Andrew Balfour, R.A.M.C., Director-in-Chief, Wellcome Bureau of Scientific Research; members, Lieutenant-Colonel G. E. F. Stammers, R.A.M.C.; Mr. E. S. Crispin, Director of the Medical Department of the Sudan Government; and Dr. Charles Todd, Director of Laboratories in the Egyptian Public Health Department.

The terms of reference of the Commission were: (1) To consider the organisation and duties of the Public Health Department and its relations with other departments concerned in public health; (2) to make in general terms suggestions for increasing the efficiency of the Department; (3) to indicate the nature and number of the official appointments to the Department which seem to be required, without nominating persons to fill them. To these ends the Commission was empowered to call the necessary evidence and have access to documents in framing a report to be sent to the Prime Minister or President of the Sultan's Council.

The Commission got to work in a practical manner, determining to make themselves personally intimate with all the existing details and conditions. They instituted a series of inspections in Cairo, Alexandria, and the provinces, thus familiarising themselves with the varying aspects of the work discharged by the Public Health Department. They met on 76 occasions, and the result is the return to the Prime Minister of a very outspoken series of findings.

Report of Commission: Scheme of Central Health Organisation.

The Report begins by recording the impression that the general plan devised by the Public Health Department for dealing with the many and difficult health problems of Egypt was a sound one. It had been valuable in checking the spread of cholera, plague, typhus, and relapsing fever; it had none of the haphazard character with which it is generally credited; and for future needs its scheme is well fitted both for adaptation and development. The Commission finds, in fact, that the future needs of the country from the health point of view have also received great attention, while they single out for special and favourable mention the last Assistant-Director of the Department, Dr. Cyril Goodman. But the Report states that the Department suffers from having no proper official status; being not an entity but a branch of the Ministry of the Interior, it has no direct official access to the High Commissioner, while the channels—namely, the Adviser or the Under-Secretary of State for the Interior—are without the necessary technical training to understand the needs of the Public Health Department. Upon the outbreak of war the efficiency of the Public Health Department, already hampered by the multifarious nature of its duties, was gravely affected, says the Report, by the fact that its officials were allowed to be seconded for duty with the troops at the very moment when the personnel of the Department should have been strengthened instead of weakened, although effective organisation managed to avert any disaster. With general reference to the present-day conditions in Egypt so far as they have a bearing on public health, the report is sanguine. Developments in roads, railways, and canals will occur, having regard to the successful issue of the war, while education in modifying the outlook of the Egyptian peasant and rendering the future of sanitation more hopeful is expected to have a powerful effect. "It is obvious," says the Report, "that the signs are propitious, and though, owing to the war, the time may not yet be actually ripe for extensive modifications in health organisation, yet it is clear that the present period of change and advance offers special facilities for the consideration of a scheme of reform." But immediately afterwards the Report speaks in

almost unmeasured language of the plague of filth in Egypt, and the first section concludes by unanimous agreement that a Ministry of Health is essential for securing proper sanitary reform in the Protectorate.

A scheme for a central health organisation is then outlined. It commences with the statement that the Ministry of Health must be a separate bureau with an Under-Secretary of State at its head as President. Immediately below him it is suggested there should be a Director-General of Health, who is intended to be the main driving force in the Ministry, as his duties will require him to coördinate the work of important subordinates as well as to prepare the annual Budget. The President will also have the advantages of a Technical Adviser, who, under the alternative title of Director of Medical Intelligence, will conduct a bureau of information, control the laboratories and research work, keep in touch with scientific developments in other countries, and be responsible for an educational museum. The Central Board of Health, it is suggested, will be completed by seven officers appointed as directors respectively of Sanitary, Epidemic, and Medical Services, of Lunacy, Medical Education, Public Health Laboratories, and Sanitary Engineering. The first three of these Directors being designated as *ex-officio* members of the Board, it would seem that it is intended to co-opt the others as occasion requires. A Secretary-General is added not only to manage the records and deal with all questions relating to subordinate personnel but also to sift the work of the Director-General, who might otherwise become overburdened with detail. The Report goes very carefully into the separate and combined duties of these various important central officials, indicating that technical inspection will undoubtedly be needed in many directions, as for provincial and ophthalmic hospitals and pharmacies, schools, and food and water control. The establishment of a chair of Hygiene in the Kasr-el-Aini School of Medicine and of a Diploma in Public Health is strongly advocated. The Report then passes to the consideration of the provincial organisation of public health in Egypt.

Provincial Administration.

The Report becomes very detailed in character when dealing with provincial organisation for the public health of Egypt, for here, rather than in central administration, are the chief defaults to be found, and here reform will get its quickest returns. The first weakness noted in provincial administration is the paucity of British Provincial Inspectors. These officers are few in number, do not live permanently in their districts, and are kept so constantly moving about by the multifarious nature of their duties that they rarely get into close touch with any section of the population. "A good type of man," says the Report, "has undoubtedly been an officer of the Royal Army Medical Corps, possibly in part because he has received a special training in hygiene and understands discipline. This source of supply should be readily available in the future." Reference here must clearly be made to medical men who have received temporary commissions in the Royal Army Medical Corps during the past four years, because there could not possibly have been any successful demand made previous to the war upon the Royal Army Medical Corps, whose cadre was then lamentably short. The Report continues: "The posts should be filled by men of about 25 years of age, and they should preferably have held some hospital appointment before joining the service of the Ministry. It would be a distinct advantage if they possessed diplomas in public health or in tropical medicine and hygiene." Such men will not be found in any quantity relinquishing at the age of 25 the Royal Army Medical Corps, but it seems possible, if the Egyptian bureau of health comes into rapid being, that British Provincial Inspectors might be obtained from among those who have held temporary commissions. The sort of work indicated should be quite attractive to many after their military experiences, but if Egypt is to get any large supply the conditions of service must be inviting.

The Report indicates that these Divisional Inspectors, as they are officially called, should be first placed under a senior officer so as to become familiar with Egyptian manners and to acquire Arabic, while arrangements, it is proposed, should be made whereby they can visit Cairo in rota and get an insight into the higher machinery of the service. The general duties of a Divisional Inspector may be described as those of a medical officer of health of the *Mudiria* (province or county). The Report recommends not only that there should be many more Divisional Inspectors, but that they should be better paid and that there should be a chance for Health Inspectors in the Mudiria (who are Egyptian doctors and next in rank to Divisional Inspectors) being raised to the position. Below the Mudiria Health Inspectors comes the *Markaz* doctor, on whom at the present moment, and for very low pay, there fall the private practices in the Markaz as well as much public health work, care of schools and prisons, registration duties, and medico legal work. A Markaz, it may be said, is a district of a province, and may contain many large villages. Some of the Markazes have, we understand, as many as 80,000 inhabitants. The Commission responsible for the Report have perhaps devoted more time and thought to the remedy of the Markaz conditions than to any other part of their work. They obtained valuable evidence and arrived at the conclusion that the best course to pursue eventually would be to divide the Markaz doctors into two categories according to their work, (*a*) Sanitary and (*b*) Medical. The (*a*) Markaz doctor would under the scheme be in sanitary charge of public works, excluded from private practice, and be responsible for general sanitation, notification and public treatment of communicable disease, vaccination, quarantine, and care of pilgrims. The (*b*) Markaz doctor would be in charge of the medical side of some of this work—namely, the treatment of communicable disease, the medical work done in prisons and schools, the examination of prostitutes, and all medico-legal work. He would be, of course, allowed private practice, which would, as stated, be denied to the (*a*) Markaz doctor, to whom, however, promotion to the Mudiria Health Inspectorships would be open. The Commissioners recognise that at the present time this scheme is not feasible, but suggest that it be given a trial in certain suitable areas. To meet immediate needs they propose a large increase in the number of Markaz doctors, whose duties would thus be lightened in some measure. A notable recommendation in the Report is the introduction of qualified British sanitary inspectors—i.e., men of the N.C.O. class—both in the case of the provinces and the large towns. In the former they would be attached directly to the British Divisional Inspectors and would supervise the work of the Egyptian inspectors of nuisances, who at present do not exist in the provinces, and whose creation is strongly urged.

Provision is made in the Report for the institution of training centres in the large towns, where the methods and appliances of sanitation can be taught to these inspectors of nuisances. An eloquent plea is here founded on Lord Kitchener's latest work for village sanitation service. The authors of the Report protest against allowing the fellaheen to live under existing sanitary conditions. Proper village water-supplies, incinerators, latrines, and conservancy systems are required to make Egyptian village life less of a sanitary scandal.

Concluding Remarks.

The various departments of medical service receive detailed notice—the department of epidemic service, of hospital management and inspection, of police, prison, and railway medical service, of school inspection and other subdivisions of medical work are all carefully noticed in the Report, as well as such subjects as medical schools and research laboratories, public health laboratories, and vaccination institutions. A special section of the Report is devoted to the public health of Alexandria, Cairo, and other large towns. We hope that the Report will soon be printed and available for the study of the profession. It is an outspoken document, covering a large amount of ground and giving information in a readable and intelligible form, which is valuable to all sanitarians as well as to those whose interests lie specially in Egypt. We trust, therefore, that the Report will not share the ill-fortune of many of its similars and remain the mere literary record of an ideal. It can easily be understood that the unification of health activities in such a country as Egypt constitutes a grave problem, but it is exactly the sort of problem which the British mind is best fitted to tackle. If those in authority are prompt in translating the recommendations of this Report into the legislation of the Protectorate their reward, in the future saving of trouble, will be very great.

Miss Gladys K. M. Simmons, who died of pulmonary tuberculosis at Bournemouth on Nov. 15th on the eve of her 27th birthday, had for the last two years been a valued helper in the editorial work of THE LANCET, although confined to her bed.

A MEMORANDUM ON INFLUENZA
FROM THE MEDICAL RESEARCH COMMITTEE.

THE secretary of the Medical Research Committee has sent us for publication the following summary of recent work done in foreign countries on the epidemiology and bacteriology of influenza.

Etiology and Clinical Course.

At a meeting of the Greifswald Medical Society on July 18th, Friedberger[1] stated that the term "grippe" was of French origin, being derived either from "gripper," to "seize," or from an insect called "grippe" which was regarded as the cause of the disease in the middle of the eighteenth century. The name "influenza" originated from the expression *ab occulta coeli influentia* used by the Greifswald physician, Calenus, in 1597. In a note on the history of influenza in Schleswig-Holstein, Hanssen,[2] of Kiel, states that he has found records of a "Spanish sickness" in 1566, 1580, and 1592, when the disease spread very rapidly and claimed many victims.

Orticoni, Barbie, and Leclerc,[3] in a note on the microbial flora of influenza, state that in addition to the usual micro-organisms of acute respiratory affections, such as pneumococci, streptococci, and pneumobacilli, they were able to isolate Pfeiffer's bacilli from the blood and pleural fluid from a certain number of influenza patients. It was chiefly towards the end of the disease and in the severest cases that Pfeiffer's bacilli were found, and almost always in association with other micro-organisms. Further investigations are needed to determine whether Pfeiffer's bacillus plays the principal rôle or is only of secondary importance in the etiology of influenza.

Florand[4] records cases tending to show that the present epidemic, which at first was so mild, is assuming a much graver character, especially as regards its pulmonary, broncho-pulmonary, pleural, and cardiac manifestations. The mild nature of the early cases in contrast with the severity of the later ones is also emphasised by Morelli (*vide infra*). Lampe[5] states that while the disease in the majority of cases observed in the Dresden Municipal Hospital ran a rapid and favourable course, 34 per cent. were complicated by severe diseases of the lungs and pleura. The frequency of cardiac dilatation and neurasthenia as sequelæ of influenza is noted by Espina.[6]

The Disease in Italy.

The high incidence of the disease in the Italian Army is shown by the fact that in some divisions the sick-rate was 90 per cent., and in one field hospital 40 per cent. of the staff went sick (Pavesi[7]).

Morelli,[8] in charge of a military hospital at Forli, states that the disease first appeared towards the end of April, and progressively increased in frequency until it reached its height in the last week of May and the first week of June, and then declined until it had almost disappeared in July. The first attacks were so mild that the men were able to keep on duty, but the subsequent cases were obliged to take to bed owing to the severity of the symptoms. Morelli distinguishes three groups of cases: 1. Very mild, ambulatory, almost abortive attacks, the symptoms consisting almost exclusively of an exanthem, enanthem, and slight general symptoms, such as headache, malaise, and a subfebrile temperature. 2. The ordinary type. 3. Severe cases with localisation of the infection chiefly in the respiratory tract. Gastro-intestinal symptoms were never prominent, but involvement of the nervous system was shown by headache, convulsions, and fainting, and in two cases by nuchal rigidity and Kernig's sign. The most characteristic feature of the disease was an exanthem which was present in almost all the cases at an early stage. It was polymorphous in character, sometimes assuming a diffuse erythematous form, varying from a bright red to a pale pink, localised on the face, trunk, and upper limbs, but hardly ever on the hands and rarely on the lower limbs. In some cases it closely resembled measles but was not followed by desquamation. In other cases it assumed the form of urticaria or erythema nodosum or affected the distribution of a prodromal rash of small-pox in the axillæ, hypochondria, and groins. An enanthem was present in all cases and consisted of an erythema involving the soft palate, uvula, and pillars of the fauces.

Influenza in Switzerland and Spain.

In a letter from Zurich, published on Sept. 8th, Häberlin[9] states that the Swiss Army has suffered severely from the influenza epidemic, not only the troops at the frontier being affected, in whose case defective hygiene might be held responsible, but also mobilised divisions in the country, where accommodation was good, and even recruits in barracks. Only isolated cases occurred in June, but towards the middle of July the epidemic broke out with great violence, so that 50 per cent. and more of the men contracted the disease in a few days. Many severe and fatal cases were observed both in the Army and in the civil population. Young persons were much more frequently attacked than the older generation, which had gained immunity from the 1889–90 epidemic. In not a few cases the infection ran a fulminating course, proving fatal in one or two days with all the signs of septicæmia. Many cases which at first seemed mild suddenly developed broncho-pneumonia just after convalescence had set in. In some troops three-quarters of the effectives fell sick. The number of fatal cases in the Army was about 500. Medical men formed a relatively high percentage of the victims, especially young doctors attached to hospitals or in the Army. Berne suffered most from the epidemic and the various places in the Bernese Jura, as well as some internment camps, such as the Chateau d'Oex.

On a discussion on the prevailing epidemic held at the Spanish Royal Academy of Medicine, Sanz[10] stated that among 120 cases under his care, 17 were of a hypothermic form, the characteristic features of which were not only the absence of fever but the persistence of a subnormal temperature, a scarcity of respiratory symptoms which were usually confined to the upper respiratory tract, intense pain in the fauces, aphonia, and a paroxysmal cough accompanied by spasm of the glottis. Intestinal disturbance was occasionally present at the onset. He had observed three varieties of nervous complications in this epidemic:—

1. Meningeal. In two cases in which lumbar puncture was performed the tension of the cerebro-spinal fluid was four times higher than the normal.

2. Neuralgic syndrome, chiefly assuming the form of sciatica or trigeminus neuralgia. In all the cases the neuralgia appeared at the onset of the disease and lasted throughout the febrile period.

3. Psychical syndrome, such as mental confusion and melancholia.

Description of a Sign.—Influenza Spondylitis.—Effect on Kidneys.

In a paper on a typical tender spot in influenza, Boeckler[11] draws attention to a sign which, in his experience, is never absent in true influenza, and the absence of which excludes the disease. This tender spot, which is usually bilateral, but may be present on one side only, is found as follows. A horizontal line is drawn two finger-breadths above the highest points of the iliac crests, with the patient in the vertical position. The point where this horizontal line intersects the outer border of the longissimus dorsi is the characteristic influenza tender point, which corresponds, according to Boeckel, to the space between the third and fourth lumbar vertebræ. This sign is often the only objective finding present at the beginning of the disease, and sometimes persists after all the other symptoms have disappeared. Boeckel has never found it present in any other disease, and considers that its constant presence in influenza proves that a more or less marked neuritis is constant in this disease, affecting all the branches of lumbar segment, and the fourth most of all. This hypothesis accounts for the pain in the back and legs and also for the giving way of the knees so frequently observed in influenza, as the fourth lumbar nerve sends motor fibres to the inner side of the leg.

A case of influenza spondylitis resembling typhoid spine and giving rise to lordosis is reported by Bregman.[12] X rays

[1] Friedberger: Med. Klin., Berl. u. Wien 1918, xiv., 922.
[2] Hanssen: Deutsche med. Wchnschr., Berl u. Leipz., 1918, xliv., 1030.
[3] Orticoni, Barbie, et Leclerc: Presse méd., Paris, 1918, 508–9.
[4] Florand, A.: Bull. et Mém. Soc. Méd. des Hôp. de Paris, 1918, 3e Sér., xlii., 753–55.
[5] Lampe, R.: Med. Klin., Berl. u Wien, 1918, xiv., 858–60.
[6] Espina: Siglo méd., Madrid, 1918, lxv., 704.
[7] Pavesi, C. M.: Policlin., Roma, 1918, xxv., sez. prat., 931–5.
[8] Morelli, G.: Policlin., Roma, 1918, xxv., sez. prat., 926–931.
[9] Häberlin: Med. Klin., Berl. u. Wien, 1918, xiv., 897–8.
[10] Sanz, F.: Siglo méd., Madrid, 1918, lxv., 704–5.
[11] Boeckler: Med. Klin., Berl. u. Wien, 1918, xiv., 860–1.
[12] Bregman, L. E.: Med. Klin., Berl. u. Wien, 1918, xiv., 912–14.

showed considerable widening of the lumbar intervertebral spaces, but no important changes in the bodies of the vertebræ. Recovery took place in three months under treatment by salicyl preparations and electric-light baths.

According to the official report quoted by Knack [13] on the epidemic of influenza in the German Army in 1889–90, among 55,263 cases there were only 10 instances of serious renal disease which did not differ in any respect from that occurring after other infectious diseases. Subsequent experience has confirmed that of the 1889 epidemic, and recent text-books state that post-influenzal nephritis is uncommon. During the present epidemic Knack has found a trace or cloud of albumin almost invariably present in mild and moderate cases of uncomplicated influenza. The albuminuria usually appeared during the first few days of the disease, and disappeared with, or shortly after, the fall of the temperature, but in rare cases it persisted for several weeks. From examination of the urinary sediment Knack has occasionally found focal and diffuse glomerulo-nephritis, and in rare cases nephrotic and purulent renal changes. An outbreak of influenza in the department for war nephritis gave Knack an opportunity of studying the effect of influenza on pre-existing renal disease. In many cases the kidney did not show any reaction, and in others there was a more or less pronounced but transitory exacerbation of the renal condition.

THE MEDICAL RESEARCH COMMITTEE:

COMMITTEES FOR SPECIAL PURPOSES.

IN the fourth annual report, just issued, of the Medical Research Committee (Cd. 8981. Price 4*d.*) an appendix is devoted to the constitution and personnel of the various committees for special purposes which have arisen during the war. We reproduce this appendix for the benefit of our readers.

(1) *The Incidence of Phthisis in Relation to Occupations.*

To investigate and report upon the incidence of phthisis in relation to particular occupations, and to prepare and suggest schemes for special research work in connexion therewith.

Dr. Addison (chairman); Dr. John Brownlee; Professor William Bulloch, F.R.S.; Dr. E. L. Collis; Dr. Major Greenwood; Dr. Leonard Hill, F.R.S.; Dr. Benjamin Moore, F.R.S.; with Sir Walter M. Fletcher, F.R.S. (secretary to the Medical Research Committee).

(2) *Surgical Shock and Allied Conditions.*

To undertake the coördination of inquiries into surgical shock and allied conditions, with a view to the better correlation of laboratory and clinical observations.

Professor W. M. Bayliss, F.R.S. (chairman); Professor F. A. Bainbridge; Professor W. B. Cannon (Harvard); Colonel T. R. Elliott, F.R.S.; Dr. John Fraser; Colonel H. M. W. Gray; Dr. P. P. Laidlaw; Professor A. N. Richards, Ph.D. (Pennsylvania); Professor C. S. Sherrington, F.R.S.; Professor E. H. Starling, F.R.S.; Major-General Cuthbert Wallace; Dr. H. H. Dale, F.R.S. (secretary). (With corresponding members in France, Italy, and America.)

(3) *Standardisation of Pathological Methods.*

To consider how far it may be practicable and desirable to obtain standardisation of routine pathological methods, and to report upon this. The Committee are empowered to coöpt additional members for particular divisions of their subject.

Professor J. G. Adami, F.R.S. (chairman); Professor F. W. Andrewes, F.R.S.; Professor W. Bulloch; Captain S. R. Douglas (secretary). Additional members for particular divisions of the subject: Colonel L. W. Harrison; Dr. C. H. Browning; Dr. J. W. H. Eyre.

(4) *Salvarsan.*

To consider the methods of manufacture, biological testing, and clinical administration of salvarsan and its substitutes used in this country, and the results of these, and to propose specific investigations aimed at improving those methods and results.

Sir Humphry D. Rolleston (chairman); Professor F. W. Andrewes; Professor William Bulloch; Dr. F. J. H. Coutts (secretary); Dr. H. H. Dale; Colonel L. W. Harrison; Surgeon Commander D. W. Hewitt, R.N.

(5) *Chemical Warfare Medical Investigations.*

Appointed by the Director-General, Army Medical Service, with the concurrence of the Controller of Chemical Warfare, to prepare reports, based upon information received from all sources at the Chemical Warfare Department, for submission to him with a view to their distribution to those concerned, to make suggestions for further co-ordinated medical investigations that may seem desirable, and to advise him generally in respect of the scientific medical aspects of chemical warfare.

Professor A. R. Cushny, F.R.S. (chairman); Mr. J. Barcroft, F.R.S.; Professor W. M. Bayliss; Professor A. E. Boycott, F.R.S.; Dr. H. H. Dale; Dr. J. S. Edkins (secretary); Sir Walter M. Fletcher; Dr. J. S. Haldane, F.R.S.; Dr. Leonard Hill; Lieutenant-Colonel J. C. Meakins, C.A.M.C.; Major H. S. Raper, R.A.M.C.; Dr. Frank Shufflebotham; Colonel A. B. Soltau. (With corresponding members in France, Italy, and England.)

[13] Knack, A. V.: Med. Klin., Berl. u. Wien, 1918, xiv., 902–4.

(6) *Anaerobic Bacteria and Infections.*

With a view to the better coördination of inquiries into the characters of anaerobic organisms, with special reference to the bacteriology of anaerobic wound infections, the Medical Research Committee invited the following to serve as a Special Investigation Committee for this purpose.

Professor William Bulloch (chairman); Dr. W. E. Bullock; Captain S. R. Douglas; Dr. Herbert Henry; Dr. James McIntosh; Dr. R. A. O'Brien; Miss Muriel Robertson, M.A. (secretary); Dr. C. G. L. Wolf. (With corresponding members in France.)

(7) *Accessory Food Factors ("Vitamines").*

Appointed by the Medical Research Committee jointly with the Lister Institute of Preventive Medicine to consider and advise upon the best means for advancing and coördinating the various lines of inquiry into the modes of action of the factors in metabolism which are independent of the provision of energy.

Professor F. Gowland Hopkins, F.R.S. (chairman); Miss Harriette Chick, D.Sc. (secretary); Dr. J. C. Drummond; Professor Arthur Harden, F.R.S.; Dr. E. Mellanby. (With corresponding members with the Forces in the East and in America.)

(8) *Air Medical Investigation.*

The Medical Administrative Committee of the Air Ministry in consultation with the Medical Research Committee, and with the concurrence of the Air Council, appointed the following Committee:—(*a*) To prepare reports for submission to them with a view to their distribution to those concerned. (*b*) To make suggestions for further coördinated medical investigations that may seem desirable. (*c*) To advise them generally in respect of the scientific medical aspects of aeronautics.

Dr. Henry Head, F.R.S. (chairman); Sir Walter M. Fletcher; Dr. M. Greenwood; Dr. Leonard Hill; Dr. W. H. R. Rivers, F.R.S.; Professor C. S. Sherrington; Professor C. E. Spearman, Ph.D.; Colonel Martin Flack, R.A.F. (secretary); the Secretary, Medical Administrative Committee (ex-officio). Corresponding members in France: Major J. L. Birley; Captain C. H. D. Corbett; Lieutenant-Colonel G. Dreyer; Mr. Sydney Scott.

(9) *Dysentery.*

In May, 1918, the following Committee was appointed by the Director-General, A.M.S., for the purpose of investigating problems in connexion with the incidence and segregation of cases of amœbic and bacillary dysentery, more especially with relation to the disposal of carriers, and such other problems as may be placed before it.

Sir William Leishman, F.R.S. (chairman); Professor F. W. Andrewes; Dr. G. S. Buchanan; Mr. Clifford Dobell, F.R.S.; Sir Walter M. Fletcher; Dr. G. T. Western (secretary).

(10) *Industrial Fatigue Research Board.*

Appointed in June, 1918, by the Department of Scientific and Industrial Research jointly with the Medical Research Committee to consider and investigate the relations of the hours of labour and of other conditions of employment, including methods of work, to the production of fatigue, having regard both to industrial efficiency and to the preservation of health among the workers.

Professor C. S. Sherrington (chairman); Dr. E. L. Collis; Sir Walter M. Fletcher; Mr. W. L. Hichens; Mr. Edward Hopkinson, D.Sc.; Dr. M. T. Legge; Mr. D. R. Wilson (secretary). (The appointments to the Board are not yet completed.)

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

A MEETING of the Executive Committee of the Fund was held at the offices of THE LANCET on Nov. 18th, when the position of the Fund was considered, having regard to the gradual reclamation of Belgium from the German occupation.

Sir RICKMAN GODLEE, the Chairman of the Committee, said that after inquiry he found that no definite announcement could yet be made as to when prompt intercommunication between the Committee of the Fund and the Comité Mixte sitting in Brussels could be made. The feeling of the Committee was that, with regard to the money remaining in their hands, as well as future subscriptions, some direct communication with the Belgian body would now be useful. It was decided that steps should be taken to obtain through the Commission for Relief in Belgium a statement from the Comité Mixte, representing the medical and pharmaceutical professions in Belgium, as to the present position. The Committee noted with pleasure that the subscriptions to the Second Appeal of the Fund were still coming in, the North of England Branch of the British Medical Association, through Dr. J. Don, the honorary secretary of the Branch, having been notably generous. Relying on two things—namely, the subsidy until the end of the year of £200 a month from the American Red Cross, and the recurring generosity of the medical profession—it was decided to resume the mensuality of £800 per month.

The Committee formally expressed deep regret at the death of Mr. Meredith Townsend, who had been an active and assiduous member of their body, and through whose instrumentality a varied and valuable assortment of medical instruments had been distributed from the Apothecaries'

Hall, London, to Belgian doctors, both in this country and fighting with the Belgian Army.

SUBSCRIPTIONS TO THE SECOND APPEAL.

The following subscriptions have been received up to Monday last, Nov. 18th:—

	£	s.	d.
North of England Branch B.M.A. (per Dr. J. Don, Hon. Sec.)—			
Dr. James Hudson ...	5	5	0
Dr. J. Wishart	1	1	0
Dr. J. H. R. Garson ...	1	1	0
Dr. J. McDonald ...	2	2	0
Dr. T. G Ainsley ...	5	5	0
Dr. C. Busan	1	1	0
Dr. F. Horseman ...	1	0	0
Dr. James Don... ...	5	5	0
Dr. A. Livingston ...	5	5	0
Dr. A. C. Burnell ...	5	5	0
Dr. Alfred Cox (monthly)	1	1	0
Dr. J. Herbert Sanders (per Sir Rickman Godlee)	1	10	10
Dr. R. H. Western... ...	20	0	0
H. L.	5	0	0
Sydenham District Medical Society (per Dr. F. G. Swayne)	7	7	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

URBAN VITAL STATISTICS.

(Week ended Nov. 16th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had increased from 11·4 to 43·8 per 1000 in the seven preceding weeks, declined to 33·7 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 44·0 or 11·5 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 14·8 in Bournemouth, 14·9 in Southampton and in Wallasey, and 15·0 in Portsmouth, to 62·0 in Oldham, 68·4 in Coventry, 68·7 in Nottingham, 70·2 in Norwich, and 84·6 in Rotherham. The principal epidemic diseases caused 186 deaths, which corresponded to an annual rate of 0·6 per 1000, and included 61 from infantile diarrhœa, 53 from diphtheria, 31 from whooping-cough, 26 from measles, 9 from scarlet fever, and 6 from enteric fever. The deaths from influenza numbered 5916, or 1644 below those recorded in the previous week, and included 1665 in London, 246 in Birmingham, 241 in Sheffield, 235 in Manchester, 208 in Leeds, 198 in Nottingham, and 161 in West Ham. The 1171 cases of scarlet fever and 1086 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 27 and 69 below the respective numbers remaining at the end of the previous week. The causes of 74 deaths were uncertified, of which 10 were registered in Nottingham, 6 each in Birmingham and South Shields, and 5 each in London, Liverpool, and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 23·9, against 30·5 and 27·0 per 1000 in the two preceding weeks. Of the 1103 deaths from all causes, 48 were classified to influenza, which was also stated as a contributory cause in 331 deaths classified to other diseases; in the previous week these numbers were 87 and 447 respectively. The 404 deaths in Glasgow corresponded to an annual rate of 18·9 per 1000, and included 5 from diphtheria, 3 from whooping-cough, 2 from infantile diarrhœa, and 1 from scarlet fever. The 234 deaths in Edinburgh were equal to a rate of 35·6 per 1000, and included 4 from whooping-cough, 2 each from diphtheria and infantile diarrhœa, and 1 from scarlet fever.

Irish Towns.—The 349 deaths in Dublin corresponded to an annual rate of 45·6, or 14·4 per 1000 below that recorded in the previous week, and included 141 from influenza, 4 from infantile diarrhœa, 3 from diphtheria, 2 from scarlet fever, and 1 each from enteric fever and measles. The 412 deaths in Belfast were equal to a rate of 54·7 per 1000, and included 3 from infantile diarrhœa and 1 each from scarlet fever and diphtheria.

LITERARY INTELLIGENCE.—A work on "Dr. John Fothergill and His Friends," by Dr. R. Hingston Fox, will shortly be issued by Messrs. Macmillan. It will give a picture of the Quaker physician, and his influence on the advance of therapeutics in the eighteenth century. The book will deal with Fothergill's large contributions to botany, his work in education and politics, and especially his relations with the American provinces. Portraits of Fothergill, Dimsdale, Lettsom, Franklin, and others are included.

COAL FOR INVALIDS.—It has been reported to the Coal Controller that local fuel overseers are receiving very many medical certificates authorising additional coal rations to householders on account of illness in the family. Many of these medical certificates have been given, in the opinion of the Coal Controller, without the necessary consideration of the serious coal shortage, and with this view he is drawing the attention of medical men to the necessity of granting these certificates only in cases of real hardship. The only condition under which a medical certificate for an extra coal ration on account of illness should be given is, says the Coal Controller, where the patient is to remain in bed and where a fire in the bedroom is necessary for recovery; and he states that "one cwt. to one and a half cwt. a week can be allowed for bedroom fires in these circumstances and only for the time the patient remains in bed." The notice to medical men is accompanied by an unfortunately worded threat of ignoring medical certificates unless the real hardship of the case is clear to his department.

The War and After.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Died of Wounds.

Capt. J. Gaston, M.C., R.A.M.C., attached Suffolk Regiment, qualified at Belfast in 1906, and prior to joining the R.A.M.C. was in practice at Cloughmills, co. Antrim. The award of the Military Cross was recorded in THE LANCET of August 4th, 1917, p. 175.

Lieut. P. R. Shannon, R.A.M.C., came over as a member of the Canadian Expeditionary Force, and later was attached to the R.A.M.C.

Died.

Capt. R. S. Cocke, R.A.M.C., was a student at King's College Hospital, London, and qualified in 1900. He held appointments at the Cambridge Hospital, Aldershot, at King's College Hospital, and at St. Pancras Infirmary. Prior to joining the R.A.M.C. he was in practice in Wimpole-street, and was on the staff of the Royal Ear Hospital, Soho, and of King's College Hospital. He died in London of disease, contracted whilst on active service in the East.

Capt. L. A. Winter, R.A.M.C., was a student at St. Bartholomew's Hospital, London, and qualified in 1892. He held appointments at the East London Hospital for Children, at the Kent and Canterbury Hospital, and at St. Bartholomew's Hospital. Prior to joining the R.A.M.C. he was in practice at Sheerness, where he was medical officer to the Post Office, divisional surgeon to the St. John Ambulance Brigade, acting commandant and medical officer to the local V.A.D., and civil surgeon to the Well Marsh Military Hospital, Sheerness. He died in France of pneumonia.

Capt. H. G. F. Spurrell, R.A.M.C., was educated at Oxford and at the London Hospital, and qualified in 1907. During 1916–17 he was temporary medical officer at Obuasi, South Ashanti, and later joined the R.A.M.C. He died at Alexandria of pneumonia.

Col. S. C. Philson, A.D.M.S., R.A.M.C., was a student at King's College Hospital, London, and qualified in 1883. He joined the R.A.M.C. shortly afterwards.

Capt. A. M. Jukes, I.M.S., was a student at St. Bartholomew's Hospital, London, and qualified in 1906. Prior to joining the I.M.S., in which at the time of his death he was Deputy Sanitary Commissioner of the Presidency Circle, Bengal, he held appointments at Shillong, Assam, and at the Royal Infirmary, Hull. He died in Egypt of neuritis and heart failure following rheumatic fever.

Lieut. J. Dow, I.M.S., qualified at Aberdeen in 1914, and after holding an appointment at the Aberdeen Royal Infirmary he joined the R.A.M.C., and later transferred to the I.M.S.

Capt. J. M. Downie, R.A.M.C., was educated at Cambridge and at Glasgow Universities, and qualified in 1916. After holding an appointment at the Western Infirmary, Glasgow, he joined the R.A.M.C.

Lieut.-Col. J. E. Hodgson, R.A.M.C., was a student at Owens College, Manchester, and qualified in 1898. He held an appointment at Barnes Convalescent Hospital, Cheadle, and joined the R.A.M.C. in 1899. He died at Salonika of pneumonia following influenza.

Capt. C. D. Hamilton, Canadian A.M.C., qualified at McGill University, Montreal, in 1911, and prior to joining the Canadian Contingent was in practice in Cornwall, Ontario, Canada.

Lieut. W. McL. McLeod, Canadian A.M.C.

Lieut. R. H. Lalande, Canadian A.M.C.

Wounded.

Capt. A. Hunter, R.A.M.C., attached Royal Engineers.
Capt. A. U. Millar, R.A.M.C.
Capt. P. G. Leeman, R.A.M.C.
Capt. J. Manuel, M.C., R.A.M.C.
Major W. H. Morrison, R.A.M.C.
Capt. C. H. G. Prance, R.A.M.C.
Capt. I. W. Jones, R.A.M.C., attached Indian Army.
Capt. R. Rodger, R.A.M.C., attached Indian Army.
Major D. H. Russell, M.C., R.A.M.C., att. Northumberland Fusiliers.
apt. C. N. Coad, M.C., R.A.M.C.
Capt. J. Pryce Davies, R.A.M.C., attached R.F.A.
Capt. J. Scott, R.A.M.C., attached Manchester Regiment.
Major H. J. D. Smythe, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Lieut. J. E. C. MacVicker, R.A.F., reported missing, now believed to have been killed, eldest son of Dr. C. G. MacVicker, J.P., of Street, Somerset.

Capt. E. V. Morse, M.C., The Buffs, killed in action, second son of Mr. T. H. Morse, F.R.C.S., of Deal.

Lieut. J. Webster, M.C., R.A.F., killed in action, only son of Dr. J. A. Webster, late of Launceston and Sorell, Tasmania.

Capt. J. C. Woollett, R.A.F., died of pneumonia, son of Dr. C. J. Woollett, of Streatham, London, S.W.

Second Lieut. J. W. B. Rowland, R.F.A., killed in action, only son of Dr. E. D. Rowland, I.S.O., British West Indies Medical Service.

Col. S. C. Philson, A.D.M.S., R.A.M.C., died of pneumonia at Karachi, India, son of the late Dr. W. Philson, of Cheltenham.

Capt. A. M. Jukes, I.M.S., died of heart failure after rheumatic fever, only son of Dr. A. Jukes, of the Church Missionary Society.

Lieut. E. L. Prichard-Evans, R.A., died at King's Lynn of pneumonia, youngest son of the late Dr. E. Prichard-Evans, of Mountain Ash, Glam.

Capt. H. S. Lyle, M.C., Canadian Mounted Rifles, killed in action, third son of the late Dr. R. C. Lyle, of Dunmow, Essex.

Gunner C. G. Kelly, R.F.A., killed in action, son of the late Dr. B. Kelly, of Rotherhithe, London, S.E.

Driver W. Marshall, R.H.A., died abroad of influenza, son of Dr. J. Marshall, of Wickford, Essex.

THE HONOURS LIST.

The following appointments of medical officers to the Order of the British Empire are announced:—

Officers: Capt. D. H. Fraser, M.C., R.A.M.C. (for an act of gallantry not in the presence of the enemy); Temp. Capt. D. F. Borrie, R.A.M.C.; Maj. S. R. Christophers, C.I.E., I.M.S.; Capt. W. Dunlop, R.A.M.C. (Spec. Res.); Temp. Capt. E. N. Glover, R.A.M.C.; Maj. F. P. Mackie, I.M.S.; Temp. Lieut.-Col. D. Macauley, R.A.M.C.; Capt. (acting Maj.) W. D. Miller, South African M.C.; Lieut.-Col. E. R. Rost, I.M.S.; Maj. E. L. Scott, M.C., I.M.S.; Maj. C. E. Southon, I.M.S.; Capt. R. Bury, Nyasaland M.S.; Temp. Capt. G. D. H. Carpenter, Uganda M.S.; Capt. W. H. Elliott, R.A.M.C. (Spec. Res.); Capt. G. B. Fleming, R.A.M.C. (T.F.); Capt. W. H. Kauntz, East African M.S.; Temp. Capt. D. McIntyre, R.A.M.C.; Maj. E. Gibbon, R.A.M.C.; Mr. A. H. Spurrier, C.M.G., L.R.C.P., attached Sanitary Service, East African Force.

FOREIGN DECORATIONS.

French.

Légion d'Honneur: Croix de Chevalier.—Lt.-Col. J. H. Hugo, D.S.O., I.M.S.

Croix de Guerre.—Maj. C. E. W. S. Fawcett, R.A.M.C.; Lt.-Col. P. G. Brown, Canadian A.M.C.; Lt.-Col. R. D. Campbell, D.S.O., Australian A.M.C.; Maj. (Temp. Lt.-Col.) R. T. Collins, D.S.O., R.A.M.C.; Capt. W. P. Croker, R.A.M.C.; Capt. (Acting Maj.) J. Dale, R.A.M.C.; Temp. Capt. J. L. Jackson, R.A.M.C.; Lt.-Col. A. B. Lyon, R.A.M.C.; Lt.-Col. A. H. Marks, D.S.O., Australian A.M.C.; Capt. (Acting Maj.) G. S. Parkinson, D.S.O., R.A.M.C.; Capt. (Temp. Col.) S. M. Smith, C.B., R.A.M.C. and A.M.S.; Lt.-Col. (Temp. Col.) A. B. Soltau, C.M.G., R.A.M.C. and A.M.S.; Maj. (Temp. Lt.-Col.) V. O Stacy, Australian A.M.C.; Maj. (Acting Lt.-Col.) C. G. Thomson, D.S.O., R.A.M.C.; Lt.-Col. J. Tobin, R.A.M.C.; Capt. (Acting Lt.-Col.) T. B. Wolstenholme, R.A.M.C.; Capt. W. L. R. Wood, M.C., R.A.M.C.; Col. R. J. Blackham, C.M.G., C.I.E., D.S.O., A.M.S.; Temp. Lt. (Acting Maj.) H. Goodman, R.A.M.C.; Temp. Capt. (Acting Maj.) H. B. G. Russell, R.A.M.C.; Senior Asst. Surg. E. V. Duckworth, I.S.M.D.

RELEASED MEDICAL OFFICERS.

The following medical officers have been released from captivity in Turkey:—

R.A.M.C.—Lieut.-Col. E. Bennett, Capt. J. S. Startin, Capt. T. E. Osmond, Capt. E. G. S. Cane.

I.M.S.—Lieut.-Col. E. F. E. Baines, Maj. S. G. S. Haughton, Maj. W. M. Pearson, Capt. C. Newcomb, Capt. M. L. Puri, Capt. L. A. P. Anderson.

FIRST BRITISH AMBULANCE UNIT FOR ITALY.—The value of the unit's work, which is to terminate at the end of the year, has been publicly recognised by the Italian Red Cross in the award of three *Croce Rossa* silver medals with certificates, one of them to Dr. George S. Brock, who was for a long time in medical charge of the Villa Trento Hospital, at Gorizia. The unit, after many stirring episodes, lays down its work in the now Italian seaport of Trieste.

OBITUARY OF THE WAR.

ROGER DAWSON BROWNSON, B.A., M.B., B.C. CAMB.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain R. D. Brownson, who died at Peshawar on Oct. 21st, was only son of the Rev. F. Brownson, of Compton Greenfield, Gloucestershire. He was educated at Warwick and St. John's College, Cambridge, going on to the London Hospital. He took the Conjoint diplomas in 1908 and the M.B., B.C. Camb. in 1911. For two years he practised at Hampstead, and on the outbreak of war he volunteered for active service and received a commission in the R.A.M.C. In February, 1915, he was sent out to France, where he was attached to the 1st Norfolks, and while with them he was gassed. After recovery he was given home service with an R.E. Bridging Train at Plymouth. In January, 1916, he was sent to India, attached to the King's Own at Peshawar, where he soon became Staff Surgeon, an appointment which he held until his death, which was the result of influenza. Captain Brownson was a keen sportsman and a regular follower of hounds at Peshawar. He married in 1911 the Hon. Gwenllian Rice, third daughter of the late Lord Dynevor, and leaves a widow and one daughter 3 years old.

FRANK PEARCE POCOCK, M.R.C.S. ENG.,

DISTINGUISHED SERVICE ORDER, MILITARY CROSS, TEMPORARY SURGEON, R.N.

Surgeon F. P. Pocock, who died of wounds on Sept. 29th, at the age of 27 years, was younger surviving son of Charles Wellesley Pocock, of Portishead. He was born at Harrow and educated at Durston House, Ealing, Ripley Court, Surrey, and St. Paul's School, where he gained an open scholarship to Westminster Hospital. He qualified M.R.C.S. Eng. in 1913 and then held the post of house surgeon at his hospital. On the outbreak of war he offered his services to the Navy, and for the first 14 months was posted to a battleship on the North Sea. He was then transferred to the Royal Naval Division and saw service in the Eastern Mediterranean and afterwards in France as M.O. to the Drake Battalion. In the autumn of 1916 he was awarded the M.C. He was invalided home in November, 1917. He served with the Royal Marines as surgeon on *Iris II.* in the Zeebrugge raid of April last, and for his services on this occasion was awarded the D.S.O. He returned to the Drake Battalion in August as M.O., and was mortally wounded himself as he was going to the assistance of a wounded man. Letters from his friends indicate the affection and esteem in which Surgeon Pocock was held. An old college friend writes: "He was one of the most popular and best-loved men who have been through the hospital for many years."

GEOFFREY ALWYN GERSHOM BONSER, B.A. CAMB., M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain G. A. G. Bonser, who was killed in action in France on Sept. 29th at the age of 30 years, was only son of G. G. Bonser, J.P., of Sutton-in-Ashfield. Educated at Brighton College and Worcester King's School, he entered St. John's College, Cambridge, taking honours in the Science Tripos, and going on to St. Thomas's Hospital, London, for his clinical work. His tastes were literary and poetical, with a passionate love of music, and while at St. Thomas's he edited the hospital gazette. After obtaining the diplomas of the Conjoint Board he joined the Territorials in 1915 while preparing for the Third M.B. Examination at Cambridge, and was attached to the Eastern General Hospital, assisting the staff at Addenbrooke's Hospital until he sailed for Egypt on Easter Day, 1916. There he served on both fronts, going through many hardships in the Palestine campaign and spending Christmas in Jerusalem. Last May he was transferred to France, and coming home on leave for the first time in July he was married to Miss Lilian Prime, to whom he had long been engaged. Two months after his return to France he was killed instantaneously by a shell while attending wounded. A letter from his colonel contains the sentence: "Captain Bonser's death is a great loss to the battalion; from all who knew him well I have heard nothing but praise." The utmost sympathy will be extended to his young widow.

KENNETH McALPIN ROSS, M.B., CH.B. GLASG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain K. McA. Ross, who died of wounds on Sept. 17th at the age of 26 years, was second son of the late Dr. William Ross, of Glasgow, and was educated at Bellahouston Academy, where he was a prominent swimmer and footballer. He graduated M.B., Ch.B. at Glasgow University in 1915, immediately obtaining a commission in the R.A.M.C. He went out to France in the following year as medical officer to a battalion of Lancashire Fusiliers, and was invalided home in 1917. In the present year he volunteered again for service, and in July was attached to a Scottish regiment, with which he received a fatal wound at Moevres. He leaves a widow and a wide circle of friends to lament his loss.

Captain JAMES GRANT MACNEILL, *M.C.*, C.A.M.C., who was killed in action on Oct. 12th, was 25 years of age and a native of St. Stephen, N.B., Canada. He graduated in medicine at Queen's University in 1916 and left Canada in May of that year. Crossing to France in August, 1916, he served with a field ambulance and as regimental M.O. He was awarded the Military Cross last July.

GEORGE FINCH, M.R.C.S. ENG., D.P.H. OXF.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

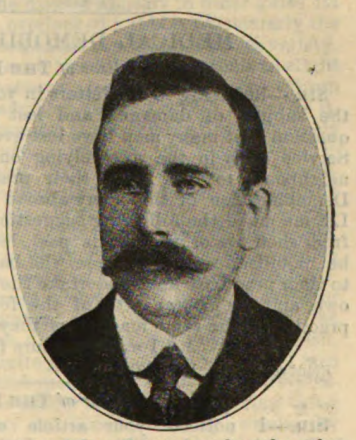
Captain G. Finch, who died at Basra on Oct. 8th, aged nearly 46 years, was only son of the late George Finch, of Kensington. He was educated at Bedford Grammar School and at Weimar, studied engineering at University College, London, and afterwards was engaged on the construction of the Central London Tube Railway. An illness turned his thoughts towards medicine, and he began a medical course at Leeds University, finishing it at St. Thomas's Hospital, London, from which he took the Conjoint diplomas in 1905. Five years later he obtained the D.P.H. Oxford. After a series of resident hospital appointments in London he was appointed in 1911 school medical officer for the East Sussex County Council. When war broke out he was assistant to the county medical officer of health for East Suffolk and resided at Ipswich. He immediately volunteered and received his commission in the R.A.M.C. before the end of the first week of the war, and was attached to the 3rd East Anglian (Howitzer) Brigade of the R.F.A. (T.F.). Later he was transferred to the military side of St. Thomas's Hospital, and thence to the 3rd London General Hospital, Wandsworth. In July, 1916, he was one of the hospital unit chosen for Mesopotamia by Colonel Bruce-Porter. Shortly after arriving at Basra he was appointed port health officer there, and held this appointment until his death from pleuro-pneumonia in the officers' hospital.

Captain Finch's heart was in his public health work, evidence of which may be seen in his contributions on school inspection and on the feeding of infants and children in the *Child* and in our own columns. He leaves a widow, the second daughter of Professor G. Carey Foster, F.R.S., and a daughter 2 years old.

GIDEON HENDRIK VAN ZYL, L.R.C.P. EDIN.,

LIEUTENANT-COLONEL, SOUTH AFRICAN MEDICAL CORPS.

Dr. G. H. van Zyl, who died of pneumonia at Wynberg in his forty-second year, was son of the late William van Zyl. He was educated at Robertson and Wellington High Schools and at Edinburgh, where he took his medical diplomas before returning to South Africa, where he started in practice at Zand Vliet, in the district of Robertson, in September, 1905. Dr. van Zyl was a diligent citizen of Robertson; he was on the executive of the local agricultural society and a member of the Turf Club and Masonic Lodge. He married in June, 1905, Frances, daughter of the late Edward Allsopp, by whom he had two children.



Captain THOMAS REGINALD GUILFOYLE, C.A.M.C., who died on Oct. 29th, at the age of 26 years, was a native of Lucan, Ontario. He graduated in medicine at the Western University, London, Ontario, in 1914, and came to England in July, 1916, serving with a stationary and a general hospital in England until last February, when he was invalided back to Canada. He returned again to duty in England in July, serving as S.M.O.

Correspondence.

"Audi alteram partem."

THE MEDICAL SERVICE OF THE ROYAL AIR FORCE.

To the Editor of THE LANCET.

SIR,—With reference to the annotation under the above heading in your issue of Nov. 16th, it may be pointed out that as the period of compulsory service for medical men in the armed forces is now drawing to a close it will be necessary to obtain some definite statement as to the above service if medical men of ability are to remain in it or be attracted to it. A scheme for this service drawn up by the Medical Advisory Committee of the Flying Services still holds the field, although it has not yet been called on for active duty while the "duration of the war" compromise known as the Medical Administrative Committee has ceased to exist.

It should be made widely known that the scheme of the Medical Advisory Committee was designed *pro bono publico* and not *pro bono medico*. At the same time, it was kept in mind that an efficient medical service for the Air Force could only be carried on by efficient medical men. So far the principles of the scheme have met with general approval, but the only application of them has been as a soothing syrup for anxious inquirers in the House of Commons. Nine months ago Major Baird, Under-Secretary of State for the Air Ministry, expressed the hope that the newly appointed Medical Administrative Committee would be able to carry out the principles of the scheme. A fortnight ago he expressed the hope that the newly appointed Director-General would be guided by the principles of the scheme. Major Baird's hopefulness is no doubt useful in Parliament but does not help members of the medical profession desirous of joining the Air Force, and they will be well advised to wait until it is known whether the Air Board have definitely adopted and guaranteed the principles of the scheme.

An important recommendation in the scheme was the appointment of a Medical Advisory Committee, meeting once a month, to aid the Director-General. It was to consist of the Director-General, his chief medical officers, and a strong civilian element. Although the functions of this committee were to be advisory only its influence in securing a high standard of professional work promised to be very great. The presence of experts on medical subjects drawn from the civilian population would undoubtedly strengthen the hands of the Director-General in maintaining an up-to-date medical service.

I am, Sir, yours faithfully,

Wimpole-street, W., Nov. 17th, 1918. G. A. SUTHERLAND.

MEDICAL DEMOBILISATION.

To the Editor of THE LANCET.

SIR,—Referring to the letters in your issue of Nov. 9th on the subject of damaged and lost practices, it is beyond question that many men have lost everything by joining the Service early in the war, relying on their "indispensable" neighbours to look after their practices in their absence. Demobilisation of the Army abroad will take many months. Let me make the following suggestion: Now that all danger from shell fire or gunshot is past, let the "indispensables" be mobilised to release those who have served long to return to their practices and undertake the reconstruction of their own and the looking after of the former "indispensables'" practice in the same manner as they have been "done" by.

I am, Sir, yours faithfully,

Pembroke, Nov. 12th, 1918. A. HURRELL STYLE.

To the Editor of THE LANCET.

SIR,—I noticed your article of recent date which dealt with the demobilisation of the medical services. I gathered that the principle to be adopted was to demobilise those who have had the longest service, and those who joined the services last were to be retained until the last. I agree that in many ways this is a good method to adopt, but I cannot accept it as by any means the fairest and most just.

I would point out most emphatically that there are a large number of medical officers in the R.A.M.C. who have done long service at the base and on lines of communication in comfort and ease. These medical officers have had all the advantages of hospital appointments and have been able to retain their medical and surgical knowledge, and, most important, have kept their methods up to date. On the other hand, there are a very large number of medical officers who have spent the greater part if not the whole of their service in the front areas with field ambulances and regiments. These medical officers (in contrast to their more fortunate brothers at the base, &c.) have had all the discomfort of the front line and dangers of the battlefields. Above all, they have been entirely cut off from the medical world, and have most naturally lost much of their former knowledge, as the medical work in the front areas consists almost entirely of first aid and evacuation of wounded and the treatment of slight sickness.

I think without a doubt that no one could disagree that these latter medical officers with front-line services to their credit should be demobilised before those with base-work service. In writing to you I am voicing the opinion of many others, and I feel sure that those responsible will fully consider this aspect with every care.

I am, Sir, yours faithfully,

France, Nov. 18th, 1918. LONDON.

To the Editor of THE LANCET.

SIR,—All temporary and Territorial officers of the R.A.M.C. who have been serving abroad will surely endorse the view put forward by "Lieut.-Colonel, R.A.M.C. (T.F.)" in the letter which appears in your issue of Nov. 9th. Eminent consultants, who will have an assured position under any conditions of State service, are surely not the best advisers as to what form such a scheme should take. Those who have left their practices to serve should be assured of a good billet when peace is signed. Even in that case they would lose the capital value of their practices, whilst those medical officers who have been able—as many officers of the T.F. have—to attend to their practices whilst performing their military duties are not under the same disadvantages.

Some steps should certainly be taken to recompense medical officers who have been compelled to leave their practices, through their own patriotism, for the unenviable position in which they will find themselves after the war, and under any scheme of State service they should have preferential treatment.

I am, Sir, yours faithfully,

Nov. 12th, 1918. TEMP. CAPT., R.A.M.C.

THE ETIOLOGY OF INFLUENZA.

To the Editor of THE LANCET.

SIR,—For some time previous to the appearance of the epidemic in Reading I have had occasion to examine many sputa from men who had been "gassed" in France. These sputa were generally submitted to culture, and in the course of this work it became evident that one particular type of organism was occurring with almost mechanical frequency. Since the epidemic broke out in this neighbourhood I have recovered apparently the same organism in pure culture from the blood of a patient with practically no physical signs in the chest, from the pleural fluid of another case, and I have isolated it from a throat swab culture as well as from sputa from civilian cases.

One case, however, which came under my notice seems to me to possess a special interest. The patient was said to have had an attack of influenzal broncho-pneumonia on the way across from America. While convalescing near Reading he suddenly developed a temperature and was admitted under the care of my colleague, Major G. S. Abram, R.A.M.C. (T). The patient had enlarged glands in both groins and in the left axilla without any obvious local irritation to account for them. The possibility that it might be a case of plague presented itself, and I was asked by my colleague to make a bacteriological investigation. From one of the glands I extracted a few drops of blood-stained fluid with which I inoculated two guinea-pigs intraperitoneally. The animals remained fairly well for a week, but were found dying on the eighth day. One of them had apparently been passing blood, as its hind parts were blood-stained. On making a post-mortem examination I found the peritoneal cavity of each

animal to contain a large quantity of blood-stained fluid. Cultures made from these animals have yielded a pure growth of an organism apparently identical with that found in influenzal and in "gassed" cases. There was no evidence of true plague.

In another case, as the sputum contained pestis-like organisms, I again inoculated guinea-pigs. One of them was found dead in 48 hours with acute general peritonitis. Cultures made from the heart blood and from the peritoneal fluid yielded a pure growth of the organism under discussion. Films made from the peritoneal fluid, however, showed enormous numbers of Gram-positive diplococci, apparently capsulated and resembling pneumococci. They differed however, in being larger, less pointed, and more of an ovoid shape.

The organism has the following characteristics:—

It grows well on agar containing sheep's washed blood corpuscles and in blood-glucose broth. On the former the colonies are round, slightly dome-shaped, translucent, and posse-s a sharply defined outline. They are very minute, and a hand lens may be necessary to enable them to be examined. Where they are less closely sown the colonies are larger and distinctly flat, and show considerable variation in appearance. Some possess a central depression of varying size, others present an even surface, while still others show a central eminence. Broth is rendered turbid and contains very tiny flocculi, which do not altogether disappear on shaking.

In films made from blood agar or from blood broth the organism shows considerable diversity of form. Very long chains predominate. These are composed of diplococci, ovoid rather than lanceolate-shaped. In the course of a chain may be seen other coccal elements, reminiscent rather of a large size of catarrhalis than of pneumococci. Isolated diplococci of both types are numerous and possess an apparent capsule. Involution forms are common—e.g., giant cocci, balloon-shaped forms, and even bacillary types. The latter, however, can frequently be seen to be actually made up of coccal elements which have remained united. Young cultures and cultures made on blood media stain very intensely with Gram's stain, but in certain media they rapidly lose this power, passing through an intermediate stage in which Gram-positive and Gram-negative elements exist side by side and even in the course of the same chain, and finally become for the most part frankly Gram-negative. In the latter stage forms can be seen which bear a distinct resemblance to the bacillus of plague. This is interesting when we remember that pestis-like forms may be seen in sputum films. The Gram-negative elements soon become mis-shapen, stain feebly with the counter-stain, and appear to be in process of dissolution. What determines these rapid changes I have not yet decided, nor have I worked out all the cultural characters. The organism does not appear to be a typical pneumococcus nor yet a typical streptococcus, although it resembles each in certain particulars. Its behaviour in culture gives one the impression of its being highly unstable owing to the rapid changes in its morphology and staining power. This may account for the fact that it is difficult to find the organism in stained films made from sputa, as it does not exist there, as a rule, in the typical form met with in cultures, but, having once studied the forms in laboratory culture, it is not difficult to recognise fairly accurately when the organism is present. This can only be accurately determined, however, by culture.

The fact that this organism has been got from the sputum of practically every case examined here as well as from the blood, &c., and in the absence of any other organism common to all, renders this organism worthy of being regarded as the possible etiological factor. A study of its somewhat erratic morphological changes, &c., furnishes a reason why it has not received more attention, especially as in many instances the sputa are merely examined microscopically, and without an idea of its cultural characters it might be difficult to trace a definite bacterial connexion between various sputa. In view of the tendency to hæmoptyses and to epistaxis, characteristic of many cases in this epidemic, the post-mortem findings in the case of the guinea-pigs inoculated with gland juice seem somewhat significant. Mixed sensitised vaccines containing amongst other things some of this particular organism have been used in treatment with good results in several cases. It now remains to be seen if a sensitised vaccine made from this organism alone will influence cases of the so-called influenza where no apparent respiratory trouble exists.

The work is only fragmentary at present, but enough has been done to justify to some extent the claim to consideration which I make on behalf of this particular organism, which for the time being we may call a pneumo-streptococcus. In view of the urgency of the occasion I feel that others who are working on the problem of the epidemic may have the opportunity to corroborate or otherwise my findings. Pfeiffer's bacillus I have generally found to be absent, and if the causal factor were a filter-passer, while the secondary complications were due to streptococci or pneumococci, why should one particular type of organism having the characters I have already mentioned be so invariably present?

I am, Sir, yours faithfully,

ROBERT DONALDSON,
Pathologist, Royal Berkshire Hospital.

Reading, Nov. 12th, 1918.

VARIETIES IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—May I call attention to a few facts which, taken together, appear significant?

(1) The present pandemic of influenza is characterised especially by pulmonary symptoms.

(2) Pandemics of a malady clinically very similar have occurred at intervals of about a generation for many hundreds of years. There was one in 1890, and another in 1847.

(3) If my memory serves me right, this type of influenza lingered in rapidly diminishing epidemics for a very few years after 1890. It was subsequently replaced by annual, very minor, and clinically very different epidemics, in some of which the pharynx and nose were especially affected. Early in the summer of the present year an epidemic occurred among troops in my charge. Hundreds of men were affected, but none showed any symptoms beyond the ordinary accompaniments of pyrexia (rigors, headaches, and the like). All recovered within a week.

(4) The 1890 pandemic differed strikingly from the present one in that, while in 1890 people of all ages were equally attacked and elderly people perished in great numbers, in the present epidemic elderly people have very generally escaped.

If the foregoing is correct it seems probable (*a*) that under the term "influenza" are grouped not several types of the same disease, but several distinct diseases; and (*b*) that one attack of that disease which has occurred in great pandemics (and which is that described in the text-books as "influenza") confers on the individual an immunity which is usually permanent. I do not know how else can be explained the very unlike clinical manifestations of the minor epidemics, or the fact that in the present pandemic, which is separated from its predecessor by 28 years, elderly people have been very generally spared, whereas in the 1890 pandemic, which was separated from its predecessor by 43 years, elderly people suffered severely.—I am, Sir, yours faithfully,

G. ARCHDALL REID.

Southsea, Nov. 17th, 1918.

THE APOPLECTIFORM VARIETY OF EPIDEMIC ENCEPHALITIS.

To the Editor of THE LANCET.

SIR,—One clinical variety of epidemic encephalitis, although mentioned by some of the speakers in the discussion at the Royal Society of Medicine, appears hardly to have received the attention which it deserves. The "new syndrome," in which lethargy or stupor and plastic tonicity of the muscles are combined with palsy of the ocular, facial, or other cranial nerves, is sufficiently well known to ensure its recognition. When the disease appears in other guise its true nature is apt to be overlooked; this is particularly the case with what may be designated the apoplectiform variety. In this—sometimes after such prodromal symptoms as slight headache or malaise, sometimes after a premonitory seizure which in minor degree resembles the one which succeeds it, sometimes without any warning at all—the patient, suddenly stricken down with agonising pain in the head, becomes collapsed and unconscious. The seizure may be accompanied by vomiting, twitchings of the limbs, or epileptiform convulsions, but this is not always the case. Unconsciousness lasts a variable period, but is not necessarily prolonged. On recovery, patients have likened their pain to a sudden blow with a stick on the occipital region or inside the head. After subsidence of the acute symptoms of onset an extensor response may often be obtained from one or both soles, the abdominal reflexes may be absent, and the pupils sluggish, sometimes unequal. Definite paralysis of the limbs and face may occur. Curious disturbances of the pulse and respiration may be present in the earlier stages, the breathing being alarming in its infrequency and accompanied by yawning, or definitely of the Cheyne-Stokes type. The pulse may be slow or rapid or irregular, with numerous extra-systoles. The blood pressure may show such wide variations within a few moments that its determination is impossible. Forced attitudes are noticeable in some, the head being forcibly deviated towards one or other shoulder and kept in this position. Rushing noises in the ears, vertigo, apparent movement of external objects, and dimness of vision may one or all be present, but apparently subside very soon. Incontinence of fæces and urine has been observed. Fever is often present and transient albuminuria, sometimes in marked

degree. The fluid obtained by lumbar puncture shows no undue pressure, but traces of blood are too constantly present to be accidental. Sometimes there is a lymphocytosis in addition. In favourable cases recovery may occur very rapidly, so that the patient is about again in a few weeks.

The symptoms of onset clearly suggest cerebral hæmorrhage, and post-mortem examinations show that, in some instances at all events, this has occurred. When we bear in mind the frequency with which hæmorrhagic foci are combined with the perivascular lymphocytic infiltration of epidemic encephalitis, the occurrence of vascular symptoms is not surprising. Some of the specimens examined suggest that the gross lesion may at times be rather of the nature of a hæmorrhagic infarction than a true extravasation, and it is conceivable that the perivascular exudation might itself lead to vascular strangulation or thrombosis. The hæmorrhagic foci in the fatal cases appear to originate in the grey matter, and have been found, sometimes in the cerebral cortex, sometimes in the vicinity of the basal ganglia, sometimes in the brain stem, and occasionally in the cortex or dentate nucleus of the cerebellum. These cases are likely to be confused with cerebral hæmorrhage of the ordinary type, but are mostly distinguished from this by the age incidence and by the absence of any signs of cardio-vascular degeneration or of chronic renal disease. The cerebral hæmorrhage of ulcerative endocarditis and of hæmorrhagic blood conditions may be excluded by the absence of the physical signs of these diseases. Moreover, the epidemic cases tend to occur when encephalitis of other types is prevalent, and show in many instances a decided tendency to spontaneous recovery.

I am, Sir, yours faithfully,

Devonshire-place, W., Nov. 16th, 1918. CHARLES R. BOX.

EXAMINATIONS FOR AMŒBIC DYSENTERY INFECTIONS.

To the Editor of THE LANCET.

SIR,—In your issue of Feb. 16th, which has recently come to hand, there appears a letter by Mr. Clifford Dobell criticising some observations of mine on the results of an investigation on *Entamœba histolytica* infections among British troops in India and Mesopotamia, a full report of which had appeared in the *Indian Journal of Medical Research*, 1917, vol. v., p. 239, and a précis of which had been published by you in your issue of Jan. 5th last. Mr. Dobell's criticism is almost wholly directed to the deductions I have drawn from the figures of his statistical essay published by the Medical Research Committee,[1] as applied to the results of our inquiry conducted on troops of the Mesopotamian Field Force. Nothing was further from my intention than any misinterpretation of his figures, and I feel indebted to Mr. Dobell for having taken the time and trouble to point out what he conceives to be their misuse and their application under conditions which, in his opinion, no longer render them admissible.

The main point at issue turns on the fact that while Mr. Dobell's figures are confined to the question of how many protozoological examinations are required to discover all cases of infection, my remarks were directed to the number of examinations required to detect merely cases of *heavy* infection. The curve showing the rapid decline in the percentage of positive findings obtained after three examinations per case, to which Mr. Dobell takes exception as completely misinterpreting his figures, appears, however, to obtain his explicit approval where he says; "When only some three examinations per case are made, those cases which pass cysts regularly are detected and those which are frequently negative, are overlooked" (p. 40[1]). And this to my mind is the only question of practical importance when dealing with a body of men among whom small or intermittent infections were found to be so common in the detection and segregation of the *gross* carriers.

No one will differ from Mr. Dobell when he says that it is impossible to state precisely, as a result of examining only single samples from a series of cases, what the real incidence of infection is, and my use of the term "Dobell's figures for correction" doubtless tends to clothe the figures with a mathematical accuracy which is unwarranted. However, Mr. Dobell, by very careful deduction and analogy, had come to the conclusion: "The chances against detecting the infection by any one examination of the *average* infected case are nearer 2:1 than 3:2" (p. 42). I felt myself justified in making use of his lower figure in calculating that in a series of cases in which 13·6 per cent. of infections were detected by one examination, the true incidence of infection was approximately 34 per cent. It has to be remembered that those examinations and the deductions therefrom were made at a time when none of the papers on the carrier question as it affects the tropics had been published, and an official request had been made to me for an opinion on the disposal of such cases. The positive findings obtained on the single examination method were so numerous that more frequent examinations per case of the non-dysentery patients were not required to prove how general *histolytica* infection was among the men being invalided from Mesopotamia for other than intestinal diseases, and how futile it was to attempt to deal with any but the gross type of carrier.

Although the factors to be considered in regard to the clearing of *histolytica* infection in England may be somewhat different from the conditions of the tropics, Mr. Dobell will no doubt agree with me as to the marked effects of diet and conditions of life in leading to a return of intestinal irritation and to the possible reappearance of cysts in the stools. Hence the importance of "clearing" patients when living under other than hospital conditions. It was to direct attention to such details that a considerable portion of my criticism was intended, because, as I think my results conclusively prove, the conditions of life under which potential carriers are living at the time of examination appear to be of greater importance than the actual number of examinations carried out.

I am, Sir, yours faithfully,

On Service in the Far East, May 26th, 1918. WM. MACADAM, Captain, R.A.M.C.

[1] Medical Research Committee, Special Report Series No. 4, 1917.

THE SEXUAL COMPLEMENT.

To the Editor of THE LANCET.

SIR,—Your leading article on the sexual complement which appeared in THE LANCET of Nov. 16th raises many questions of great biological and clinical interest. As you have stated, the profound mental and physical modifications which in many women follow quickly upon marriage are matters of common observation. They are attributable to the altered life attendant on the married state, which involves change of action and environment each moment of the day from one sunrise to the next. It is beyond the skill of man to apportion justly amongst the several elements of change introduced the various modifications which are wrought. Is it not possible, however, to separate from the complex something which is due to the action of the prostatic secretion on the woman?

Your leading article aptly marshalled the knowledge of the physiologist and comparative anatomist but ignored completely the evidence to be found by clinical observation. Medicine owes great debts to physiology, especially in the domain of internal secretions, but at various times portions of the debt have been repaid. We should know but little of the action of the thyroid gland on the eyebrows or on the subcutaneous tissue had we relied solely on laboratory studies of health. It was only by its therapeutic administration in disease that the gland was seen to stimulate scanty eyebrows to luxuriant growth and to reduce thick myxœdematous tissues to due proportions. This is only one of many instances in which clinical medicine has lightened the dark places of physiology.

When the prostate gland substance, in tablet form, is taken by the mouth by unhealthy women quite definite results follow. Normal breast tissue is soft and of a velvet-like consistency. Such breasts are not common amongst women with systemic disease. With the development of even minor degrees of chronic intestinal stasis the mammary tissues begin to feel granular when palpated between the fingers and thumb, and are tender at the menstrual epoch. After a time the hardening becomes greater, the granularity coarser, and the tenderness more continuous, until the condition is recognised as chronic mastitis. Sir Arbuthnot Lane described this sequence many years ago, and more recently in his article in THE LANCET of Nov. 9th, where he also pointed out that the prostate gland has the power of diminishing the granularity and of abolishing the pain and tenderness of such breasts. Of this fact there can be no doubt, because the effect is pro-

duced even when the prostate is administered by the mouth in tablet form. The evidence is not merely that of an altered symptom, but also that of an altered physical sign observable by simple palpation. One of the most convincing cases which I ever observed was that of a woman whose breasts were so tender that she dreaded to enter any crowded place because of the intensity of the pain induced by any slight accidental pressure. I gave her dried prostate gland in tablet form, and the condition was completely controlled. After a time she ceased to take the tablets continuously and used them only when tenderness threatened to recur.

The secretion of the male organ is, therefore, clearly useful to the diseased female in this respect. It seems justifiable to suggest by analogy that it is capable of effecting other changes in other tissues and may be responsible for the improved state of nutrition and many other chemical and structural changes which follow upon the consummation of the sexual functions. A most fascinating biological principle is thus vindicated. The prostate gland stands pre-eminent as an organ found in one sex only, but producing a secretion needful to the complete well-being of the opposite sex, an organ possessed by one to be shared by two, and serving as a biochemical keystone linking complement to complement. I am, Sir, yours faithfully,

London, W., Nov. 16th, 1918. N. MUTCH.

RECONSTRUCTION IN NEUROLOGY.

To the Editor of THE LANCET.

SIR,—In the annotation under this heading in your issue of Nov. 16th you observe that Dr. Aldren Turner stated in his paper on the Neuroses of the War that all neuroses are the consequence of a failure of psychological adaptation. The wording suggests that Dr. Turner is responsible for this view, and I am sure that it was not intended to convey this meaning. The view that neuroses are failures of adaptation is one that was coming to the forefront long before the war started. I quote the following observation of Dr. Jung, in a paper read before the Seventeenth International Medical Congress in London, 1913:—

"The psychological trouble in neuroses, and neurosis itself, can be considered as an act of adaptation that has failed. This formulation might reconcile certain views of Janet's with Freud's view that a neurosis is—under a certain aspect—an attempt at self-cure; a view which can be and has been applied to many diseases."

I am, Sir, yours faithfully,

MAURICE NICOLL.

Empire Hospital for Officers, Westminster, S.W., Nov. 16th, 1918.

*** Captain Nicoll is right in believing that our words were not intended to make any such claim.—ED. L.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeon-Lieutenants: J. H. Sheldon, J. T. Johnston.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. H. P. W. Barrow relinquishes the temporary rank of Colonel on re-posting.

Temp. Major R. H. Cooper and Capt. F. C. Moore to be temporary Lieutenant-Colonels whilst specially employed.

Temp. Capt. W. B. Davy to be acting Major whilst specially employed.

To be acting Lieutenant-Colonels whilst in command of a Medical Unit: Temp. Capt. (acting Major) F. R. Thornton, Lieut. (temp. Capt.) A. J. Hickey, Temp. Capt. L. G. Brown, Temp. Major C. V. Mackay, Major F. A. Stephens.

Temp. Capt. H. Dodgson to be temporary Major.

To relinquish the acting rank of Major on re-posting: Temp. Capts. H. F. Wilson, W. S. Martin, T. P. Cole; Capt. E Catford.

To be acting Majors: Temp. Capts. D. MacIntyre, H. J. Pickering, C. S. E. Wright, R. G. Riches, J. S. Hall, G. H. Darlington and P. A. Leighton (whilst specially employed), W. A. Clayton (whilst commanding troops on a Hospital Ship); Capt. D. C. G. Ballingall.

Lieutenants (temporary Captains) to be Captains: J. M. McKenzie, R. R. Thompson, (acting Major) A. E. Richmond, (acting Lieutenant-Colonel) A. J. Hickey.

Temporary Lieutenants to be temporary Captains: J. B. J. L. Dalby, F. G. Beatty, J. Walker, H. A. R. E. Unwin, A. Y. Hutchison, D. A. H. Moses, E. Evans, C. Watson.

A. D. Clinch, late temporary Captain, is granted the honorary rank of Captain.

Temp. Capt. B. H. Mellon, from A.V.C., to be temporary Captain.

Officers relinquishing their commissions: Temp. Capts. W. H. Wishart (on account of ill-health, and is granted the honorary rank of Captain), V. G. Best, T. B. Sellors, P. A. Hall, G. R. Gray, J. Welsh (on account of ill-health contracted on active service, and is granted the honorary rank of Captain).; Temp. Hon. Lieut. S. A. Moor.

The undermentioned on transfer to R.A.F.: Temp. Capts. W. H. Anderson, F. H. Bowen, E. Brown, J. D. Bridger, E. R. Bastard, L. C. Blackstone, W. Bannerman, J. E. Cable, J. E. Cox, E. P. Chennells, E. P. Carmody, G. W. Clark, L. G. Davies, A. J. Davoren, R. H. Dixon, R. A. G. Elliott, J. Gardner, H. M. Holt, P. H. Hadfield, H. Harvey, R. J. Hearn, A. E. F. F. Huntsman, T. R. Hunter, F. Irvine, F. C. Jobson, W. M. Jeffreys, J. Keenan, W. R. Kemp, A. Lindsay, E. W. Longden, W. B. Loveless, G. Lewin, C. E. Lowe, T. E. Mulvaney, F. C. Morgan, A. E. McCulloch, P. W. McKeag, W. R. Nasmyth, H. J. Orr-Ewing, J. J. O'Mullane, W. H. Payne, A. W. P. Pirie, H. W. Pigeon, T. S. Rippon, H. Y. Riddell, J. I. Russell, A. F. Rook, L. C. Rivett, R. H. Robbins, A. B. Rooke, T. E. Regan, R. L. Roe, D. Ranken, J. J. Sinclair, H. B. Smith, C. Salkeld, J. B. Stevenson, A. E. B. Sim, W. A. Simpson, F. O. Spensley, C. E. Thwaites, A. Thompson, C. Visger, A. W. Weston, A. J. O. Wigmore, D. Wilson, J. L. Whatley, W. F. Walker, H. E. Whittingham, H. N. Wright, L. A. Walker, W. P. Wippell, A. H. Wade, M. R. Dobson, M. Hocken, O. May, C. Peacock, C. P. Strong, A. H. L. Thomas; Temp. Lieuts. C. J. Miner, C. T. Costello, J. A. Johnson, P. M. Roberts.

Queen Mary's Army Auxiliary Corps.

To be Controllers of Medical Services: Jane H. Turnbull, Laura S. Sandeman.

To be Medical Controllers: Irene C. D. Eaton, Mabel A. D. Crawford, Cicely M. Peake, Grace E. Soltau, Mary G. McCullough, Katherine J. S. Clark, Alice Stalker, Eleanor E. Bourne, Agnes H. Nicholl.

To be Recruiting Medical Controllers: Adeline M. Roberts, Julia V. Christie, Anne M. Watson, Elizabeth Budd, Eleanor A. Montgomery, Hester M. Henderson, Mary B. Ferguson, Amy Hodgson, Charlotte A. F. Sturm.

To be Medical Officials: Hannah K. Alton, Marjorie McMullen, Celia M. C. Macneil, Amy F. Nash, Adeline H. Campbell, Alice Rattray, Stephanie P. L. H. T. Daniel, Margaret E. Douglas, Olive M. Anderson, Annie S. Robertson, Lilian M. W. Grant, Agnes M. Cowan, Rosalie Holmes, Hilda W. Esson, Jessie H. Gellatly.

SPECIAL RESERVE OF OFFICERS.

Major G. Lane is placed on the Retired List on account of ill-health contracted on active service.

Capt. R. L. Newell relinquishes the acting rank of Major on re-posting.

Officers relinquishing their commissions: Capts. R. G. Bannerman (on account of ill-health contracted on active service, and is granted the rank of honorary Captain) and D. Dempster (on account of ill-health caused by wounds, and is granted the honorary rank of Captain).

Captains to be acting Majors: A. F. L. Shields, A. Picken.

Lieutenants to be Captains: C. M. Titterton, R. N. Mackenzie, J. I. Watson, H. Taylor, C. Shaw-Crisp.

To be Lieutenants: J. M. Melvin and C. O. Anderson (from Glasgow University Contingent, O.T.C.), G. H. Middleton (from Edinburgh University Contingent, O.T.C.), S. E. Critchley (from Manchester University Contingent, O.T.C.).

TERRITORIAL FORCE.

Lieut.-Col. (Hon. Surg.-Col.) A. Thorne is retired on completion of tenure of command, and is granted permission to retain his rank and to wear the prescribed uniform.

Major A. J. Hall to be Lieutenant-Colonel and is restored to the establishment.

Major A. H. Buck relinquishes his commission on account of ill-health, and is granted the honorary rank of Major.

Capt. J. M. Bowie to be Major.

Temp. Capt. W. H. Broad to be Major (temporary).

Capt. J. P. I. Harty is seconded for duty with the R.A.F.

Capt. N. Milner is restored to the establishment.

Capts. L. Rawes, H. F. Everett, J. B. F. Wilson, J. McL. Macfarlane, and A. Rodger to be acting Majors whilst specially employed.

Capt. (temp. Major) F. D. S. Jackson relinquishes his temporary rank, and is restored to the establishment.

Capt. (acting Major) G. L. Chiene relinquishes his acting rank and is restored to the establishment.

Capts. F. M. Robertson and F. R. H. Laverick relinquish their commissions on account of ill-health contracted on active service, and are granted the honorary rank of Captain.

Capt. A. H. Evans is seconded.

Capt. (Brevet Major) H. F. Horne to be Major and to remain seconded.

Capts. E. T. Roper and M. W. Williams relinquish their commissions on account of ill-health, and are granted the honorary rank of Captain.

Capts. (acting Majors) W. T. Torrance and G. A. Auden relinquish their acting rank on ceasing to be specially employed.

Capt. F. C. Moore is seconded whilst holding a temporary commission in the R.A.M.C.

Capt. A. J. Walton is seconded for duty overseas.

TERRITORIAL FORCE RESERVE.

Capts. R. J. McConnell (from a Field Ambulance), N. P. Laing (from Attached to Units other than Medical Units), J. McG. Deuchars (from R.A.M.C.) to be Captains.

Canadian Army Medical Corps.

Temporary Captains to be temporary Majors: J. L. Tower, K. E. Hollis.

Temporary Captains to be acting Majors while specially employed: J. H. Moore (as Surgeon at a General Hospital), H. H. McIntosh (on X Ray Work).

INDIAN MEDICAL SERVICE.

Lieut.-Col. J. L. T. Jones is retired in consequence of ill-health.

Capts. C. R. O'Brien, N. H. Hume, and D. M. C. Church to be Majors.

ROYAL AIR FORCE.

Medical Branch.—Major (acting Lieut.-Col.) H. C. T. Langdon retains the acting rank of Lieutenant-Colonel whilst employed as Lieutenant-Colonel, from (S.O.). J. T. T. Forbes is granted a temporary commission as Lieutenant.

Dental Branch.—J. Jones and J. Wren are granted temporary commissions as Lieutenants.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on Nov. 14th, Sir George Makins, the President, being in the chair.—It was resolved that Diplomas of Membership should be granted to 94 successful candidates; also that Licences in Dental Surgery should be granted to 19 successful candidates.—Mr. William S. Haslam was re-elected a member of the Committee of Management.—In June last the President called the attention of the Council to the heavy rate of rejections at the Primary Examination for the Fellowship, to the dissatisfaction with which the examination was regarded by many, and suggested that it would be desirable to take into consideration the possibility of altering the subjects and character of the examination with a view to making it of more practical value as a test for surgeons likely to become chiefly engaged in operating practice. The matter was referred to the Nomination Committee, and a report from that committee was now presented, approved and adopted. It was to the effect that: (1) The Primary Examination for the Fellowship is an honours examination and should be continued as such; and (2) all the questions set should be relevant to the science of surgery.—The President reported that, in accordance with Article 6 of the Regulations for the award of Sir Gilbert Blane's prize medals, which provides that "if the unadjudicated medals should exceed four their value is to be given to the Supplemental Fund for the Children of Medical Officers," he had sent a cheque for £42, the amount of four years' income from the Blane Medal Fund, to the honorary treasurer, Naval Medical Compassionate Fund, Admiralty Medical Department, 12, Charles-street, Berkeley-square.—A letter was read from the Board of Scientific Studies forwarding a copy of a report by a committee of the Board favouring the introduction of a metric system of weights and measures in this country, and asking for the comments of the College in reference thereto. The consideration of this matter was postponed.—Sir George Makins and Sir John Bland-Sutton, were re-elected as representatives of the College on the Board of Scientific Studies for the year 1919.—The President reported that the vacancy on the Court of Examiners occasioned by the expiration of Mr. W. G. Spencer's term of office would be filled at the ordinary meeting of the Council on Dec. 12th. Mr. Spencer is not applying for re-election.—The President reported that he had granted the use of the lecture theatre on Nov. 13th, 20th, and 27th, and Dec. 4th and 11th, for five lectures by Dr. E. Mellanby, acting superintendent of the Brown Animal Sanatory Institute.

At the Primary Examination for the Fellowship, held on Nov. 6th, 7th, and 12th, 35 candidates presented themselves, of whom 15 (including six women) were approved and 20 were rejected. The following are the names and medical schools of the successful candidates:—

Arthur Silver Burns, McGill Univ.; Hetty Ethelberta Claremont and Edith Marian Evans, Lond. School of Med. for Women; Sidney Forsdike, Middlesex Hosp.; Ada Marion Freeman, Lond. School of Med. for Women; Henry Albert Harris, Univ. Coll.; George Franklin Wise Howarth, Middlesex Hosp.; Haji Hyderali Khan, Bombay Univ., Middlesex and Guy's Hosps.; Reginald Cyril Bell Ledlie, Guy's Hosp.; Sybil Grace Mocatta, Lond. School of Med. for Women; William George Rose, St. Mary's Hosp.; Harry Spibey, Cambridge Univ.; Mildred Warde, Manchester Univ. and Lond. School of Med. for Women; Agnes Edie Westwood, Lond. School of Med. for Women; and Frederick Arnold Williamson, Cambridge Univ. and St. Mary's Hosp.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a meeting of Comitia of the Royal College of Physicians of London on Oct. 31st and of the Council of the Royal College of Surgeons of England on Nov. 14th diplomas of L.R.C.P. and M.R.C.S. were respectively conferred upon 94 candidates (including 11 women) who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and have complied with the requisite by-laws. The following are the names and medical schools of the successful candidates:—

John Binford Barnett, Birm. Univ.; Lewis Henry Bartram, Camb. Univ. and St. Bart.'s Hosp.; Frederic James Bennett, Camb. and Manch. Univs.; William Leslie Berry, Camb. Univ. and St. Bart.'s Hosp.; Moshek Zelmanovitch Bochenek, Lond. Hosp.; John Clifford Brown, Birm. Univ.; John Maurice Brydson, Lond. Hosp.; Henry Cecil Herbert Bull, Camb. Univ., Lond. and St. George's Hosps; Frederick Thomas Burkitt, Camb. Univ. and St. Bart.'s Hosp.; Charles Reginald Cade, Guy's Hosp.; Duncan Campbell, New York Univ.; Walter Mattocks Casper, St. Bart.'s Hosp.; Cecil Belfield Clarke, Univ. Coll. Hosp.; Cyril George Coombs, Guy's Hosp.; Eric Ashley Crook, Oxford Univ. and St. Bart.'s. Hosp.; William Davies, Cardiff Univ. and Lond. Hosp.; Mary Day, Royal Free and St. Mary's Hosps.; Charles Cottrell Ralph Downing, Camb. Univ. and Univ. Coll. Hosp.; Clarence Franklin Eminson, Charing Cross Hosp.; David Washington Evans, Lond. Hosp.; John Harold Ewen, St. Mary's Hosp.; Paul Faraci, Beirut Med. Coll. and Middlesex Hosp.; Donald Charles Farquharson, St. Mary's Hosp.; George Annesley Fisher, Camb. Univ. and St. Bart.'s Hosp.; Lilian Mabel Fisher, Royal Free Hosp.; John Turnbull Thomson Forbes, Guy's Hosp.; Richard Gainsborough, Oxford Univ. and Guy's Hosp.; George Anthony Goolden, Camb. Univ. and St. Thomas's Hosp.; Lorne Benjamin Graham, Toronto Univ.; Clermont Grantham-Hill, Camb. Univ. and Lond. Hosp.; Denis Paul Guilfoyle, St. Bart.'s Hosp.; Albert William Holgate, Univ. Coll. Hosp.; Eric Theodore Holden, Birm. Univ.; Arthur St. George Joseph McCarthy Huggett, St. Thomas's Hosp.; Cori McColm Jones, Camb. and Liverp. Univs.; Robert David Jones, Liverp. Univ and St. Bart.'s Hosp.; Edward Gordon Joseph, Edin. Univ.; Florence Maltby Kerruish, Liverp. Univ.; James Kyle, Guy's Hosp.; Victor John Frederick Lack, Lond. Hosp.; Louis Jacques Maurice Laurent, Univ. Coll. Hosp.; Horace Sharman Le Marquand, St. Thomas's Hosp.; Allan Wellesley Lewis, St. Mary's Hosp.; George Strickland Lewis, Bristol Univ.; Sidney Simon Lindsay, St. Thomas's Hosp.; Tudor David Llewelyn, Cardiff Univ. and St. Thomas's Hosp.; George Lyon Lyon-Smith, Camb Univ and St. Bart.'s Hosp.; Hector Clive McAlister, Toronto Univ.; Kathleen McCrie McKeown, Royal Free Hosp.; Donald Gregory Macpherson, New Zealand Univ. and Univ. Coll. Hosp.; Walter Edgar Masters, Lond. Hosp.; Gordon Millar, St. Bart.'s Hosp.; Reginald Stanley Millar, Durh. Univ. and Guy's Hosp.; Arthur Richard Neckles, Guy's Hosp.; Wilfrid Otts, Camb. Univ. and St. Thomas's Hosp.; Harry Palmer, Lond. Hosp.; William Horson Palmer, Camb. Univ. and St. Thomas's Hosp.; *Aerath Narayanan Nanoo Pankker, Edin. Univ.; William Alfred Whitehouse Parkes, Birm. Univ.; Robert Hughes Parry, Middlesex Hosp.; Frederic Paul Nigel Parsons, Camb. Univ and Univ. Coll. Hosp.; Eugene Arthur Pearson, Lond. Hosp.; Evan Albert Idris Phillips and Montagu Cecil Polhill, Univ. Coll. Hosp.; Thomas Dawson Pratt, Leeds Univ.; Hubert Llewellyn Pridham, St. Bart.'s Hosp; Ronald Seton Ralph and Francis William Reitz, Guy's Hosp.; Theodore Ernest Roberts, Glasg. Univ.; Ronald Henry Ottywell Betham Robinson, Camb. Univ. and St. Thomas's Hosp.; Joan Margaret Ross, St. Mary's Hosp.; Charles Cecil Rowland, Lond. Hosp; Elizabeth Dill Russell, Royal Free Hosp.; Joseph Harold Shelton, King's Coll. Hosp.; Hilda Nora Shufflebotham, Birm. Univ.; Arthur Herbert John Smart, Camb. Univ. and St. Thomas's Hosp.; Frances Minnie Spickett, Royal Free Hosp.; Jacques Spira, Brussels Univ. and St. Thomas's Hosp.; Frank Hugo Stuttaford, St. Mary's Hosp.; Graham McKim Thomas, Guy's Hosp.; Edward Sherman Toogood, Univ. Coll. Hosp.; Norah Edith Trouton, St. Mary's Hosp.; Robert Hugh Turner, Bristol Univ. and Univ. Coll. Hosp.; Martin Baird Moore Tweed and Jacob Eliza De Villiers van der Merwe, Guy's Hosp.; Donald Wallace, Camb. Univ. and Lond. Hosp.; Hugh Pennefather Warren, Lond. Hosp.; †Thomas Digby Wheeler, Manitoba Univ.; Alice White and Ethel White, Sheffield Univ.; Julius Maurice Winnett, Lond. Hosp.; Geoffrey Winter, Birm. Univ.; Robert Wolff, Middlesex Hosp.; Sidney Carver Woodhouse, Lond. Hosp.

* M.R.C.S. Diploma alone conferred. † M.R.C.S. Diploma conferred on Oct. 10th.

NATIONAL COUNCIL FOR COMBATING VENEREAL DISEASES: GLASGOW BRANCH.—A course of lectures (illustrated by diagrams and lantern slides) will be delivered on the following Fridays, at 8 P.M., in the Berkeley Hall, Berkeley-street, Glasgow. Nov. 22nd: Professor F. O. Bower, F.R.S., Sex in Animals and Plants. Nov. 29th and Dec. 6th: Professor Thomas H. Bryce, F.R.S., Reproduction in Mammals. Dec. 13th: Professor Robert Muir, F.R.S., Microbic Infection in Venereal Disease. Dec. 20th: The Effects of Venereal Disease on the Body. Admission is free, and all engaged in teaching and social work are specially invited.

INFLUENZA IN LEICESTER.—The epidemic, which was of a very severe nature, now appears to be waning rapidly so far as fresh cases are concerned. Although the death-rate is still high, many of the deaths notified are of persons who have been seriously ill for some time. To combat the epidemic doctors and nurses usually connected with infant welfare, tuberculosis, and school inspection were diverted from their work. V.A.D. and other voluntary workers were also utilised. Some 60 beds were cleared at the isolation hospital by sending out scarlet fever and tuberculosis cases in order to provide the institutional treatment which was urgently needed, and over 70 cases have been treated there.

DONATIONS AND BEQUESTS.—The late Mr. James B. Dugdale, of Wareham, Dorset, has left by will £5000 to King Edward's Hospital Fund and £1000 each to the Dorset County Hospital and the Victoria Hospital, Bournemouth.—Under the will of the late Miss Emily C. Talbot, of Glamorgan, the testatrix has left £1000 each to King Edward VII.'s Hospital, Cardiff, the Swansea General and Eye Hospital, the University College of South Wales and Monmouthshire, and the Rest (seaside) Convalescent Homes at Porthcawl and Southerndown, South Wales; and £500 to the Gower Nursing Association of Queen Victoria's Institute for Nurses.—By the will of the late Mrs. Jessie M. Smith, of Pollokshields, the testatrix left £10,000 to the Glasgow Royal Infirmary; £5000 each to the Western Infirmary and the Victoria Infirmary, Glasgow; £2000 each to the Ayr County Hospital and the Royal Samaritan Hospital for Women, Glasgow; £500 each to the Glasgow Magdalene Hospital, the Mission to the Outdoor Blind of Glasgow and the West of Scotland, and the Glasgow Society for the Education of the Deaf and Dumb.—The late Mrs. Hannah Derbyshire, of Oldham, has among other legacies left £1000 to Oldham Royal Infirmary.—As a peace thankoffering Mr. W. T. Farr, of Mumbles, has given £5000 to the Swansea General Hospital.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The General Election.

THIS Parliament comes to an end this week, and a General Election will follow immediately. The voting takes place on Saturday, Dec. 14th. The counting of the votes is postponed until those recorded by the soldiers who are in Belgium and France can be received.

The War Casualties.

Mr. MACPHERSON, Under Secretary of State for War, stated last Tuesday that the figures available of the British casualties during the war were necessarily incomplete. Up to Nov. 10th, however, the following were the figures, including Dominion and Indian troops, for the various theatres of operations:—

Theatre of operations.	Killed (including died from wounds and died from other causes).		Wounded.		Missing (including prisoners).		Totals.	
	Officers.	Other ranks.	Officers.	Other ranks.	Officers.	Other ranks.	Officers.	Other ranks.
France...	32,769	526,843	83,142	1,750,203	10,846	315,849	126,757	2,592,895
Italy ...	86	941	334	4,612	38	727	458	6,280
Dardanelles ...	1,785	31,737	3,010	75,568	258	7,431	5,053	114,676
Salonika	285	7,330	818	16,058	14	2,713	1,217	26,101
Mesopotamia...	1,340	29,769	2,429	48,686	566	14,789	4,335	93,244
Egypt ...	1,098	14,794	2 311	35,762	183	3,705	3,592	54,261
East Africa	380	8,724	478	7,276	38	929	836	16,929
Other theatres	133	690	142	1,373	51	908	326	2,971
Totals ...	37,876	620,828	92,664	1,939,478	12,094	347,051	142,634	2,907,357

Grand total 3,049,991

The numbers "missing" include 6741 officers and 164,767 other ranks known to be prisoners of war, and also over 30,000 officers and other ranks whose deaths have been accepted for official purposes. In addition to the above figures there have been 19,000 deaths from various causes among troops not forming part of any of the Expeditionary Forces.

HOUSE OF LORDS.

WEDNESDAY, NOV. 20TH.

Prevention of Venereal Disease.

Lord SYDENHAM asked His Majesty's Government what steps were being taken to prevent the spread of venereal disease during and after demobilisation. He said that after previous wars this disease had entailed effects upon the civil population which were existing to this date. At the present time there were conditions which were even more favourable to the spread of the disease than those which existed in the past, and from personal study he was in a position to state that unless measures were taken quickly to combat the evil it would lead to most serious results. Legislation to deal with it had been too long delayed. Nothing had been done except the passing of a Bill to deal with quacks and quack remedies. That Bill had done good, but not as much as it might have done, and quacks and quack remedies were still in existence in some places. Many more treatment centres on the lines of those which had already been set up by the Local Government Board would be needed throughout the country when demobilisation commenced, and time was running very short. The Criminal Law Amendment Bill had been held up, and he assumed that the Joint Select Committee would be discharged, though he hoped that its labours would not be wholly thrown away. He could not understand why the Government had not proceeded with a Bill which was so urgently needed. He pressed that it should be re-introduced and passed into law as quickly as possible. It would be a disgrace to humanity if Clause 5, which made it a crime knowingly to communicate venereal disease, were not enacted. Such an offence might easily be worse than murder, for it might not only wreck one life, but young lives as yet unborn. Regulation 40 D, he believed, would shortly be abolished. He did not think that it had done any real good, but its disappearance left the country without any protection against the wilful spread of the disease. He hoped that a number of points of special importance would be dealt with. First of all it was required that no soldier or sailor should be discharged while in an infected state. He was sorry to say that the total number of infected men was very formidable. Considerable strengthening of the medical provision for dealing with the civil population was also necessary, as the present line of defence against the disease was not sufficient. The Prime Minister had laid great stress the other day upon the vital necessity of raising the standard of public health in the country. He (Lord Sydenham) hoped the Prime Minister realised that the conditions he deplored were largely due to the ravages of venereal disease, that most insidious enemy of the national vigour and the cause of immense economic loss. He pressed the Government to give an undertaking that they would grapple with the peril which would become acute when demobilisation came.

Lord MUIR-MACKENZIE said that the danger regarding the present situation was that it looked like a deadlock. His opinion from his work on the Joint Committee was that prompt measures were required. A disastrously long period of time had been allowed to elapse between the sending of the Bills to the Joint Select Committee. He did hope that the Government would not let the labours of that Committee be thrown away.

Viscount PEEL (replying for the Government) said that the reason why the Criminal Law Amendment Bill had not been proceeded with was the Parliamentary difficulties arising from a crowded session. In judging the future attitude of the Local Government Board towards this subject it was only fair to remember what they had done in the past. Arrangements were made as long ago as April last between the Local Government Board and the Army Council that soldiers about to be discharged should be examined, and that if they were suffering from venereal disease they should be detained in the military hospitals until such time as the disease had disappeared. A fresh situation might arise on demobilisation, but the Local Government Board were fully aware of the dangers which might arise from the release of infected men from the Army and Navy, and at the present moment discussions were taking place with the War Office with a view to preventing infected men being let loose among the civil population. Lord Sydenham might be interested to learn that some 130 treatment centres for venereal disease had already been established in England and Wales. If this was not enough allowance must be made for the shortage of medical staff and other difficulties created by the war. The Local Government Board together with the Ministry of National Service were arranging for the release of army doctors and naval surgeons who had specialised knowledge of venereal disease, and it was intended to press upon local authorities the necessity for establishing further treatment centres and clinics, especially in the evening. He could give a general assurance that the whole matter was being not only examined but dealt with.

The Archbishop of CANTERBURY deplored the delay in dealing with the subject. Several proposals had been made and successively tinkered with, but the matter remained in a state of confusion. He strongly urged that legislative action should be taken to combat the evil at the earliest possible moment.

Lord SYDENHAM thanked the Government for their reply and said that the most important thing, in his opinion, was that there should be coöperation between the Local Government Board and the naval and military authorities.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 13TH.

Influenza in the Army.

Viscount WOLMER asked the Under Secretary for War (1) how many cases of influenza in the British Army in France and England were reported during the months of September and October, 1918; what hospital accommodation was there to cope with these cases; whether any fresh hospital accommodation was provided; and, if so, how many beds; and (2) how many officers and men of the British Army died in England and France respectively from influenza or pneumonia during the months of September and October, 1918.—Mr. MACPHERSON replied: I regret that the figures for the United Kingdom for the month of October are not yet available. The figures for September are:—

	Influenza.		*Pneumonia.*	
	Admissions.	Deaths.	Admissions.	Deaths.
Officers	110	Nil.	20	Nil.
Other ranks ...	2791	18	361	75

I cannot give the figures in the detailed form desired in the case of France. In September there were 92 admissions

to hospital on account of pneumonia and 24 deaths. The figures for October are: 2702 admissions to hospital and 1044 deaths due to pneumonia, and 24,894 admissions to hospital and 421 deaths due to influenza. As regards hospital accommodation on Sept. 1st there were 96,000 vacant beds in hospitals in the United Kingdom, and since that date an additional 8000 beds have been provided.

Viscount WOLMER: Is the right honourable gentleman taking steps to have the mortality statistics of the Army compared with the civilian statistics?—Mr. MACPHERSON: I cannot say whether we are doing that now, but I will see that it is done.

Viscount WOLMER asked whether the right honourable gentleman had received complaints in regard to the overcrowding of hospitals; and whether steps had been taken in all those hospitals in which influenza or pneumonia cases were numerous to reduce the number of inmates.—Mr. MACPHERSON answered: No complaints have been received regarding overcrowding in hospitals. It is impossible in every case to reduce the number of inmates owing to the widespread and very extensive nature of the outbreak, and the fact that the hospitals are at present strained to the utmost by the arrival of wounded from overseas.

Viscount WOLMER asked how many cubic feet of air space per patient was considered necessary by the military authorities for patients in military hospitals suffering from influenza and pneumonia.—Mr. MACPHERSON replied: At present 600 cubic feet of air space has been provided as a minimum in every hospital, and with adequate ventilation and efficient warming there is no evidence that this is insufficient for ordinary cases. It is recognised that cases of influenza and pneumonia require additional air space, and this is given whenever practicable.

Colonel MCCALMONT: Is it not the case that in many districts where there has been this epidemic the figures have been very much lower for the troops than for the civilian population?—Mr. MACPHERSON: That is so.

British Columbia Medical Degrees.

Mr. CECIL HARMSWORTH asked the Colonial Secretary whether he was aware that under existing conditions medical men from British Columbia were prevented from registering in Great Britain unless they took a British degree; whether this was in consequence of arrangements made by the Foreign Office with one or more foreign and Allied countries; and whether any such regulations could be suspended in view of the present great lack of medical men.—Mr. LONG replied: The difficulty in question arises from the fact that it had not been possible to arrange for such reciprocity between the United Kingdom and British Columbia as is considered to be necessary before an Order in Council can be issued applying the second part of the Medical Act, 1886, to that Province.

THURSDAY, NOV. 14TH.

Medical Service of the Air Force.

Mr. JOYNSON-HICKS asked the Under Secretary to the Air Ministry whether he was aware that at the last meeting of the Medical Administrative Committee they unanimously reaffirmed their view that the new medical administrator should be willing to accept the principles laid down in the Medical Advisory Committee's report, on the ground that unless this step were taken all the work of such Committee might be undone to the detriment of the Air Service; and whether the new administrator was prepared to accept such resolution.—Major BAIRD answered: The reply to the first part of the question is in the affirmative. The offer of appointment was made to Colonel Fell on the recommendation of the Medical Administrative Committee, which had not ascertained whether he concurred in the report of the Medical Advisory Committee. One of the conditions of the offer made to Colonel Fell is that he should be guided by the principles laid down by the Watson Cheyne Committee, subject to certain amendments as regards principles of administration.

Rabies in Devon and Cornwall.

Answering Mr. CAREW, Mr. PROTHERO (President of the Board of Agriculture) said: So far there has been no spread of rabies beyond the two counties (Devon and Cornwall) in which it was originally found to exist. But the period of incubation of rabies, though usually one of days, may be one of months, and it is always possible that the disease may have been carried to another part of the country in a dog which has not yet developed it. I trust, however, that the measures which are being taken against the disease in the two counties are such as to insure its final eradication after all the present sources of infection have been brought to light. I am informed by the Local Government Board, who deal with hydrophobia, that there have been no cases of that disease, and consequently no deaths. The number of persons known to the department to have been bitten or scratched by rabid or suspected dogs is 25.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

MEETINGS OF SECTIONS.

Monday, Nov. 25th.

ODONTOLOGY (Hon. Secretaries—F. N. Doubleday, G. Paton Pollitt, J. Howard Mummery): at 8 P.M.

Casual Communication by Mr. J. Howard Mummery.

Papers:

Mr. Cole and Mr. C. H. Bubb: Bone Grafting in Un-united Fractures of the Mandible, with Special Reference to the Pedicled Graft.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W.1.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.

MONDAY, Nov. 25th.—8.30 P.M., Paper:—Prof. J. D. Adami, Col., C.A.M.S.: Inheritance and Acquirement of Disease, a Study of the Rejected.

Owing to the declaration of the suspension of hostilities, the meeting of the Society for Monday, Nov. 11th, was adjourned until Monday, Dec 2nd, at 8.30 P.M., when Col. H. J. Waring will open a discussion on Reconstruction in Medical Education and Practice.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

WEDNESDAY, Nov. 27th.—4.30 P.M., Lord d'Abernon, G.C.M.G. Drink Control in Various Countries.

THURSDAY.—4.30 P.M., Bhupendranath Basu: Some Aspects of Hindu Life.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.

(Details of Post-Graduate Course were given in issue of Nov. 2nd.)

THE THROAT HOSPITAL, Golden-square, W.

MONDAY, Nov. 25th.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

UNIVERSITY COLLEGE, LONDON, Gower Street, W.C.

Two Lectures on Wound Shock.

FRIDAY, Nov. 29th.—5 P.M., Prof. W. M. Bayliss. (Lecture II.)

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures on Public Health Problems under War and After-war Conditions (each Lecture will be followed by a Discussion):—

WEDNESDAY, Nov. 27th.—4 P.M., Lecture VIII.:—Alderman C. Spencer: National Kitchens and the National Health.

NATIONAL ASSOCIATION FOR THE PREVENTION OF INFANT MORTALITY, at Dr. William's Library, Gordon-square, W.C.

Three Lectures on the Feeding of Children:—

TUESDAY, Nov. 26th.—5.30 P.M., Lecture III.:—Dr. E. Pritchard: The Drawing up of Diet Sheets.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne District Infirmary.—Sen. H.S. £250.
Barnstaple, North Devon Infirmary.—H.S. £150.
Birkenhead Borough Hospital.—Jun. H.S. £170.
Bridgend, Glamorgan County Council.—Temp. Asst. M.O. 6 gs. p.w.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Carlisle, Cumberland Infirmary.—Female H.P. £250.
City of London Hospital for Diseases of the Chest, E.—Res. M.O.
Derbyshire County Council.—Tuberc. Officer. £500.
Devonport, Royal Albert Hospital.—Res. H.S. £200.
Dorchester, Dorset County Council Education Committee.—School Dentist. £350.
Dorset County Council.—Female Temp. Asst. M.O. £400.
Elizabeth Garrett Anderson Hospital, Euston-road.—Female H.P. Also Obst. Asst., Two H.S's. £50. Also Clin. Assts. Also Res. M.O. at House of Recovery, New Barnet. £60.
Essex County.—M.O.H. £1000.
Forest Gate, Sick Home.—L.T. 7 guineas per week.
Glasgow District Mental Hospital, Gartloch.—Asst. M.O.
Hellingly, East Sussex County Asylum.—Temp. Asst. M.O. 7 gs. p.w.
Leeds Hospital for Women and Children.—Hon. S.
Manchester, Baguley Sanatorium.—Med. Supt. £550.
Monmouthshire County Council.—Female Asst. M.O. £400.
Nottingham General Hospital.—Female H.P. and H.S. £250.
Queen's Hospital for Children, Hackney-road, E.—Temp. Assist. P. £25.
Royal College of Physicians, Pall Mall East.—Milroy Lecturer.
Royal Free Hospital, Gray's Inn-road, W.C.—Female Medical and Gynæcological Registrar.
St. Helens, Lancs., Pilkington Special Hospital.—Res. M.O. £500.
St. Peter's Hospital for Stone, &c., Henrietta-st., W.C.—Jun. H.S. £75.
Sheffield, Jessop Hospital for Women.—Hon. Asst. M.O.
Sheffield Royal Infirmary.—Two H.S.'s. £150.
Shrewsbury Dispensary, 42, St. John's-hill, Shrewsbury.—Locum M.O.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Biggar (Lanark), Pontymister (Monmouth), and Witney (Oxford).

Births, Marriages, and Deaths.

BIRTHS.

DUTTON.—On Nov. 16th, at St. Petersburgh-place, Bayswater, the wife of Surgeon Lieutenant F. B. Dutton, M.B., R.M., of a daughter.

MITCHELL.—On Nov. 16th, at Leintwardine, the wife of Major Wright Mitchell, R.A.M.C., of a daughter.

QUACKENBOS.—On Nov. 20th, at a nursing home in Taunton, the wife of Maxwell Quackenbos, M.D., of a son.

MARRIAGES.

ALLEN-MAUGER.—On Nov. 12th, at Rouen, T. Stevens Allen, F.R.C.S. Ed., Captain, R.A.M.C., son of Mr. and Mrs. T. Stevens Allen, of "Tenchleys," Forest Hill, to Elisabeth, daughter of the late Mons. G. L. Mauger and Mme. Georges Mauger, of Rouen.

WILTSHIRE—MONCK-MASON.—On Oct. 26th, at Alexandria, Captain H. G. Wiltshire, R.A.M.C., to Eileen, daughter of the late Colonel G. G. Monck-Mason, R.A., and Mrs. Monck-Mason, of St. Jean de Luz.

DEATHS.

COCKE.—On Nov. 16th, at Wimpole-street, W., of disease contracted on active service, Robert Sturgeon Cocke, F.R.C.S., Captain, R.A.M.C., aged 44.

JONES.—On Sept. 30th, killed in action, Captain Evan Lawrence Jones, R.A.M.C., attached 2nd H.L.I., aged 30.

JUKES.—On Oct. 18th, in Egypt, of neuritis and heart failure after rheumatic fever, Captain Andrew Monro Jukes, M.D., I.M.S.

PHILSON.—On Nov. 13th, at Karachi, India, Colonel S. C. Philson, A.D.M.S., R.A.M.C., aged 58.

SPURRELL.—On Nov. 8th, at the 19th General Hospital, Alexandria, Captain Herbert George Flaxman Spurrell, R.A.M.C., aged 41.

WINTER.—On Nov. 15th, at the 20th General Hospital, France, Captain Laurence Amos Winter, M.D., R.A.M.C., aged 50.

WOO.—On Nov. 15th, at South Devon and East Cornwall Hospital, Frederick Joseph Woo, M.B., Ch.B., F.R.C.S. Edin., aged 27, House Surgeon of the Hospital, from pneumonia following influenza.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

EDITORIAL NOTICE.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. W. Allingham, Orsett; Admiralty, Lords Commissioners of the, Lond.; Dr. F. W. Alexander, Lond.

B.—British Commercial Gas Association, Lond.; Lt.-Col. H. W. Bayly, R.A.M.C.(T.); Sir John Byers, Belfast; Dr. G. S. Brock, Lond.; Messrs. Banton, Mackrell, and Co., Lond.; Mr. W. P. Bettany, Lond.; Dr. C. R. Box, Lond.; Dr. R. A. Bennett, Torquay; Capt. P. H. Bahr, D.S.O., R.A.M.C.; Mr. J. L. Balderston, Lond.

C.—Mrs. S. H. Connolly, Lond.; Canada, Overseas Military Forces of, D.G.M.S. of; Dr. J. T. Clarke, Ipoh; Mr. W. J. B. Carter, St. Albans; Dr. P. J. Cammidge, Lond.; Coal Control Office, Director of Publicity of, Lond.

D.—Dr. R. Donaldson, Reading; Mr. H. Dickinson, Lond.; Mrs. C. Duggan, Lower Broadheath.

E.—Dr. H. A. Ellis, Middlesbrough.

F.—Dr. R. B. Ferguson, Lond.; Hon. Surg.-Lt.-Com. P. Fildes, R.N.V.R.; Factories, Chief Inspector of, Lond.

G.—Dr. A. K. Gordon, Sheringham; Mr. H. B. Grimsdale, Lond.; Great Northern Central Hospital, Lond.; Capt. J. A. Glover, R.A.M.C.

H.—Lt.-Col. C. B. Harrison, I.M.S. (retd.); Sir Thomas Horder, Lond.; Capt. F. Heatherley, R.A.M.C.; Capt. A. Hines, R.A.M.C.; Dr. H. N. Hardy, Croydon; Major W. E. Home, R.A.M.C.

I.—Irish Ophthalmological Society, Dublin, Hon. Sec. of.

L.—"London"; Local Government Board, Lond., Sec. of; London Dermatological Society; Messrs. Longmans, Green, and Co., Lond.; Dr. R. B. Low, Lond.; Mrs. O. Langmead, M.D., Lond.

M.—Medical Research Committee, Lond.; Lt.-Col. J. L. A. Mackay; Mr. J. McLaggan, Torphins; Duchess of Marlborough, Lond.; Bde.-Surg.-Lt.-Col. A. B. R. Myers, Lond.; Dr. C. K. Millard, Leicester; Mr. J. B. Macalpine, Manchester; Medical Society of London; Mr. W. Martindale, Lond.

N.—National Union of Trained Nurses, Lond.; Capt. M. Nicoll, R.A.M.C.; National Baby Week Council, Lond.

O.—Mrs. S. O. O'Reilly, West Wellow.

P.—Capt. J. Pringle, R.A.M.C.; Mr. J. Phillips, R.A.M.C.

R.—Royal Microscopical Society, Lond.; Royal Statistical Society, Lond.; Royal Mail Steam Packet Co., Lond.; Capt. C. H. L. Rixon, R.A.M.C.; Mr. Ernest E. Roye, Southampton; Royal Medical Benevolent Fund, Lond.; Royal Institution, Lond.; Royal Society of Arts, Lond.; Mr. D. D. Robertson, Lond.; Royal Society, Lond.

S.—*St. Bartholomew's Hospital Journal*, Lond., Editor of; Mr. A. H. Style, Pembroke; *The Sphere*, Lond., Editor of; Mrs. F. O. Slade, Lond.; Dr. G. A. Sutherland, Lond.; Scala Theatre, Lond.; Dr. C. G. Seligman, Maghull; Scottish Universities Parliamentary Association, Lond., Chairman of; Dr. E. Stolkind, Lond.; Capt. C. P. Symonds, R.A.M.C.

T.—Tasmania, Agent-General for, Lond.; Dr. J. M. Taylor, Philadelphia; Capt. E. Thorp, R.A.M.C.

V.—Veterans' Association, Lond., Organising Sec. of.

W.—Mr. W. W. Smith, Dublin; Dr. F. P. Weber, Lond.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

THE TUBERCULOUS SOLDIER.

Dr. Jane Walker, at the Royal Institute of Public Health on Nov. 13th, described the problem of the tuberculous soldier as one of the most pressing before the country. Owing to the lowered standard of health demanded from recruits in the later days of the war many conscripted men were, she said, unfitted for the duties imposed upon them, and as a consequence became broken in health. More especially had this been the case with the tuberculous. The medical profession, Dr. Walker continued, were not in the best position to deal effectively with tuberculosis, since what Sir George Newman had described as "the when? the how? the what? and the why?" of treatment had not formed part of the training of the medical student, who received practically no instruction at all in prognosis. The omission to instruct medical students in the beginnings of disease was specially disastrous in the case of tubercle. The average case which the student saw in hospital was so advanced that even the man in the street could recognise it as tuberculous, but even these cases were seen in small numbers, as they were not admitted to the wards of general hospitals. Was it therefore to be wondered at, the lecturer queried, that so many practitioners failed to recognise early tuberculosis? While, on the one hand, this failure to recognise early cases had led to the admission of advanced cases to the Army, on the other hand many men had received exemption, as the result of X ray shadows, who were quite normal. Dr. Walker described the failure of sanatorium benefit under the National Insurance Act as scandalous. In London large numbers of patients were waiting for treatment, beds were few, and the period of treatment granted to each patient had been reduced to six weeks, a time totally inadequate to deal with the disease. Naturally, under such circumstances, sanatorium treatment was a failure. The time to deal with the tuberculous soldier was in peace. In the lecturer's experience the relaxation of military discipline resulted in the ex-soldier running amok for a time and taking no interest in work. This constituted a great difficulty in the after-care of the tuberculous soldier. Much of the value of sanatorium treatment was thrown away by allowing the patient to return home without supervision and without occupation. At Nayland Sanatorium a school had been set up for instruction in sheet-metal work and silver jewelry making. These trades had been selected to fulfil three conditions: (1) the tuberculous workman to be his own master; (2) not to work against time; and (3) to obtain an income sufficient to keep him. The man was instructed how to keep a village shop, and was taught clock and watch cleaning as a fill-up for his time. The discussion which followed the lecture centred round the desirability of life in the Dominions, especially South Africa, for the tuberculous soldiers, provided that they were welcome guests, and the necessity of preventing by legislation the production of new slums to take the place of those that had been swept away.

PUBLIC HEALTH IN BOMBAY.

SEVERAL circumstances have combined to render the health conditions of Bombay abnormal during the past three years, chiefly on account of the war. There has been an increase in the population owing to high wages and abundant employment; increase in the birth-rate and in the mortality; overcrowding in every direction; increase in rents and food prices; lastly, increase in income for most of the labouring classes, as well as for the richer people engaged in commerce, while for the salaried and official classes and for persons of small fixed incomes there was a virtual reduction owing to taxation and increased cost of living. The enormous traffic through this city by sea and land, particularly in connexion with the war, adds to the labour and difficulty of health administration, and a special assistant health officer was appointed, and the conservancy staff strengthened, on the suggestion of the chief medical officer, Dr. J. A. Turner.

The health conditions of the city, as set out in Dr. Turner's report for 1917, taking everything into consideration, compare favourably with the normal before the war. Calculated on a population of 979,445 (that of the census of 1911), the total death-rate was 34·09 per 1000, but Dr. Turner considers the population to have really numbered over 1,100,000. There was no epidemic of any disease except plague, and that only to a small extent. The causes of the infant mortality (304 per 1000 births) are considered at length: respiratory diseases, debility, and convulsions account for four-fifths of the whole. Much good work has been done

by Lady Willingdon's organisation for securing proper treatment for women during confinement and for their infants after birth. There are 12 lady health visitors to supplement the work of the corporation midwives, as well as three maternity homes with an infant milk depôt for each. The death-rate in Bombay from all causes (34·09 per 1000) in 1917 was in excess of that for the preceding year (31·21), but slightly below the decennial average (1907–16) of 34·59. The highest ratio was that for respiratory diseases (11·46 per 1000), showing considerable increase over the decennial average of 8·81; nervous diseases (2·10) were also slightly in excess of the average (2·01), but in all other important affections there was a decrease in mortality. The cholera ratio was 0·06, compared with 0·38; that for plague was 1·74, compared with 3·52; and that for small-pox 0·27, compared with 0·59. Zymotic diseases generally showed a ratio of 6·03, compared with 9·22 for the decennium, a very noticeable improvement. The death-rate from all causes varies very considerably according to caste or race. For Hindus, who constitute the large majority of the population, the ratio was 34·46; for Mussulmans, 38·31; for Parsees, 19·81; for Europeans, 21·85 per 1000.

Plague has been continuously present in Bombay since 1896—that is, for 21 years. In 1903 it caused 20,788 deaths, or 26·78 per 1000 of the population; in 1915 there were only 599 deaths (0·61 per 1000), in 1916 the ratio was 2·02, and in 1917 there were 1706 deaths (1·74 per 1000). There were attacks and deaths in each month throughout the year 1917, and from March to the beginning of June it was epidemic, being worst in April as usual. The two Colaba wards suffered most (6·25 and 5·78 deaths per 1000). Inoculation and rat destruction were carried out vigorously; 501,632 rats were examined at the Parel Laboratory, of which 2·22 per cent. were found to be infected. In April the percentage infected was 5·1. Wherever a plague case occurred, or an infected rat was found, the place was disinfected throughout with posterine, as well as all neighbouring gullies and passages. The total cost of disinfectants used was 29,900 rupees.

Cholera prevailed slightly throughout the year, there being 74 cases and 61 deaths, but did not become epidemic at any time. The death-rate was 0·06 per 1000, compared with a decennial average of 0·38.

Tuberculosis.—The mortality from tuberculosis, 2·16 per 1000, was higher than in any of the three years immediately preceding, but lower than the decennial average (1907–16), which was 2·58. The apparent increase over the years 1914 to 1916 is considered to have been due to increased accuracy in diagnosis, many cases that would formerly have been returned as fever or bronchitis being now correctly diagnosed and returned as tuberculosis. Moreover, the facilities provided by the tuberculosis dispensaries for advice and treatment have brought to light many cases that would otherwise have been undetected. Fort, Southern Section, had the apparently enormous tuberculosis death-rate of 14·44 per 1000, but of 50 deaths from this cause 43 occurred in the Lady Hardinge Hospital, leaving only 7 deaths (2·02 per 1000) to be debited to the section. The Anti-Tuberculosis League provides two dispensaries, each with a medical officer and three nurses. All cases are reported to the health officer and disinfection of the homes is carried out. A sanitarium is about to be established by the league for treating early cases, segregating advanced cases, dealing with glandular tuberculosis in children, and to be utilised as an open-air school.

Enteric fever.—A considerable increase in enteric fever occurred among the civil population in 1917, commencing in June; during this month and the three months following there were 189 cases and 96 deaths. The cause or causes could not be discovered with certainty. Abolition of the open system of drainage, of the basket privy, and of the night-soil depôt is recommended, and increase in facilities for removal of house refuse and accumulations of manure, so as to diminish breeding places of house-flies, and, perhaps most important of all, early notification.

This most interesting report is accompanied by valuable appendixes of statistical data and is illustrated by many admirable diagrams. If a plan of Bombay could also be inserted we feel sure that it would be appreciated by students of public health and municipal administration.

THE TALE OF A CONVOY.

Sir John Bland-Sutton had the good fortune to travel with a convoy made up of many and various ships, and as he travelled in the escorting cruiser he learned to understand the difficulties over which the British Navy has had to triumph in shepherding its awkward but willing flocks across the Atlantic and into safety. The text of his story, entitled "The Tale of a Convoy" (London: Adlard and Son, pp. 39), is Mr. Kipling's cry of the big steamers:—

> "Send out your big warships to watch your big waters,
> That no one may stop us from bringing you food.
> . . . . . .
> For if anyone hinders our coming you'll starve."

The instinct of a naval captain is to make his ship do precisely what the other ships in the fleet are doing, so keeping her relatively to the other ships always in the same spot. The merchant captain is ever an individualist, and his ship generally gives him little help when he tries to sail her in a fleet. She goes her own gait steadily, she only with difficulty accommodates her course to that of others. But use becomes second nature, and the captains became quite good at station-keeping in the fortnight they spent together, with the escorting cruiser every now and then sailing rings round them and making caustic signals to the laggards and wanderers. Sir John Bland-Sutton recognises the alert devotion to their multifarious duties given by all the officers and men of the big cruiser, the readiness with which they turn out in alarms, the zeal with which a destroyer rushes out to protect one of its charges, the variety of the methods of attack prepared for meeting submarines. In fact, the landsman who reads this little pamphlet does well, for he will learn from it to realise how many are the professions included amongst the personnel of a ship of war.

The author does not forget to emphasise an appeal that has often been made in THE LANCET. "Great ingenuity is exercised to increase the carrying capacity of cargo ships and enable the owners to become richer, but little consideration is given to make the quarters for sailors, firemen, and stewards comfortable." Surely at the end of this war the country, mindful of the splendid help it has had from these devoted seafaring men, will see to it that they are at least as well protected as their brethren who work in factories. No one who reads this little book and its stories of the sufferings endured by the sea-folk in the war can ever but be grateful to them for the invaluable help they have doggedly gone on giving to the country, above all, perhaps, the engineers. The book is written in a pleasant style, which makes the pictures live before us, and even if the account of the Thibetan hell in the last chapter makes us shiver—well, that was intended. Sir John Bland-Sutton is to be congratulated on the interest of the story he had to tell and on the skill of his narration.

THE CHILDREN'S JEWEL FUND.

To the Editor of THE LANCET.

SIR,—The Administrative Committee of the Children's Jewel Fund (a subcommittee of the National Baby Week Council) is anxious to make the best possible distribution of the money which has so far been collected or raised by the sale of jewels by the Appeal Committee. Grants are available for the inception of new infant welfare centres and day nurseries, or towards certain new developments in connexion with existing institutions of the same kind. To the committees of voluntary institutions grants up to 50 per cent. may be given, while the committee is willing to consider applications for small grants towards the initial equipment of entirely municipal undertakings. Grants amounting to £5099 3*s.* have already been allocated to London, whilst Greater London and the Provinces have received £5015 5*s.*

Full information may be had on application to the Secretary to the Administrative Committee, 27A, Cavendish-square, W. 1. Jewels and money should be sent to me at the offices of the Appeal Committee, 175, New Bond-street, W.1.

I am, Sir, yours faithfully,

CONSUELO MARLBOROUGH,
Honorary Treasurer, Administrative Committee
of the Children's Jewel Fund.

Nov. 16th, 1918.

PRECAUTIONS AGAINST FIRE.

WE have often called attention to the warnings issued by the British Fire Prevention Committee in regard to the accidental occurrence of fires at celebrations and entertainments. The approach of the festive season, which the happy issue of the war is likely to make more festive, makes their repetition desirable. The general precautions suggested are:—

Flags and bunting.—All kinds of bunting should be kept well clear of open lights and fires, and away from electric switch-boards and fuses.

Evergreens.—All dry shrubs are easily ignited, especially the fir-trees used in the winter, as they contain a considerable quantity of resin.

Celluloid, being a highly inflammable material, should not be used in decorative schemes.

Tissue paper (unless properly treated) should not be used as a decoration or covering for illuminated globes.

Paper lanterns.—All paper and similar lanterns should be hung by wire, and during the period they are lighted should be watched to see they do not swing. A swinging "Chinese lantern" easily catches fire.

Candles are easily bent out of shape, even by the slight heat of another light below. Bent candles drop down and set things alight. If used for window illumination, curtains, &c., must be well tied back and raised blinds securely fastened.

Electric wiring.—Do not make the slightest change in electric wiring without consulting a competent electrician or an electrical inspector.

With additional Christmas precautions as follows:—

Christmas trees should not be placed near window curtains or in positions in which a draught may cause inflammable draperies, &c., to be blown on to the lights.

Cotton-wool (unless properly treated) should not be used to represent snow, as it is highly inflammable. Asbestos fibre or slag wool are good substitutes.

Matches should not be put within the reach of children. Children should not be allowed to light Christmas tree or other candles unless adults are present. They frequently set fire to their clothing instead.

Buckets of water should always be available, also buckets or bins of dry sand with scoops where oil or spirit is used. Stout blankets are useful for smothering incipient fires. Copies of this warning (No. 33) may be obtained gratuitously on written application, enclosing postage, to the Committee at 8, Waterloo-place, Pall Mall, London, S.W.1.

Wullie.—The medical practitioner in question would regard the humorous criticism as a deeply-thought-out insult.

A Triple Plea

FOR A MORE RIGOROUS STANDARD OF CURE IN THE TREATMENT OF GONORRHŒA.

BY E. R. TOWNLEY CLARKSON, M.A., M.R.C.S., L.R.C.P.,

SENIOR CLINICAL ASSISTANT, MALE GONORRHŒAL SECTION OF THE GENITO-URINARY DEPARTMENT, LONDON HOSPITAL; HONORARY MEDICAL SECRETARY, NATIONAL COUNCIL FOR COMBATING VENEREAL DISEASES; ADDITIONAL DEMONSTRATOR OF HUMAN ANATOMY, UNIVERSITY OF CAMBRIDGE.

With a

SUGGESTED SCHEME AS REGARDS TESTING FOR CURE IN GONORRHŒA,

BY A. MALCOLM SIMPSON, B.A., M.B., D.P.H. CANTAB.,

SURGEON, OUT-PATIENTS, ST. PAUL'S HOSPITAL; SENIOR CLINICAL ASSISTANT, GENITO-URINARY DEPARTMENT (WOMEN), LONDON HOSPITAL.

AND

E. R. TOWNLEY CLARKSON.

INTRODUCTION.

AN increase of venereal disease (V.D.) was formerly one of the aftermaths of war. "Post bellum Venus venit." This statement now requires some qualification. Gonorrhœa and her grim sister syphilis are even now striding throughout the land, and I believe with increasing vigour, while the battle still rages.[1]

A further increase in the victims of Venus when peace is declared is inevitable. The emotional condition of the nation will be intensely susceptible to various stimuli, and correlated to this there will be a widespread outburst of promiscuous sexual activity, with much resultant venereal disease. The pathological aggregate will be further augmented by the influx into this country of thousands of men and women, many of whom will be suffering from these disorders in a chronic and, in their estimation, in a non-infectious condition. Here is a menace to the national health the immensity of which cannot be realised. The number of such cases no man can forecast, but of necessity it will be great.

It is obvious that many practitioners will be called upon in the immediate future to treat V.D. to whose purview in the past such cases have never or only rarely been presented. Upon such will rest a great responsibility—the responsibility of deciding whether patients suffering from V.D. are in a condition to assume or resume conjugal relations. Upon their dicta will also hang the fate of thousands of other men and women. If their verdicts be carelessly passed large numbers of the unmarried, fallaciously encouraged by the verdict of "cured," will pass from consulting-rooms and clinics as disseminators of the disease of which they believed themselves to be cured. The responsibility applies in cases of syphilis and gonorrhœa, but I am more immediately concerned with the question of the latter. For reasons I need not enunciate, I am convinced that the national health will be endangered to a far greater extent by the latter rather than by the former.

To treat imperfectly or to discharge prematurely a patient suffering from pneumonia may imperil his health and possibly cause his death. Similar neglect with regard to a case of venereal disease *must* imperil the health and may cause the death of many individuals.

Apart from the purely human factor reference should be made to the great economic saving which the nation would achieve if every case of gonorrhœa was searchingly tested before being "discharged as cured." Not only would the expense incurred by the community for further treatment, involved by the recrudescence of the disease after the pseudo-cure had taken place, be saved, but many thousands of new cases infected by the imperfectly cured would never ensue and the cost of their treatment would thus be obviated. If the reduction in efficiency of these individuals were taken into account in terms of work-days lost, it would be realised how great a national gain would thus be achieved.

[1] This was written before the cessation of hostilities.

In the past (a very recent past) the task of examining a patient suffering from gonorrhœa before discharging him as cured generally fell upon the medical man who had treated the case. To-day his responsibility is a great one, but one which is more easily discharged. It is in many cases a comparatively simple matter to send the patient to a Local Government Board clinic with a request for a thorough examination to be made as to whether he is cured. Such a test should be carried out at least on two separate occasions, after a due cessation of treatment.

It is true there are still towns and large country areas without a clinic. It is impossible to over-estimate the crass lack of prevision on the part of the responsible municipal or other authorities who thus fail to make provision for the reduction of suffering and disease among their fellow-creatures.

It is impossible to conceive of any adequate explanation; it is equally impossible to think that public opinion will allow national health thus to continue to be menaced by such factors as pseudo-religion or meticulous municipal and other jealousies, which thus stand in the way of normal hygienic development.

Venereal disease has been a sociological problem; it is now becoming a biological factor. In passing, I would quote from Norris:—

"There is probably no other disease known to medical science that has caused as much suffering and sorrow throughout the civilised world as has gonorrhœa. Neisser states that, with the exception of measles, gonorrhœa is the most widespread of all diseases. It is the most potent factor in the production of 'race suicide,' and, by sterilisation and abortion, does more to depopulate the country than does any other one cause. The number of deaths annually that can be traced directly to this disease is difficult to estimate, but it is undoubtedly large. The majority of deaths due to this disease are usually under other headings in mortality statistics." (Norris on "Gonorrhœa in Women.")

These words are as a trumpet-call to efficiency of treatment. It is in the atmosphere they conjure up that I venture to submit the following fundamental principles for consideration in relation to a disease which is essentially a curable and almost entirely a preventable one.

I. ON THE NECESSITY OF EXERCISING THE MOST RIGOROUS STANDARD OF CURE.

It is but the enunciation of a platitude to state that the standard of test for cure is a variable one. The verdict of cured is given at times solely on the grounds that there is no discharge (with or without a macroscopic examination of the urine). Between this the lowest rung of the ladder of tests and the highest in the shape of the scientific and relatively exhaustive "marriage tests" there are many intermediate steps.

In gonorrhœa the most rigorous test possible should be utilised. If such a test was always insisted upon the verdict "cured" would not result in the tragedies which too often follow in its train.

The appreciation of the abstract is sometimes more easily realised by a statement of the concrete. With a view to pressing home an insistent plea for the universal application of a higher standard of cure, I will deal with a case which may be regarded as typical of a lamentably large group of patients. A man who is suffering from gonorrhœa is put through a certain course of treatment. As a result the disease is apparently cured, inasmuch as the standard of cure set up by his medical attendant has been attained. In the course of time—and here it is most important to point out that the intervening time may be one of months or of years—the man marries. Between his "cure" and marriage there has been no exposure to a fresh infection. Shortly after marriage he discovers that he is suffering from the old complaint. Now comes the tragedy. He is forced to arrive at a conclusion which he would give all he possesses to forgo. What are his data? He was told that he had been cured of his previous attack, he knows he has been leading an absolutely chaste life. He is now suffering from the same disease. The only conclusion to which he can come (with his limitation of knowledge) is that his wife has lapsed from the paths of virtue and, having contracted the disease herself, has now handed it on to him. Here we see the elements in an inexpressibly sad and terrible domestic drama, all too frequently enacted. The man

forced by apparently irrefutable reasoning to the above conclusion, the wife convinced of her own integrity, no mediator to explain and heal the breach. Apart from pathological results, there follows either a life-long separation with all its attendant temptations and disabilities, or a continuation of a so-called union, which, beginning with a lack of faith and continued in an atmosphere of mutual recrimination, must almost necessarily result in a permanent wreckage of happiness. What is the explanation? It is as simple as it is tragic.

The standard of cure which was originally set up and which had been attained was a superficial one, and therefore imperfect one. The examination on which the verdict of "cured" was based was insufficiently searching to discover the inimical gonococci. In one or both of the vesiculæ seminales these had lingered in apparent quiescence during the months and possibly during the years, only then to break out from their lurking place with renewed virulence on the consummation of marriage. The husband's bridal gift to his wife was, indeed, a terrible one, and the infection which she derived she has handed back (in some cases with interest) to her all unconscious spouse. If at the time of "cure" the contents of the vesicles had been expressed and examined the danger would have been detected and eventually all would have been well.

I need but merely refer to pyosalpinx, sterility, gonococcal rheumatism, and chronic invalidism as other lesions which may accrue from the non-insistence upon the most rigorous test as to cure. It is stated that whereas syphilis constitutes a third of pathology, gonorrhœa is a causal factor in nearly half the total number of cases suffering from diseases peculiar to women. It is surely unnecessary, in the light of such a statement, to debate upon the grave responsibility which presses upon all of us to find out the most stringent standard of cure known to science, and, finding it, to use it.

For information as to the nature of such a standard of cure I must refer my readers to the suggested scheme at the end of this article.

II. The Most Rigorous Standard of Cure Must be Applied to Every Type of Gonococcal Disease.

There is no doubt that an insistence upon utilising the highest standard of cure does obtain amongst certain members of the profession. It is, however, a remarkable fact that a certain proportion of these penultimists fail to carry out their practice to a logical conclusion. These practitioners insist that before a married patient be allowed to resume marital relationship, or a bachelor on the verge be permitted to contract marriage, he should be run through the gamut of urinary, urethral, prostatic, and vesicular examinations.

But what of the bachelor who determines as such to remain? And here is my point: in nearly every instance he is discharged as "cured" after an essentially less stringent test than is insisted upon by our idealists when dealing with the husband actual or potential. Why is the married man or matrimonial candidate so rigorously overhauled? Because he may infect his wife that is or is to be. It is, indeed, a terrible fate for a married woman to develop a pyosalpinx as the result of an infection contracted from her husband. It is surely more terrible if many women contract the same hideous complaint, for without cynicism one must admit that in many instances such will be the result of prematurely discharging as "cured" the amorously flitting bachelor. Whether the suffering woman be a matron of virtue or the mistress of many is possibly beside the point—from the logical purview; from the sociological the latter is undoubtedly the more serious.

A rigorous test is imperative for the married man in order to protect his wife; for the bachelor it is necessary in order to safeguard society. I submit that in every case of gonorrhœa the most rigorous test known should be applied irrespective of the patient's actual or potential matrimonial position and irrespective of the apparent lightness or severity of the disease. If this is not carried out the apparently cured will act as venereal emissaries in the dissemination of disease.

Let us remember that, in urging the necessity of the ideal standard of cure, we are not only making for the reduction of suffering and the prevention of domestic tragedies, but we are working for the repopulation of England. By the prevention of gonorrhœa we prevent a large proportion of that sterility by which countless women are robbed of their potential offspring, and England of innumerable citizens, at a time when we shall need them most.

III. The Standard of Cure should be Systematically Employed.

Amidst the multifarious activities and tensions thrust upon us we have not fully realised the value of the admirable machinery set up by the Local Government Board in the shape of venereal cliniques. I believe that history will show the initiation of such a scheme to be one of the greatest pieces of public health work ever originated.

As a result of this organisation a far-reaching series of statistics, medical and sociological, should be at our disposal. But unless a uniform standard of cure be systematically used the data from various institutions would not be comparable, and it would be impossible to appraise scientifically the value of the various methods of treatment employed. Moreover, a fallacious index of the efficiency of different institutions will originate—for the clinique with a low standard of cure will have many cures to its credit, whilst the one with an ideally stringent standard will have but few. We have blindly worshipped too long and will continue to worship at the shrine of numbers—let us make certain that our numerical basis be a sure one.

Let it not be thought that by suggesting that any particular "standard of cure" should obtain in all clinics I am advocating a policy which might result in a stereotyped conservatism. The standards of to-day are unfortunately in many cases the standards of yesterday, but there is no reason why those of to-morrow should be identical with those of to-day.

Let us, however, be certain that the standard of to-day be the most rigorous one possible. It is easy to assent to such a statement, but difficult to secure that any given standard is the most perfect. The underlying fundamental principle of such a test is that every weapon in the antigonococcal armoury should be utilised in order to dislodge that inimical micro-organism from every conceivable lurking place. From this it follows that every possible lair of a glandular nature should be most thoroughly explored by a searching examination of its expressed secretion.

How are the various standards to be compared? I would tentatively suggest that in one group of clinics a certain standard of cure should be employed, whilst in another group another standard should be initiated. Care should be taken that the nature of the cases and the treatment administered should be as similar as possible. After a given period the number of cases which had been discharged as cured and which had returned for further treatment (a new infection being eliminated) should be compared. The comparison instituted therefrom should give evidence with a fair amount of scientific verity of the validity of the varying standards employed in the two groups of cliniques. In the case of large cliniques such an experimental method could be utilised with still greater advantage.

I fully realise the difficulties which exist in these times of levelling up standards in medicine as in other spheres, but in this instance there is a peculiar necessity, eugenic and economic, incident to the present condition of affairs, which calls for the exercise of every possible endeavour in this direction.

In these days of ubiquitous venery it is for us to know how, and knowing how, to act in such a way as to cripple, if not eventually to destroy, the luxuriant and deadly growth of this particular upas tree in the forest of disease.

SUGGESTED SCHEME AS REGARDS TESTING FOR CURE IN GONORRHŒA.

By Malcolm Simpson and E. R. Townley Clarkson.

In the interest of the public health it is imperative that the most stringent standard of cure should be employed before a patient who has suffered from gonorrhœa is "discharged as cured." If such a practice does not obtain many patients will be set at liberty with a fallacious sense of security. In this way venereal clinics and practitioners will be acting as distributing agencies of disease.

We venture to suggest below a course of procedure to be followed before a patient is discharged. The method is

necessarily a tentative one. It is one which is used in the course of our hospital and private practice. We are aware that many may regard it as unnecessarily rigorous. We hope that with the lapse of time and the ingress of new ideas it may be improved by the introduction of more searching methods, but we must state our belief that the adoption of any standard of a less rigorous nature would be fraught with great individual and therefore sociological dangers.

I. *Males.*

1. Suspend treatment for at least one week. Patient should be advised to take alcohol as a provocative stimulant. If for any reason this should be considered inadvisable, the alcohol may be administered as a non-recognisable constituent of some palatable mixture.

2. Patient to present himself for examination, having if possible refrained from micturition all night, or, at least, from four to six hours. Meatus examined and urethra "milked up" from bulb. The bacteriologist takes meatal drop on platinum loop, film is made, culture-tube is then inoculated. If no meatal drop then platinum loop is to be passed into urethra, and mucous membrane stroked forward, and film made and tube inoculated from wire. Patient micturates first portion of urine into sterilised vessel, which bacteriologist examines in culture media. Centrifugalisation to be carried out or not as seems desirable. Any threads or deposit examined in film and culture. Glans penis is cleansed with soap, and later on with sterilised water, foreskin retracted, and urethra washed out with sterilised water, and patient placed in knee-elbow position; the glans penis is not to be touched; shake out last drop of fluid in urethra. Systematically palpate prostate and vesicles, special attention to be made to any feeling of abnormality—e.g., thickened or occluded vesicles or nodules in prostate. Massage prostate and vesicles till a drop appears at meatus or presents itself after milking urethra forward from the bulb.

N.B.—The drop may be either like white of egg—i.e., slightly opalescent and homogeneous—or in marked cases turbid, yellow, or granular.

Films are then made of the prostatic and vesicular fluid and culture-tubes inoculated.

The glycerine drop is a product of the anterior urethra, and indicates that the prostatic or vesicular secretion has not presented itself at the meatus.

Finally, a urethral examination should be made, preferably by Wyndham Powell's instrument with magnifying eye-piece. The instrument having been passed, the anterior urethra from the bulb forwards is carefully examined in order to ascertain its condition as regards (*a*) hard or soft strictures or infiltrations; (*b*) intra-urethral warts; (*c*) infected follicles; (*d*) any abnormal congenital condition, e.g., angiomata. At the same time the roof and the floor should be carefully palpated over the urethroscope tube in order that any peri-urethral infiltrations present may be discovered.

The glans penis is to be examined for para-urethral follicles, especially in the cases of patients exhibiting a hypospadiac or epispadiac condition. The perineum should be examined with a view to discovering the presence of cowperitis and perineal abscess, &c.

II. *Females.*

Suspend treatment for at least one week. Patient should be advised to take alcohol as a provocative stimulant. If for any reason this should be considered undesirable the alcohol may be administered as a non-recognisable constituent of some palatable mixture. Examine as soon after menstrual period as possible. It is advisable to always wear gloves during examination of females. An abdominal examination should be made with the object of noting any abnormality. The patient should be examined in the dorsal position, leaning back in a urological chair, with the thighs flexed on abdomen and knees supported in crutches. The examiner wears a suitable head lamp.

Method of Examination.

1. Remark presence or absence of discharge, and, if any, note quantity, consistency, and colour.

2. *Vulva.*—Vulva is to be cleansed and Bartholin's glands to be carefully examined; note specially redness around opening of same—squeeze out contents if possible; resultant fluid to be placed by bacteriologist on film or culture-tube.

3. *Urethra.*—The meatus is to be examined for the presence of pus. The floor should be pressed forward by finger in vagina and film should be made and culture-tube inoculated with the secretion expressed. If no drop expressed, platinum wire passed into urethra, and mucous membrane stroked forward, slides should be made and tubes inoculated from wire. Crypts in vestibule around meatus urinarius should be carefully looked for and notice taken as to infection. Small retractor speculum should be introduced and the urethra examined thereby, especially as regards infected Skene's tubules. Patient micturates; culture-tubes to be inoculated; centrifugalisation if deemed necessary.

4. *Vagina.*—A speculum, preferably Cusco's or Ferguson's, is to be introduced and an examination made of the vagina. The cervix is to be exposed and any pathological appearance, such as erosion, polypi, cysts, or ulcer, noticed. If secretion (either the normal ropy mucous secretion or pus) issues from the cervical canal a film is to be made and a culture-tube inoculated. If none is seen, then gentle pressure should be made by means of a blunt sponge-holder forceps in an antero-posterior position so that the contents of the deeper cervical glands may be expressed. A film should be made and a culture-tube inoculated with any secretion so obtained.

5. A bi-manual examination of the uterus and adnexa should be made, so that evidence of any disease may be noted.

The above should be carried out on two occasions at intervals of a month.

Note.—It is advisable that the bacteriologist should be present himself and take his own specimens.

No mention has been made of the place of provocative vaccines and the complement-fixation test in connexion with testing for the presence of gonococci. We realise the potentialities associated with these methods, but we do not at present regard their efficacy as sufficiently proved to justify their inclusion in a routine scheme.

We take this opportunity of thanking Dr. G. T. Western and Dr. P. N. Panton, of the London Hospital, for their advice as to the bacteriological points involved in the foregoing scheme.

A NOTE ON

THE USE OF "ANTIGENS" IN DIAGNOSIS BY THE WASSERMANN REACTION:

THE NECESSITY FOR FURTHER INVESTIGATION.*

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THERE can be no doubt that the adoption of a "standard" antigen would introduce a valuable simplification into the performance of the Wassermann reaction. It is the object of the present note, however, to draw attention to limitations of antigens in common use, which should preclude the adoption of any single one as a standard.

The property which a substance or a mixture must possess in order to be termed a syphilitic antigen is that when mixed with syphilitic serum (heated at 56° C.) in suitable proportion and added to fresh guinea-pig's serum it deprives the latter of its hæmolytic or complementing power; a necessary corollary is that the same amount of "antigen" along with non-syphilitic serum shall be, in comparison, practically devoid of this action on complement.

Stages in Evolution of Syphilitic Antigens.

The following stages may be traced in the evolution of knowledge as to the syphilitic antigen:—

(1) The demonstration that a watery saline extract of certain congenital syphilitic livers possessed this property (Wassermann, Neisser, and Bruck), which has subsequently been found to depend on autolysis rather than on the presence of abundant spirochætes.

(2) The proof that alcoholic extracts of normal tissues also yielded a syphilitic antigen (Levaditi and Yamanouchi, Porges and Meier, &c.). As commonly used, such extracts contain alcohol, which is by no means a negligible factor in the production of the antigenic effect.

(3) The demonstration that the property resides to a considerable extent in the ether-soluble, acetone-insoluble fraction of such alcoholic extracts (Noguchi), even granting that, as McLean states, the antigen is not "lecithin," but something which is precipitated along with it.

(4) The observation (Browning, Cruickshank, and Mackenzie [4]) as to the enhancement of antigenic power conferred on such lipoid mixtures by the addition of cholesterol; also the evidence subsequently afforded that crude alcoholic extracts could be enhanced in a similar fashion (Sachs).

* A Report to the Medical Research Committee.

The question as to which is the "*best*" antigen has received attention since an early period of such investigations. For practical purposes it is desirable that the quantitative difference between a negative and a positive serum, as measured by the excess of the amount of complement which the serum-antigen mixture will inactivate in the latter as compared with the former case, should be as great as possible, since this is the only index of positiveness which exists. Accordingly, extracts of a variety of more or less normal organs have been examined and it has been found in general that alcoholic heart extracts possess this property to an outstanding degree; thus human heart extract has been recommended by Michaelis and has been employed as syphilitic antigen for routine purposes by Thomsen and Boas,[1] and a similar extract, with the addition of cholesterol, has been recommended by Fildes and McIntosh,[5 7] who are supported by Walker and Swift.[9]

Browning, Cruickshank, and Gilmour,[3] in their examination of the ether-soluble, acetone-insoluble fractions of various animal tissues, found that the heart "lipoids" (from the ox) constituted a more potent antigen than similar products derived from ox-liver and kidney and egg-yolk, but they observed that ox-heart lipoid plus cholesterol, when mixed with certain normal sera (one being that of a laboratory worker who habitually used his own serum as negative control), led to a very great inactivation of complement, which was not attended by a particularly high anticomplementary property of the lipoid mixture by itself. Thus they did not feel justified in adopting it for purposes of diagnosis. They therefore continued to use liver lipoid in the full knowledge that the liver-lecithin plus cholesterol, as compared with certain other antigens, caused less complement fixation along with most syphilitic sera.[3] This deficiency was, however, considered to be compensated for, to a great extent, by the fact that when using the liver lipoid in parallel series with lipoid plus cholesterol, if a serum caused more complement to be inactivated in the cholesterol series than in the series without cholesterol, this was an indication of its syphilitic character and could be utilised in the diagnosis of weakly reacting sera.

Heart Extract plus Cholesterol Antigen.

The tendency of crude heart extracts plus cholesterol to cause a considerable amount of complement fixation with non-syphilitic sera has been recorded by a number of observers, especially in America (e.g., Bronfenbrenner and Schlesinger,[2] Smith and McNeal[8]). On the other hand, the use of such an antigen, as first advocated by McIntosh and Fildes, has found much favour and neither these workers nor certain others have found non-specific effects, which doubtless depends on the criteria of a positive result which they have adopted. The popularity of this antigen is evident from the fact that of the four methods of performing the test recommended in the Interim Report on the Wassermann Test of the Special Committee upon the Standardisation of Pathological Methods of the Medical Research Committee,[5] three employ this antigen and it is stated that (p. 37)—

"Antigen or Extract.—Of the various extracts which have been recommended at one time or another, that prepared from heart and reinforced with cholesterol, as recommended by McIntosh and Fildes, will be found simple to prepare and as satisfactory as any in use at the present moment."

The evidence as to the pre-eminent value of this antigen appears to rest on the extensive tests carried out by Fildes and McIntosh[7] which led them to the following conclusion, which is also quoted in the Interim Report by Harrison:—

"Since no antigen gave a positive reaction in any case in which heart-cholesterin gave a negative, the results have been tabulated as comparisons between heart-cholesterin and the other antigens."

Liver-lecithin plus Cholesterol Antigen.

This, however, ceases to be the case when the liver-lecithin plus cholesterol antigen is used under optimum conditions (see Table). McIntosh and Fildes instituted a comparison between heart-extract, heart-extract plus cholesterol, Wassermann-Meier's fœtal syphilitic liver antigen, and the liver-lecithin plus cholesterol antigen of Browning, Cruickshank, and Mackenzie. It is important to note, however, that as regards the liver-lecithin plus cholesterol antigen, these observers, actuated by theoretical considerations, employed it in a dilution (1 : 20) much exceeding the optimum which was recommended by the original workers (viz., 1 : 8). Hence what McIntosh and Fildes really determined was the unsuitability of this antigen when employed under the conditions which they adopted, and not the inferiority of the method including the use of liver-lecithin plus cholesterol as originally put forward. Walker and Swift,[9] from their results, consider that the antigenic property of cholesterol-heart-extracts is especially evident when testing sera from late (treated) cases of syphilis.

Results of Investigation by Authors.

Recently we have carried out a series of parallel tests, employing liver-lecithin plus cholesterol, according to the usual method (Medical Research Committee's Interim Report on the Wassermann Test, p. 27), and also McIntosh and Fildes's heart-extract plus cholesterol under the precise conditions laid down by these workers as regards dilution and volume of antigen and amount of patient's serum. We have always used varying amounts of complement in both series so as to obtain a quantitative estimate of the complement fixation. The results, while confirming our earlier observation that the liver-lecithin plus cholesterol antigen with *many* positive sera gives a smaller amount of complement fixation than do certain other antigens, e.g., heart-cholesterol, have also shown that *with a proportion of sera which is by no means negligible (nearly 6 per cent.), the liver-lecithin-cholesterol antigen leads to greater complement fixation than does the heart-cholesterol antigen.*† (See Table.)

Table showing Results with the Two Antigens.

Heart-cholesterol.	Liver-lecithin-cholesterol.	Number of sera.	Result.
+	+	125	Agreement in 83 per cent.
−	−	165	
?	?	9	
+	− or ?	15 = 4·2%	Difference of result in 17 per cent.
?	−	1 = 0·28%	
− or ?	+	21 = 5·8%	
−	?	24 = 6·6%	
	Total	360	

We have examined several such sera repeatedly with different specimens of complement and with three different liver products (Thomson, Skinner, and Hamilton's batches iii., vi., and vii.), so that the result may be accepted as of general application. Thus certain sera will be recorded as positive with liver-lecithin plus cholesterol and not with heart-cholesterol, while other sera will be more positive with the latter antigen.

A further point which it is of importance to bear in mind in connexion with further work on antigens, is that not merely may one antigen differ from another as regards optimum concentration, but also that the amount of serum necessary to elicit the maximum complement fixation may vary. Thus, with the heart-cholesterol antigen reduction in the amount of serum, recommended by McIntosh and Fildes, leads to a striking reduction in the amount of complement fixation, whereas a similar reduction does not lead to this effect when liver lecithin-cholesterol is used as antigen.

These results have led us to adopt the following procedure in conducting routine Wassermann tests. For each serum two series of three tubes each are set up: (*a*) containing liver lecithin-cholesterol (1 : 8 turbid emulsion) 0·3 c.cm. plus 0·025 c.cm. patient's heated serum; and (*b*) heart extract plus cholesterol (1 : 30 rapidly mixed emulsion) 0·5 c.cm. plus 0·05 patient's heated serum, along with increasing amounts of complement in each series. Thus the procedure is practically the same as that described by us in the Medical Research Committee's Report except that the heart extract plus cholesterol is substituted for the emulsion of lecithin alone.

We would strongly urge that the uncertainty which at present exists with regard to the significance of the behaviour of certain sera can be best cleared up by a collective investigation concentrated on such cases, and that three classes of material are required: (1) cases of syphilis known to have reacted positively, in which the reaction is becoming extinguished as the result of treatment; (2) untreated cases

† Case 7—see Medical Research Committee's Special Report, Series No. 21—(penile chancre supposedly of 18 days' duration) which reacted positively with liver-lecithin plus cholesterol, but was "practically negative" when tested with heart-cholesterol, illustrates this very well.

of congenital syphilis in which other children of the family or the mother are definitely positive; and (3) cases in which, although there is no clinical suspicion of syphilis, suspicious or positive reactions have been obtained. An extensive selection of negative controls is also highly desirable; these might best be obtained voluntarily from among laboratory workers.

Conclusion.

In the absence of an ideal antigen the present results indicate that a proportion of weak positive reactions will be missed if only a single antigen be employed in performing the Wassermann test. Hence it is advisable always to use *both* antigens. Since all laboratory tests are productive of the most valuable results when the clinician and the laboratory worker collaborate intimately, the desirable procedure would appear to be that, where tests are performed with only one antigen, all sera should be preserved (e.g., by freezing), so that if a positive reaction fails to be obtained in cases which are clinically suspicious, the test may be repeated with the other antigen. Of course, when the reaction is being tested for the control of treatment both antigens should be employed.

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THE RELATIVE CONTENT OF

ANTISCORBUTIC PRINCIPLE IN LIMES* AND LEMONS,†

TOGETHER WITH SOME NEW FACTS AND SOME OLD OBSERVATIONS CONCERNING THE VALUE OF "LIME JUICE" IN THE PREVENTION OF SCURVY.

A.—*EXPERIMENTAL INQUIRY*,
BY HARRIETTE CHICK, E. MARGARET HUME, AND RUTH F. SKELTON.

B.—*HISTORICAL INQUIRY*,
BY ALICE HENDERSON SMITH.

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Introduction.

A BELIEF in the antiscorbutic virtue of the preserved juice of the West Indian lime has long been cherished by the public. Such a faith is, however, not universally shared by those having experience, in recent years, of the value of lime juice for prevention or cure of scurvy. This scepticism is first found in the writings of the Arctic explorers at the end of the nineteenth century (see Jackson and Harley, THE LANCET, April 28th, 1900). It has also been expressed recently by many observers who, confronted with scurvy in one or other of the recent theatres of war, have declared that they found lime juice of no avail as a prophylactic or therapeutic agent. Nevertheless, the literature[1] upon this subject appearing in the eighteenth and early nineteenth century is full of the praises of "lime juice," and there appears to be every reason for believing that the use of so-called lime juice was responsible for the disappearance of scurvy from the British Navy in the first decade of the nineteenth century. The naval records of the period have been carefully searched and the result of the inquiry forms the subject of the second section of this paper. A sufficient explanation of the anomaly will be found to lie in the fact that at this early date the term "lime juice" included the juice of lemons from the Mediterranean, whereas for the last 50 or 60 years it has been applied to the preserved juice of the West Indian lime.

A.—*Experimental Inquiry.*

A study of lime juice has formed an important item in a comprehensive investigation of the antiscorbutic properties of various foodstuffs which has been carried out by a group of workers in this institute during the past two years.[2] This inquiry has confirmed and extended the researches of Holst and his co-workers,[3] published in 1912. Scurvy, in accordance with the view of ancient tradition, has been shown to be a deficiency disease, occasioned by absence in the diet of an unknown accessory food factor, or "vitamine." This factor is present in living vegetable and animal tissues, in largest amount in fresh fruits and green vegetables, to a less extent in root vegetables and tubers. It is present in small amount in fresh meat and milk, and has not been detected in yeast, fats, cereals, pulses. The antiscurvy food factor is sensitive to high temperatures and suffers destruction when the living tissues in connexion with which it is produced are disorganised by drying and other methods of preservation. The expressed juices of fresh vegetables rapidly become impotent in respect of antiscorbutic properties, but Holst and Fröhlich (1912) detected a distinctly greater stability in this respect in the expressed juices of acid fruits.

Experimental.

In studying the distribution of the antiscurvy vitamine among the various foodstuffs the general aim of the experimental work has been to assign to each a definite quantitative value in respect of its antiscorbutic properties. The work has been done mainly with guinea-pigs, though later confirmatory experiments have been made with monkeys.

Young, growing guinea-pigs, 300–350 g. in weight, were selected for the work. If all greenstuff is removed from the diet, and they are nourished on grain (oats and bran) alone, symptoms of scurvy appear after 10–20 days and death takes place in about 30 days. If, in addition, they receive a daily ration (60 c.cm.) of milk, heated at 120° C. for one hour to reduce its original antiscurvy value to a minimum, the general condition of the animal is much improved and growth is maintained for 15–20 days; the onset of scurvy is not, however, materially influenced and death takes place after 30–40 days. (See Chick, Hume, and Skelton, 1918.[4]) The value of fruit juices and their preparations was estimated by adding them in various amounts to this "scurvy diet" of oats, bran, and autoclaved milk, and determining the minimum daily ration required to maintain the animal in health and prevent occurrence of scurvy for a period of 90 days. At the end of this period the animals were killed with chloroform and careful post-mortem examinations were made, followed by histological study of the bony tissues.

There is evidence that the guinea-pig is more susceptible to scurvy than many other mammals, including both monkey and man, and needs a greater proportion of antiscorbutic food in its diet to obtain adequate protection from the disease. But there is every reason to believe that the *relative value* of different foods, as determined experimentally by this means, will remain the same for all, and the results obtained with guinea-pigs have found abundant confirmation in the available historical records of the worth of human diets from the standpoint of antiscurvy value.

Preserved lime juice.—Four samples which had been supplied for official use were placed at our disposal at different times by the authorities. Two were the purified juice of West Indian limes preserved with rum (14 per cent.), one contained no preservative, and the fourth was a sample of Bombay lime juice, preserved with salicylic acid and alcohol. To our great surprise we were unable to detect any significant protection in a daily ration of from 5 to 10 c.cm., which was as large a dose as could be tolerated. It was possible that the age of the samples might be responsible for their inefficiency. The process of "purification" consisted of a lengthy sedimentation and a separation of all pulpy matter expressed from the ripe fruit; this alone involves several months, a fact which, when added to the length of time taken in transport, &c., renders it likely that this lime juice, when consumed, may be many months, even years, old.

Crude lime juice.—Accordingly a series of samples of crude juice were examined; the samples were cloudy and contained a considerable proportion of oily and pulpy matter. They were of various age, but some, at least, were fairly fresh and were examined immediately on their arrival in this country. In two samples only was any antiscorbutic value detected, and in these instances partial protection only was conferred by a daily ration of 5 c.cm.

Fresh lime juice.—In order to eliminate the question of age and to obtain a satisfactory basis for comparison we

* *Citrus medica*, var. *acida*. † *Citrus medica*, var. *limonum*.

investigated the juice of the fresh fruit expressed in the laboratory. This we were enabled to do through the kindness and generosity of Messrs. L. Rose and Co., who supplied us with regular monthly supplies of fresh fruit, specially imported for the purpose. The fresh, ripe fruit‡ was cut in half and the juice pressed out by hand upon an ordinary glass lemon-squeezer, there was little admixture of rind products. It was used as fresh as possible, being kept in a refrigerator. On the arrival of the next consignment of fruit the remainder was rejected and the fresher juice employed; the expressed juice was never more than two months old when administered. Protection from scurvy was obtained with a daily ration of 10 c.cm.; with doses of 5 c.cm. and 2·5 c.cm. a definite degree of protection was manifested, but it was neither constant nor complete. The details of the above results are all summarised in Table I.

TABLE I.—*Antiscorbutic Value of Lime (Citrus Medica, var. Acida) Juice and Lemon (Citrus Medica, var. Limonum) Juice.*

Experiments with guinea-pigs.—Cabbage was removed from the normal diet of oats, bran, and greenstuff and replaced by the fruit juices investigated. A daily ration of 60 c.cm. cow's milk (heated to 120° C. for one hour to destroy anti-scurvy properties) was added to improve the nutritive value of the diet.

Antiscorbutic material.	Dose c.cm. daily.	Age of juice (months).	Preservative.	Result.	Degree of protection against scurvy.
LIME JUICE.					
Preserved.					
1. Army sample, Nov., 1916.	5	Uk.	Rum, 14%	Animals died of scurvy.	0
2. Navy sample, March, 1917.	5	,,	Rum, 14%	,,	0
2A. Navy sample, March, 1917.*	10	,,	0	,,	0
3. Bombay samples (Willcox brand), Oct., 1917.	5	2 to 4	Alcohol and sal. acid.	,,	0
Crude.					
1. From Lewis and Peat, Feb., 1917.	5	Uk.	None.	Animals died of scurvy.	0
2. From A. Riddle and Sons, April, 1917.	5	About 14	,,	,,	0
3. From L. Rose and Co., May, 1917.	5	6 to 7	,,	Some protection in 2 cases out of 4.	+
4. From L. Rose and Co., Sept., 1917.	5	3 to 6	,,	Scurvy, but considerable degree of protection.	++
5. Bombay crude juice, Oct., 1917.	5	2 to 4	,,	Animals died of scurvy.	0
5A. Bombay crude juice, Oct., 1917.	10	4 to 5	,,	,,	0
Fresh juice.†	2·5	0 to 2	,,	Scurvy in all cases, but some protection.	+
	5	0 to 2	,,	Scurvy in 4 cases out of 6.	++
	10	0 to 2	,,	No scurvy.	+++
LEMON JUICE. *Fresh juice.*	0·5	0 to 2	None.	Scurvy in all cases, but definite protection.	+
	1·5	0 to 2	,,	Protection almost complete in 2 cases out of 4.	++
	2·5	0 to 3	,,	No scurvy.	+++
FRESH RAW CABBAGE LEAVES.	Grm. 0·5	Fresh	—	Scurvy symptoms, but definite protection.	+
	1·5	,,	—	Protection.	+++
	2·5	,,	—	,,	+++

* Without addition of rum.

† Limes imported monthly from Dominica, squeezed in laboratory, and preserved in refrigerator.

Uk., Unknown. Sal. acid., Salicylic acid.

+++ = Complete. ++ = Definite. + = Slight. 0 = No protection.

‡ These limes were about 4 to 8 weeks in transit owing to war conditions of transport, and it has been suggested to us that this duration of time may have influenced the condition of the fruit unfavourably. We hope in the future to investigate the juice of limes only 2 to 3 weeks old, in order to see if the minimal protective dose for guinea pigs may not be lowered a little with juice obtained from fresher samples of fruit. It is unlikely that any significant alteration in the anti-scorbutic value of the juice will be obtained, as all the fruit employed in the above experiments appeared to be in sound condition. Nevertheless, the point seemed to merit investigation.

Fresh and preserved lemon juice.—Fresh lemon juice was found to be much more potent in respect of antiscorbutic properties. Marked degree of protection was discovered by a daily ration of only 0·5 c.cm., and this was almost complete in some cases with a dose of 1·5 c.cm. With a daily ration of 2·5 c.cm. complete protection from scurvy was attained. The value of fresh lemon juice was therefore estimated at about four times that of fresh lime juice. The lemon juice was roughly of the same age as the lime juice in the above experiment. The lemons were squeezed in the laboratory, the juice was kept in a refrigerator, and its age varied from a few days to two months.

Our experiments with preserved lemon juice are still incomplete, but it appears probable that preservation with sulphite will prove satisfactory in retaining a considerable measure of the original antiscorbutic value. One sample of imported lemon juice from Messina, kindly provided by Messrs. L. Rose and Co., was found to afford distinct protection from scurvy in a daily dose of 5 c.cm. when at least 7 months old.

Experiments with Monkeys.

The question was of sufficient importance to warrant a series of experiments with another experimental animal, and young growing monkeys were selected. After observation for a month or more, to be assured that they were in normal satisfactory health, they were placed upon a generous diet, consisting of various cereal foods with nuts and abundant autoclaved milk, the antiscorbutic element being provided solely by the ration of fresh fruit juice provided. In case of limes the whole fruit was minced in order to include all constituents and the resulting mass squeezed in strong muslin of coarse mesh, yielding a somewhat thick liquid containing pulpy and oily matter. This was done immediately after delivery and at the same time, fresh lemons were procured and their juice expressed. Both supplies were kept in a refrigerator room, until the arrival of the next consignment of limes, when a fresh supply of lemon juice was also prepared. It was thus arranged that the lime and lemon juice used in the experiments (detailed in Table II.) should be comparable as far as possible.

TABLE II.

Experiments with monkeys.—The diet consisted of wheaten biscuit, peanuts, boiled rice, wheat germ, and autoclaved milk (120° C. for one hour) *ad libitum*. The antiscurvy food factor was provided only by the ration of fresh fruit juice.

Fresh Lime Juice.				*Fresh Lemon Juice.*			
Exp. No.	Average daily ration.	Initial weight.	Duration of diet.	Exp. No.	Average daily ration.	Initial weight.	Duration of diet.
	c.cm.	g.	days.		c.cm.	g.	days.
1	10	2340	35	8	10	1660	93
2	10	2010	91	9	10	3130	92
3	10	3500	54	10	5	1900	49
4	5	3650	115	11	5	3500	171
5	3·5	2620	120	12	5	1750	66
6	2·5	1910	101	13	2·5	2010	122
7	2·5	2010	168	14	2·5	2030	123

Results of Experiments in Table II.

Fresh Lime Juice.

1. Good health, until sudden death from acute, undiagnosed illness.
2. Poor health, no symptoms of scurvy, death due to dysentery. P.M. no macroscopic signs of scurvy, histological evidence of slight scurvy.
3. Good health.
4. Acute scurvy, symptoms first noticed 49th day; cured with daily dose of 5 c.cm. lemon juice, beginning 115th day.
5. Scurvy, symptoms first noticed 45th day.
6. Incipient scurvy. Death from dysentery complicated by a worm infection of large intestine. P.M. definite signs of slight scurvy, hæmorrhage in synovial membrane, incipient periosteal hæmorrhage, deformity of rib-junctions.
7. Slow chronic scurvy, complicated with intestinal worm infection.

Fresh Lemon Juice.

8 to 14. Good health.

The fruit juice was, as a rule, acceptable to the monkeys, and the necessary ration, diluted with water and sweetened with sugar, was readily sucked from the nozzle of a syringe. This was not always the case with lime juice, the animals sometimes grew tired of it, and some coaxing was necessary in order to get the ration successfully administered.

The experiments are set forth in Table II., and the results may be summarised as follows: with young, growing monkeys, of 2000–3500 g. weight, daily rations varying from 2·5 c.cm.–10 c.cm. lemon juice never failed to prevent scurvy over periods of time as long as 4 to 7 months. The animals were in excellent health and spirits, and grew in a normal manner.

In case of lime juice the result was otherwise, and the general health of the animals was distinctly inferior. In one case a ration of 10 c.cm. lime juice daily afforded protection from symptoms of scurvy for as long as three months. At the end of this time, however, the animal died of dysentery, and a histological examination of the bony tissues revealed some degree of abnormality. In Experiments 4–7, where the daily ration was 5 c.cm. to 2·5 c.cm., scurvy to a more or less severe degree ensued in every case. Most of these experiments are still in progress.

Experiment 4 is of particular interest. In this case very severe scurvy developed, accompanied by progressive loss in weight. The lower limbs became helpless, wrists and ankles were swollen and tender, the teeth became loose, the gums spongy and hæmorrhagic, and there were distinct follicular hæmorrhages on the face at the base of the whiskers. Finally, blood was passed in the stools and death appeared to be imminent. The lime-juice ration was changed to an equal ration of lemon juice of equal age. In 7–14 days the teeth became firm; gradually all tenderness vanished in the limbs; the animal regained activity and improved in weight. The cure was slow, but the curative dose of lemon juice was small in comparison with the severity of the case.

The relative value of these two fruit juices, deduced from the trials with monkeys, is therefore in accord with that obtained in the experiments with guinea-pigs—i.e., *the value of fresh lemon juice is approximately four times that of fresh lime juice.*

In conclusion, our best thanks are due to Messrs. L. Rose and Co. for generously providing us with a regular supply of fresh lime fruit from Dominica, in spite of the difficulties of transport, &c., occasioned by war-time conditions. We desire also to record our appreciation of their willing coöperation in supplying numerous special samples of crude and preserved juices, and for the accurate and detailed records made on our behalf of the methods used in their preparation. Without this assistance the above research would have been impossible.

B.—*Historical Inquiry*, by ALICE HENDERSON SMITH.

The lime juice now issued to the Navy and Army for their use as a preventive of scurvy is the juice of the sour lime (*Citrus medica*, var. *acida*) grown in the West Indies. To it has long pertained the reputation made in the Navy 125 years ago by the "lime juice" used then. But that "lime juice" was not the juice of the sour lime.

The citrous fruits first used by the Navy came from the Mediterranean, largely from Spain. They did not include the *sour* lime, which is not grown in Europe; they did probably include the *sweet* lime (*Citrus medica*, var. *limetta*), but consisted principally of lemons (*Citrus medica*, var. *limonum*). In 1796 the war cut off Spain as a source of supplies and lemons were brought from Lisbon; the supply was uncertain, insufficient, and very expensive until 1803, when contracts were first made through the naval representative at Malta. Thereafter, for many years, an annual contract secured an ample quantity of the juice of lemons grown in Malta and Sicily. This enabled the Admiralty to employ "lime juice" much more widely than had been done before, and for some years the issue was a general one and not confined, as before, to the sick and to the crews of ships on foreign service. Together with the improvement in victualling and in the general conditions of living on board ships of war this was successful in expelling scurvy from the Navy in the course of a very few years, and by 1810 the records of scurvy cease. From that time the disease has occurred only in isolated and exceptional cases.

Before the middle of the nineteenth century complaints were made about the quality of the lemon juice sent from Malta, but by that time opportunities for the trial of it therapeutically were rare in the ordinary service of the Navy. On the return of Sir James Ross from the Arctic regions in 1849, however, it was shown what disastrous results might follow from a deficiency in the supply. In order that other ships then about to leave England on Arctic service should be assured of a reliable protection from diseases the Medical Director-General caused lemons to be squeezed at Deptford for them, and this provision proved fully adequate. Arrangements were made for the careful supervision thenceforward of all lemon juice bought in Malta.

About 17 years later, when the development of the lime cultivation in the West Indies made available a quantity of lime juice, the Admiralty transferred its contracts, and thereafter issued the juice of limes instead of that of lemons. The essential inferiority of limes to lemons in antiscorbutic power was not suspected, and the new supply was believed to be far better than the old. It was produced by English firms under such conditions as would secure its soundness and purity.

Polar exploration again provided the test of its value; and by comparing the experience of the ships provided with the pure lemon juice in 1850 with that of the first Arctic expedition that took out West Indian lime juice we get a very satisfactory human experiment, demonstrating the relative value of the two fruits. The setting of the comparison is made more precise than is generally to be looked for in historical evidence by the following facts.

The lemon juice for the 1850 expedition was prepared at Deptford, and much attention was paid to the best method of preserving it and for obtaining its maximum value when consumed at sea. The juice was issued to the ships under regulations which insured accuracy and definiteness in the quantity consumed by each member of the crew. The daily ration, 1 oz., was issued to each man individually, and drunk by him in the presence of an officer. In 1875, when Sir George Nares's ships, the *Alert* and the *Discovery*, sailed to discover the North Pole, Sir Alexander Armstrong, who had been medical officer on the *Investigator*, was Medical Director-General of the Navy. So satisfied had he been with the results of lemon juice during the voyage of the *Investigator* that he gave directions that the juice should be issued in precisely the same way on the *Alert* and the *Discovery* as on the previous expedition, that is, in the same quantities, and with the same safeguards against any variation in the consumption of it. But the juice issued to Nares's ships was the "lime juice" from the West Indies.

The two expeditions were so near to one another in time that the general conditions of diet, &c., were very similar; but the later one did enjoy certain improvements of diet suggested by accumulated experience, including double vegetable and fruit rations, additional meat, sugar, &c., and a reduction in the amount of alcohol allowed. In casual supplies of fresh game and herbs there was no outstanding difference. Indeed, every detail of the conditions is very nicely adjusted for the comparison, any difference there was being in favour of the lime juice ships.

And the result was not only clear, but emphatic. Nares's ships, supplied with West Indian lime juice, went out in May, 1875; they had their first case of scurvy in January, 1876. Premonitory scorbutic symptoms showed themselves in a further number of the crews in early spring, but they were not recognised, as scurvy was never thought of as a possible danger. With the starting of the sledge expeditions early in April, 1876, scurvy developed with great severity in the sledge crews and three deaths occurred; concurrently there was a development, only less serious, among the men who remained on the ships. The expedition came home to England in October, 1876.

On the other hand, the *Investigator*, supplied with lemon juice, left England in January, 1850, and got into the ice during the following summer. Throughout the next winter and the spring sledging she had no scurvy. In autumn, 1851, her rations were reduced to two-thirds and her lemon-juice ration was halved, and she still had no scurvy through the following winter and spring. Only in May, 1852, her first case developed, 27 months after leaving home and after seven months of short rations and reduced lemon juice. Other 15 months passed before her crew were rescued, and in that whole period of three and a half years she had three deaths from scurvy, the same number that occurred on Nares's ships within one year.

The conclusion suggested by the history of this long immunity from scurvy during the voyage of the *Investigator* is supported by the history of other ships of her time, while the failure of the lime-juice ration to prevent scurvy on the *Alert* and the *Discovery* is repeated in later cases where it

has been relied on as a protection. In the absence of any other satisfactory explanation of the contrast afforded by the experience of these two expeditions—and the prolonged examinations of the Scurvy Commission of 1877[5] discovered none—*it must be accepted as a very convincing piece of evidence that lemon juice is far more effective than lime juice in the prevention of scurvy. It fully confirms the results of the laboratory experiments which have determined more exactly their relative value for this purpose.*

Summary.

1. The antiscorbutic value of the juice of fresh limes (*Citrus medica*, var. *acida*) has been compared experimentally with that of fresh lemons (*Citrus medica*, var. *limonum*) and has been found to be distinctly inferior. Volume for volume fresh lime juice possesses a potency of about one-fourth that of lemon juice. In one instance severe scurvy developing in a monkey on a diet containing a small daily ration (5 c.cm.) of fresh lime juice was cured by an equal ration of fresh lemon juice.

2. Preserved lime juice was found useless for the prevention of scurvy by the method employed. Experiments with preserved lemon juice are still in progress, but give promise of better results.

3. The experimental results are fully confirmed by a historical study of "lime juice" in connexion with human scurvy. At the period when scurvy was eliminated from the British Navy by its agency the term was used to express the juice of lemons, and it was not until the second half of the nineteenth century that the juice of West Indian limes was adopted in the Navy and Mercantile Marine. The history of two Arctic expeditions, that of the *Investigator*, 1850, and that of the *Alert* and *Discovery*, 1875, has been carefully investigated. The former, supplied with lemon juice, experienced remarkable immunity from scurvy during the first two years of great difficulty and privation; the latter, supplied with lime juice, suffered severely from scurvy at the end of the first winter spent in the Arctic regions.

It should be noted in connexion with these facts that scurvy is a disease with a long period of development. As much as four to eight months upon a defective diet may elapse before definite symptoms of scurvy can be observed.

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A CASE OF REPEATED CESSATION OF THE HEART BEAT.

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ARREST of the heart for so long as 30 seconds is very uncommon; we have only been able to find an account of one case in which the heart stopped repeatedly.[1] The notes of our case are given below.

The patient, a man, aged 67, was seen by us on March 27th, 1918. He had been healthy all his life; had recently been excited over the war. He had been in the habit of taking plenty of exercise, bicycling up hills, &c. Just before his illness he was carrying some heavy portfolios about the house. No history of specific disease. On March 13th he complained of giddy attacks. His pulse was noticed on one occasion to be 30. He stayed in bed two or three days, but then he got up feeling quite well, but stayed upstairs. During this time he was having two or three short fainting attacks each day. On March 25th, at 2.30 P.M., he began having repeated fainting attacks till 4.30 P.M. The attacks began again at 5.30 and lasted till 7.30. He then got some sleep, but the attacks began again at 10 P.M. and lasted nearly without intermission till his death in the afternoon of March 28th. During the fainting attacks the heart stopped beating.

Clinical features of the attacks.—Between the attacks the patient was sitting up in bed talking perfectly normally. The pulse was bounding; radial artery palpable, but not calcified. On one occasion the pulse-rate was counted at 84 per minute, soon after it had recommenced beating after an attack. It remained at this rate for about 50 or 60 seconds and then it gradually became slower, the rate falling to about 60 or slightly less, the strength being fully maintained. In 86 seconds from the start the pulse suddenly stopped. Immediately the patient grew pale and there was slight cyanosis. The patient went on talking for 2 or 3 seconds, but then fell back on to his right side with a groan. In 5 to 7 seconds consciousness had certainly been lost, but it was impossible to be certain exactly how much earlier this had occurred. Loss of consciousness was followed by contractions of various muscles, and there were involuntary movements of the limbs.

Breathing became gradually deeper and more convulsive, all the accessory muscles of respiration being brought into play. After about 20 seconds the respiration was at the rate of 44 per minute and was extremely deep. This rapid deep breathing was the most noticeable thing about the case at this period. It was more marked than we have either of us ever observed in other pathological conditions. It can only be compared with the convulsive panting which occurs in the severest kind of muscular work. The patient's face was livid and pale. There was no corneal reflex or light reflex.

After 39 seconds, during which no pulse had been felt at all, it suddenly started again, at first rather weakly, but in 5 or 10 seconds it had regained its normal strength, the rate being sometimes over 80 and sometimes between 75 and 80. Within two or three beats the face flushed bright red, and beads of sweat were visible, the conjunctivæ were congested, and there was excess of lacrymal secretion, and very soon afterwards consciousness was completely restored.

The total length of the cycle was on this occasion 125 seconds. On other occasions it was 115 seconds. Roughly it may be said that during every two minutes the pulse completely stopped for 40 seconds. This sequence of events continued with regularity all the time we were examining the case, some 45 minutes.

There was no obvious abnormality about the heart.

The patient was emphysematous and the apex beat barely palpable. There were no murmurs. When the pulse stopped no beat of the heart was audible with the stethoscope; nor was there any sound suggestive of auricular beats. No venous pulsation in the neck was observed. It was unfortunate that no polygraph tracing could be obtained in this case.

Various attempts were made to interrupt the events of the cycle. The patient was told to take some deep forced breaths during the conscious period, but without effect. He then breathed backwards and forwards through a piece of hose pipe, so as to increase the dead space and increase the CO_2 content of the lungs which might stimulate the heart; but again there was no effect. Firm pressure was exerted on the vagi in the neck, smelling salts were applied to the nostrils while the patient was unconscious but without effect. Sal volatile diluted with an equal volume of water was administered by the mouth. Vomiting was produced and the attacks ceased for about 20 minutes, but then they recurred. He died with signs of cardiac failure.

Post-mortem.—Lungs: Congested and œdematous. *Aorta:* Atheroma, particularly in descending thoracic part. *Heart:* Hypertrophy of both left and right ventricles; they contained rather more blood clot than usual. The heart muscle was rather mottled, but did not look very unhealthy; some moderate degree of fibrosis was suspected. The coronary arteries were atheromatous but patent. The aortic and mitral valves were slightly thickened.

Brain.—The vertebral, basilar, internal carotid, and cerebral arteries were all very atheromatous. The brain substance looked healthy.

The abdominal viscera were not examined.

Dr. P. P. Laidlaw very kindly examined some microscopic sections for us.

Sections of the medulla were cut at the middle and upper part of the vagus nucleus. Numerous small hæmorrhages were found throughout the sections, but they were more striking in the immediate neighbourhood of the vagus nucleus. One in particular involved the nucleus itself, but had not destroyed the nerve cells at this point. The vagus nerve cells showed very poor Nissl bodies and the nucleus was occasionally excentric. A few of the cells were vacuolated. The cells form a very great contrast to those of the hypoglossal nucleus alongside. It is doubtful, however, if the appearances indicate a nuclear lesion, since the apparent chromatolysis and the position of the nucleus are both conditions so frequently found in the vagus nucleus that they can be termed normal post-mortem appearances. The vacuolation is, however, abnormal.

Since the hæmorrhages are numerous it is suggested that they are secondary to the repeated asphyxial periods which occurred before death and are not primary. It is impossible to be certain on this point. The arteries at the base of the medulla showed a little atheroma, but this did not appear very advanced, and the smaller vessels appeared normal.

Sections were also taken at regular distances over the lower part of the medulla. No abnormality was seen, and there was no appearance seen similar to those in Neubürger and Edinger's case.

Sections of the vagus nerve trunk did not show any sign of degeneration or any cellular infiltration suggestive of neuritis.

Sections of the heart muscle which were cut failed to show the auriculo-ventricular bundle. It is thus impossible to say whether this was normal or not. The heart muscle showed a little fibrosis at the upper part of the interventricular septum The largest artery in this region showed considerable fibrosis of the muscle and also some intimal overgrowth.

[1] Neubürger and Edinger: Berl. klin. Woch. (1893), xxxv., p. 69, 100.

Discussion.

The case published by Neubürger and Edinger was as follows:—

The patient was a man of 46, who had attacks of unconsciousness which came on after straining at stool. The attacks were of short duration and often repeated. Later on, the free intervals became shorter. The pulse was counted at 12 to 16 for some minutes and it became slower before stopping altogether. On restarting the pulse was more rapid to begin with. The sequence of events was compared with stimulation of the vagus in animals. The post-mortem disclosed congenital absence of the right cerebellar lobe. The myocardium was healthy. The vessels in the neighbourhood of the accessory fibres on one side of the medulla were dilated and varicose. These fibres, according to Heidenhain, probably contain the inhibitory fibres to the heart.

In the present case the fact that no venous pulsation was noticed in the neck, and that there was complete silence on auscultation of the præcordium, suggests that there was complete arrest of the whole heart. The gradual slowing beforehand strongly suggests vagal action. However, this slowing was not so marked as in Neubürger and Edinger's case. A pulse of 30 was noticed some three days before death before the repeated fainting attacks began, and this probably means that there was complete heart-block. This may have been a temporary condition, and may have been followed by attacks of arrest of the whole heart.

Previous descriptions have laid stress on the convulsions that occur after the cessation of the heart beat. So far as we know, no previous description has been given of the enormously increased respiration that we observed. One of us (E. P. P.) has found that the ventilation of the lungs in the severest cases of air-hunger is always less than 20 litres a minute; but in severe muscular work four times this amount has been noted. The respiration observed in this case was quite comparable with the huge ventilation due to muscular work. A similar effect is noticed on ligaturing the carotids in animals. It is presumably due to the stasis of CO_2 in the respiratory centres associated with a lack of oxygen, and since the blood normally arrives at the centre almost fully saturated with oxygen, it would require some seconds after arrest of the heart for the lack of oxygen to be felt. The rapid onset of dyspnœa also suggests a local action on the centres, and it may well be, as Haldane and Douglas have suggested, that the lack of oxygen acts by forming lactic acid locally in the respiratory centre.

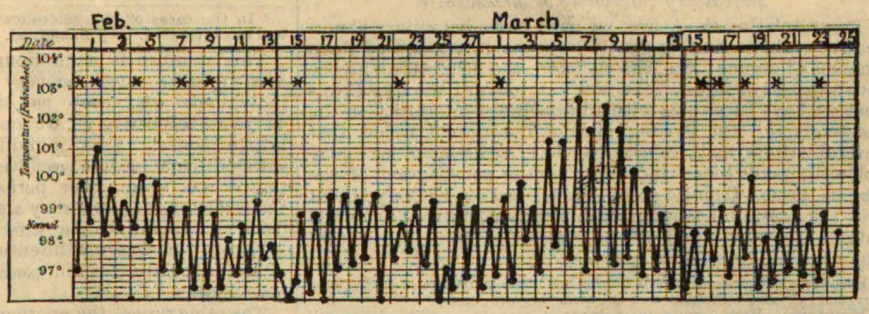
THE SPACING OF INJECTIONS IN THE MAINTENANCE OF A PNEUMOTHORAX.

BY CLAUDE LILLINGSTON, M.B. CANTAB.

IN a retrospect of the development of collapse therapy in pulmonary tuberculosis since it was started in England in 1910 one fact stands out prominently. There has been no great teaching centre or standard work from which the beginner could learn and to which he could subsequently turn for help in difficult cases. The recently published text-book by Dr. Clive Riviere on this subject has therefore met a want. It says much for the intrinsic value of this treatment that it has survived these early vicissitudes. Particularly with regard to the spacing of refills and the total duration of the treatment are the effects of the inadequate teaching of collapse therapy in this country evident. The decision when to discontinue the injections for good requires so much general experience and knowledge of the individual case that it is unsuitable for discussion in a short paper. But the publication of the following case may, perhaps, be useful as a warning against too long intervals between refills.

A man, aged 23, presented on Jan. 14th, 1918, signs of extensive disease of the right lung. The left lung was intermittently crepitant in the second and third intercostal spaces. Sometimes no moist adventitious sounds were audible over this lung. On Jan. 31st the first injection of gas was given, and by the end of February the clinical signs indicated practically complete collapse of the right lung. A few days after the ninth injection, given on March 1st, an acute intercurrent infection sent the temperature vaulting. On this account, and because any extra activity seemed undesirable for the left lung at this critical stage, the next injection was deferred till March 15th, by which date the temperature had become practically normal. After such a comparatively long interval it was anticipated that space for a large quantity of gas would be found. But after only 300 c.cm. had been introduced there was a pressure of +8 cm. of water on expiration. There were no signs of a pleural effusion, but from the root of the lung to its base and round to the axilla and front of the chest respiratory sounds were plainly audible. In the hope that the lower part of the lung had become only loosely adherent to the chest wall, and that the adhesions would give way if a high intrapleural pressure were maintained, injections of gas were frequently repeated, and as high a pressure as + 16 cm. of water was created. With each injection it was, indeed, possible to reduce the air entry on the right side, but not for long. Even the development of a pleural effusion late in April failed to compress the lower half of the right lung, and after May 11th no further injections were given.

This was deplorable, and the only consolation to be extracted from my mistake was the reflection that, owing to the activity of the disease in the left lung, the patient would probably in any case have ultimately fared badly. There are few experiences more disheartening in collapse therapy than to find an otherwise promising case ruined by re-expansion of the lung and its adhesion to the chest wall for lack of timely refills. It is fatally easy to be caught napping when a pleural effusion has developed, particularly when the pneumothorax is incomplete. For as the fluid is reabsorbed the adherent section of the lung appears to act as a base from which adhesions spread to the previously free surface of the lung. But even without a pleural effusion the lung may, as in this case, flap against the chest wall and adhere there, despite every effort to detach it. Looking back on an experience of about ten years and of several hundred injections, I cannot remember a single case under my own care or that of colleagues in which refills were given too frequently. Error to the opposite extreme is, I believe, common, and many a patient's prospects of permanent recovery have been irrevocably impaired. My grateful thanks are due to Dr. Esther Carling for permission to publish this case.



In the chart * indicates injection of gas. In the following table are stated (1) expiratory and inspiratory pressures before injection; (2) after injection; and (3) c.cm. of gas injected.

—	Jan. 31st	Feb. 1st	4th	7th	9th	13th	15th	22nd	March 1st	15th	16th	18th	20th	23rd
(1)	−7−11	−6−15	−4−12	−5−16	−2−12	0−14	−2−10	−2−11	−1−12	−1−10	0−12	+2− 6	−2−12	−1−8
(2)	−5−10	−2−10	−2− 9	−1− 5	+2− 6	+3− 6	+2− 4	+2− 4	+6− 2	+8− 5	+16+10	+16+10	+6− 0	+7−2
(3)	300	300	500	600	500	450	500	400	300	300	400	400	500	650

BLUE SCLEROTICS,

IN CONNEXION WITH OTHER HEREDITARY OR CONGENITAL ABNORMALITIES.

BY DR. N. VOORHOEVE,

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EARLY in 1916 I had the opportunity of examining a father (C. W.) and his two daughters, in whom I found the following abnormalities.

Description of Abnormalities.

1. *Brittle bones* (fragilitas ossium).—The individuals were normal and full-grown at birth; they exhibited no abnormalities, and particularly did not suffer from rickets. They enjoyed good health until at two or three years of age the first bone fracture occurred after a very slight trauma. This was soon succeeded by numerous other fractures; the father had 5 and the daughters 13 and 15 respectively. With puberty the frequency diminished and bone fractures only occurred sporadically. Nearly all the fractures healed without leaving any inconvenience; a few healed in a bad position or did not sufficiently consolidate.

With the X rays the entire skeleton exhibited the same abnormalities—viz., a very thin cortex, which stood out sharply from the surrounding tissues; further, it only contained a slight proportion of lime salts and showed a rarefaction of the bone supports and an absence of every rachitical alteration. In certain fractures little or no endosteal, but very strong periosteal, callus had been formed.

We have here characteristic cases of osteopsathyrosis infantilis. As to the cause opinions are still divided.

2. *The blue sclerotics.*—In the two girls the dark grey-blue colour of the sclerotics immediately attracted my attention; in the father they were concealed by pingueculæ. In both the father's eyes was a very marked arcus senilis. Closer examination by Dr. Smit disclosed no further abnormalities in the eyes. It is quite possible that the father, who has an exophthalmia of his left eye, has only his thin sclerotics to thank for it. This exophthalmia showed itself when, about 6 years old, he suffered from "glands in the eye." He now has besides maculæ corneæ with consequent irregular astigmatism, a myopia of 10 D., and a small sickle in the fundus.

3. The father suffers from hæmophilia. The two girls do not.

Hereditary Inferiority of Mesenchyme.

Recapitulating the above, we have three hereditary abnormalities which find expression in the inferiority of three systems of organs—viz., the skeleton, the sclerotics, and the blood-vessels or blood. We now put forward the hypothesis that we have here to do with an hereditary inferiority of the mesenchyme. On looking up the literature I found that several writers had conjectured that fragile bones and blue sclerotics point to an inferiority in the constitution of the fibrous tissue. Definite proofs were, however, entirely absent and the question has never been clearly postulated or looked into. The organs and tissues descended from the mesenchyme are shown below.

Ectoderm.—Epidermis with its derivatives; central and peripheral nervous system; epithelium of the sense organs; lens.
Mesoderm.—Back segments (voluntary muscles); side plates (all epithelium of urogenitary system, epithelium of pleuro-peritoneal cavity).
Entoderm.—Epithelium of entire intestinal canal with appendages (liver, pancreas, lungs, &c.); epithelium of bladder; gustatory papillæ.
Mesenchyme.—Skeleton; sclerotics; heart, blood-vessels and blood, ? spleen, ? lymph glands and vessels; fibrous tissue, ligaments, involuntary muscles.

The question arises whether the patients exhibit other phenomena which would point to abnormalities in, or to inferiority of, the mesenchyme organs. In the father we find a premature degeneration of the corneæ (arcus senilis) and of the blood-vessels (severe arterio-sclerosis at 54 years of age), besides which the ears stand right out from the head. In the elder daughter the jaws are too small and the lateral incisors are planted inwards. Both little fingers are in radial adduction to the metacarpo-phalangeal joint. All three patients are of slender build and small size and the palate is very high. No further abnormalities were found in the patients, who are very intelligent. The father has scars of tuberculous fistulas in the neck and shows retraction of the top of the left lung.

Inquiry into the Members of the Family.

The patient could furnish information concerning no fewer than 244* members of his family, extending over five generations. Consanguinity did not occur nor any trace of lues.

Of the 244 members of the family 59 are here represented in a genealogical tree. I was enabled personally to interrogate or examine 40 of them. In order not to impede the general view the Groups (*a*), (*b*), and (*c*) have not been included in the diagram.

Group (*a*): Containing father and mother of (*a*), his brothers and sisters and their descendants. Information could be got about 83 individuals of this group. Among them I mention: 1† *hæmophilia* (son of daughter of ancestors); 1† epilepsy; 7 cases of tuberculosis.
Group (*b*): Containing father and mother of (*b*), her brothers and sisters, and their descendants. Information could be got about 69 individuals of this group. Among them I mention: 1† congenital deformity of heart (grandchild of ancestors); 1† born lame, 1† dwarf (great-grandchildren of ancestors); 1 hunchback; 6† tuberculosis.
Group (*c*): Containing father and mother of (*c*), her brothers and sisters, and their descendants. Information could be got about 33 individuals. Among them I mention: 2 hunchback (children of ancestors); 3† lymph gland tuberculosis (2 children and 1 great-grandchild of ancestors); 1 severe rachitis (grandchild of ancestors).

Observations with regard to Groups (*b*) and (*c*) I shall omit. In Group (*a*)—that is, the grandfather of my patient and his descendants, excluding the branch of my patient's father—there is an individual, the son of a daughter of the sire of the family, who died from hæmophilia at the age of 8. We may assume that Group (*a*) conceals even more individuals suffering from hæmophilia, but in any case the hæmophilia, which recurs in later generations, is due to the ancestral pair which head this group.

A list is given of the various congenital and hereditary abnormalities exhibited by the individuals in this genealogical tree.

(1) C.W. + brothers and sisters. (2) C.W. + 3 children. (3) 59 members of the family (including C.W. and children). (4) 33 members of the family (excepting C.W. and children).

—	(1)	(2)	(3)	(4)
Number of individuals	6‡	4‡	59	33
Blue sclerotics	1	3	4	1
(Blue sclerotics*)	(3)	—	(7)	(7)
Brittle bones	1	3	3	—
Hæmophilia	2	1	4	3
Cong. vit. cord.	—	—	1	1
Cleft palate	1	—	1	1
Rachischisis	—	—	1	1
Total abnormalities	5 (8)	7	14 (21)	7 (14)
Individuals affected	5	3	9 (16)	6 (13)
Abnormalities per individual	0·84 (1·33)	1·75	0·24 (0·36)	0·13 (0·26)

* In the cases of blue sclerotics given in brackets the discolouration was less intensive. ‡ Examined.

This number is a minimum and would probably prove even greater after a very careful examination. Two individuals who each had a bone fracture (at 12 and 44 years respectively) are not indicated as suffering from brittle bones. Two individuals are marked as having suffered from severe rachitis; it is not at all impossible that it was some other, perhaps hereditary, abnormality of the skeleton, and we may also ask whether severe rachitis does not point to an inferiority in constitution of the skeleton. It was my intention only to employ the fixed minimum of the certain cases of inferiority as the basis for my remarks.

The table proves the enormous number of congenital abnormalities of the mesenchyme organs in this family. We have before us a family in which hæmophilia occurs hereditarily. But the inferiority of blood and blood-vessels is not seen exclusively in the presence of hæmophilia; a congenital defect of the heart shows in what a labile equilibrium the constitution of this organic system is found. Brittle bones do not yet occur, but the constitution of the skeleton already shows signs here and there of labile equilibrium; the cleft palate and rachischisis are there to prove it. Blue sclerotics, although less intensive than in my patients, are already found in several individuals, and one of them has, besides, an embryotoxon.

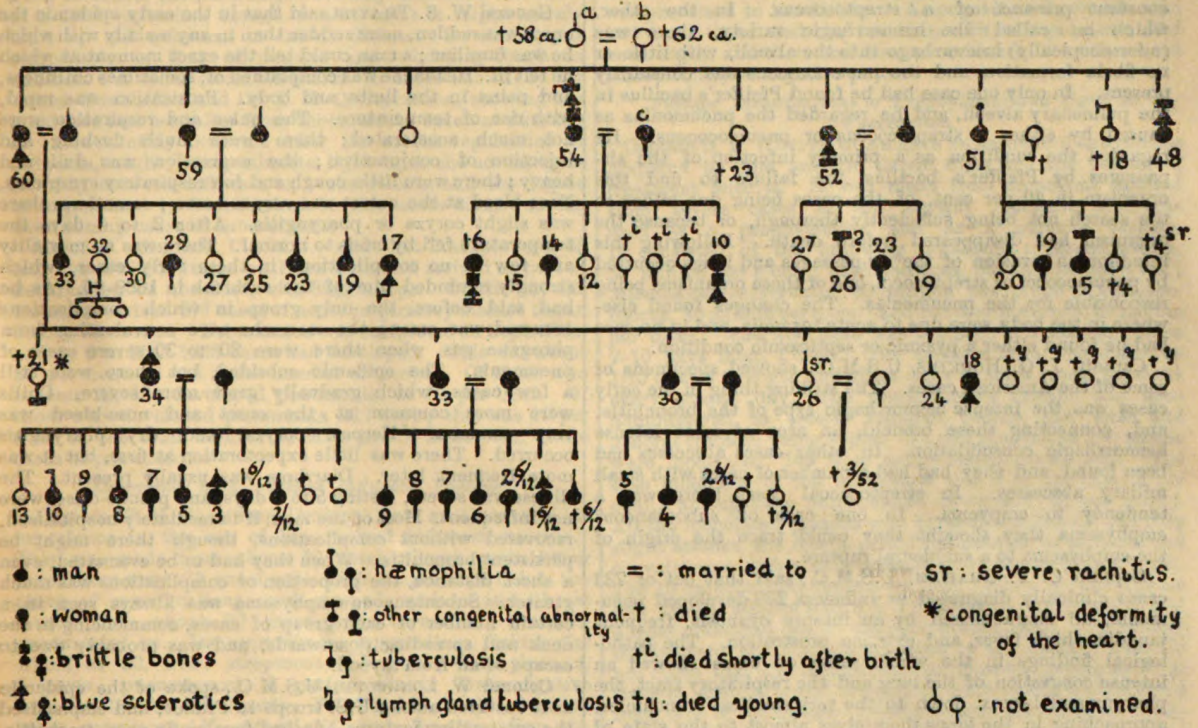
All the abnormalities above described relate to the mesenchyme organs, but of certain mesenchyme organs no abnormalities are here mentioned. These are the spleen, the lymph glands and vessels, the fibrous tissue, the ligaments, and the involuntary muscles. The descent of the

* Infants that died before attaining the age of 2 years are not taken into consideration.

spleen from the mesenchyme is very doubtful, and we know so little about its physiology that it would not be surprising if an inferiority of this organ had not been found clinically. As to the lymph glands and vessels, the number of cases of lymph-gland tuberculosis in this family is striking, whereas the relation of frequency between tuberculosis of the lymph glands and that of other organs is very large. Possibly the diminished resistance of these organs against infection with the bacilli of tuberculosis must be considered as a sign of inferiority. Finally, it is not remarkable if inferior tissues concealed in the body, when their functions are not of great importance, do not show any appreciable abnormality. Further, I need only mention that many women, and also some of the men, belong to the type of the so-called habitus atonicus, without deciding whether this should be considered as a proof of congenital inferiority of the ligaments.

On summing up the above, I am of opinion that the grounds here developed form a strong support for the hypothesis of an hereditary inferiority of the mesenchyme.

Genealogical Chart Illustrating the Inheritance of Blue Sclerotics, &c., through Four Generations.



A possible objection is that the inferiority of these systems of organs was due to some deficient organ or other. The thought of an organ with an internal secretion naturally suggests itself. Such an organ is, however, not only unknown, but its existence is improbable. Moreover, even after a very careful examination of these patients no single abnormality of any of the blood-glands was discovered.

Significance of the Hypothesis.

The presence of an hereditary inferiority in one of the four groups in which the embryonal cells are differentiated in the very earliest stage of development is of far greater general significance than to give an explanation of the origin of the abnormalities found in this family. It is a working hypothesis. It seems to be very important to follow up the combinations of hereditary abnormalities with other symptoms of degeneration in one and the same family. Have such hereditary inferiorities of the whole or of the greatest portion of the mesenchyme been known to occur? Can they likewise be restricted to one germinal layer to the exclusion of the mesenchyme and of the two other germinal layers? Numerous examples appear to point that way.

Among many questions I shall only mention one more: How far can the degeneration of a germinal layer or of the mesenchyme proceed in a family before the other germinal layers also begin to degenerate? In January, 1916, Professor van der Hoeve stated at the Medical Society at Groningen that, together with de Kleyn, he had discovered deafness as an accompanying symptom of brittle bones and blue sclerotics. Professor Burger examined the ears of two of my patients and of two members of their family. All four suffer from typical *labyrinthine deafness*, an hereditary ailment *par excellence*, but an affection of an ectoderm organ. On the other hand, van der Hoeve and de Kleyn and also Bronson found in their patients otosclerosis (mesenchyme), although both the two former and the latter observed in one patient a combination of otosclerosis and labyrinthine deafness. According to the investigations of Kishi, Quix, and van Lennep the atrophy of the Cortian organ in certain labyrinthine abnormalities (in the dancing mouse, for instance) is most probably caused by a primary affection of the stria vascularis, a product of the mesenchyme. The possibility is, at any rate, presented that the affection of the labyrinth in my patients is a further proof of an inferior mesenchyme.

This example shows that an examination based on this working hypothesis may present difficulties, and there is no doubt that their number will not be small. I need only mention the critical classification of congenital and hereditary abnormalities, of symptoms of inferiority in constitution and pathological abnormalities *sensu strictiori*, especially when these occur in the individual in the embryonal stage. Further, a high degree of discernment will be required to distinguish between an abnormality and its inevitable result on the one hand and two consequences of one and the same cause on the other. Moreover, descriptive embryology has yet many secrets to reveal and the experimental branch of this science is still in its infancy, whereas anatomy, physiology, and pathology will but too frequently be unable to furnish the so ardently desired information. But this is no reason why one should allow the explanation of the spontaneous experiments exhibited in nature to pass by with a *non possumus*. If the inductive method does not lead us to the goal, we may at least expect that the deductive method will create numerous questions and points of view the answer to which will add an inducement to prosecute the search. If this hypothesis, even if it should prove to be incorrect, can in any way further this end it will not have been fruitless.

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Medical Societies.

ROYAL SOCIETY OF MEDICINE.

Resumed Discussion on Influenza: Morbid Anatomy.

IN continuing the discussion on influenza which was reported in THE LANCET of Nov. 23rd (p. 704), Dr. B. H. SPILSBURY, discussing the morbid anatomy of the condition, gave an account of the post-mortem findings of 20 fatal cases, 15 occurring in persons between 10 and 37 years of age, the remainder being infants. The most constant condition found was acute inflammation of the air-passages of the vivid "flaming" variety, with abundant purulent exudate in the upper air-passages. He had found an organism having the morphological characters of Pfeiffer's bacillus in the air-passages in 12 out of the 20 cases. In 16 cases there was acute broncho-pneumonia of two types. The first variety was a typical acute suppurative bronchopneumonia, with a tendency to abscess formation and the constant presence of a streptococcus. In the other, which he called the hæmorrhagic variety, there was (microscopically) hæmorrhage into the alveoli, with little or no fibrin formation, and the pneumococcus was constantly present. In only one case had he found Pfeiffer's bacillus in the pulmonary alveoli, and he regarded the pneumonias as caused by either a streptococcus or pneumococcus. He regarded the condition as a primary infection of the air-passages by Pfeiffer's bacillus, the failure to find this organism in 40 per cent. of the cases being due either to the search not being sufficiently thorough, or because the organism had disappeared before death. Following this infection an invasion of the air-passages and lungs occurred by pneumococci or streptococci, one of these organisms being responsible for the pneumonias. The changes found elsewhere in the body were due to acute toxæmia, and in no case had he found either a pyæmic or septicæmic condition.

Captain J. G. HOPKINS, U.S.M.C., showed specimens of some of the American cases. The striking thing in the early cases was the intense hæmorrhagic type of the bronchitis, and, connecting these bronchi, an area of most intense hæmorrhagic consolidation. In other cases abscesses had been found, and they had had a number of cases with small miliary abscesses. In streptococcal cases there was a tendency to empyema. In one case of subcutaneous emphysema they thought they could trace the origin of the emphysema to a subpleural rupture.

Captain C. F. GRAHAM, U.S.M.C., said that out of 723 cases clinically diagnosed as influenza 239 developed pneumonia, all characterised by an intense cyanosis, frequent jaundice, high fever, and extreme prostration. The pathological findings in the whole series of cases showed an intense congestion of the lung and the respiratory tract, the pharynx and larynx, down to the very smallest bronchioles, approaching in the lungs themselves almost to the state of hæmorrhage. The very frequent presence of the hæmolytic streptococcus gave rise to their conception of the situation—that the streptococcus was the organism most commonly concerned.

Clinical Picture: Bacteriology.

Surgeon-General Sir BERTRAND DAWSON, speaking from the clinical side, said that although the onset was generally acute it might be subacute or insidious, and the disease might start in the throat and not in the nose. The graver form might come on immediately or as late as the sixth day. The seriousness of the cases depended for their characteristics upon the relative prominence of (1) the septicæmia, and In that of the septicæmic cases the patient is in the lying (2) the amount of involvement of the respiratory tract and its nature. In each type the clinical picture is distinctive. posture, breathing quickly, and of a blue colour approaching heliotrope, but there is no true dyspnœa; the patient is fully aware of his surroundings; the heart is rapid and the blood pressure low; there are no physical signs in the lungs except perhaps a few scattered rhonchi, and there is no sputum. There may be purpuric patches and perhaps subcutaneous emphysema. The pulmonary varieties include the broncho-pneumonic cases, hæmorrhagic or suppurative, with dullness, tubular breathing, and increased vocal resonance. Where bronchitis dominates the patient looks obviously ill and suffers from respiratory distress; in the lungs there are scattered rhonchi and large areas of silence; the percussion note is high-pitched and resonant, and the patient is sucking in the lower intercostal spaces; the bronchi are filled with purulent glutinous exudate. In the pulmonary type the findings are the same as in lobar pneumonia. He thought that the difference in the result of bacteriological investigation was due in part to the different methods employed, the difficulty in finding Pfeiffer's bacillus, and the date of the disease on which the examination was made. Evidence tended to show that Pfeiffer's bacillus did play a dominant part; its rôle was a pioneer one in that it prepared the way for other organisms. Its habitat was limited, but it might penetrate deeply, though not to any great extent. With regard to the other organisms, their morphology mattered less than their virulence. In the virulent cases the streptococcus was more often found than the pneumococcus. Diplococci were also found in some cases, and sometimes, on frequent subculture, returned gradually to the pneumococcal form.

Colonel H. FRENCH'S pictures, which were taken at Aldershot, were then exhibited, showing the flushing and cyanosis.

Experience of U.S. Medical Officers.

General W. S. THAYER said that in the early epidemic the onset was sudden, more sudden than in any malady with which he was familiar; a man could tell the exact moment at which he felt ill. Headache was complained of, sometimes chilliness, and pains in the limbs and body. Prostration was rapid, with rise of temperature. The pulse and respiration were not much accelerated; there were much flushing and injection of conjunctivæ; the expression was dull and heavy; there were little cough and few respiratory symptoms. Nose-bleed at the outset was very common; sometimes there was slight coryza or pharyngitis. After 2 to 4 days the temperature fell by crisis to normal. There was no mortality and few or no complications in these early cases, which strongly reminded him of the outbreak in 1889–90. As he had said before, the only group in which complications occurred was among the men who were convalescing from phosgene gas, when there were 20 to 30 severe cases of pneumonia. The epidemic subsided, but there were still a few cases, which gradually grew more severe. Chills were more common at the onset and nose-bleed was very common. Herpes, coryza, and dry pharyngitis occurred. There was little expectoration at first, but it was more frequent later. Diarrhœa was usually present. The illness was severe, lasting 5 to 6 days, and pseudo-crises were not infrequent. Most of the men, if immediately hospitalised, recovered without complications, though there might be persistent bronchitis. When they had to be evacuated, even a short distance, the proportion of complications was much greater. Subcutaneous emphysema was always seen in a certain number of each group of cases, commencing in the neck and spreading downwards, and was probably due to escape of air from alveoli.

Colonel W. LONGCOPE, U.S.M.C., spoke of the epidemic as it occurred among U.S. troops in France, and emphasised the outstanding features—flushed face, puffy eyes, tracheitis, pains in back and in joints and bones and occasionally in muscle, the tenderness of the leg muscles being extremely noticeable. He had the impression that there were two infections—a primary infection and an infection of the respiratory tract, usually pneumonia. He drew attention to two other features. The patients at Brest, who had just landed from the boats, were emaciated, cyanosed, delirious or in coma, and always died. This was probably due to the difficulty in treating on board. In the subacute cases râles and expectoration (purulent) persisted, though the patients were much better. X rays showed scattered shadows throughout the lung. These patients might possibly recover, though some bronchiectasis would remain. Immediate hospitalisation was necessary. Segregation and isolation were equally important, by means of which hospitals had been able to prevent the spread of the disease. In one hospital the patients were segregated according to the germ found. They were at first isolated, and those in whom streptococci or pneumococci were found were placed in another room, as a result of which very little pneumonia developed.

Etiology.—Pulmonary Tuberculosis as a Late Complication.

Mr. HERBERT TILLEY said that in other epidemics pneumonia was regarded as a secondary infection, spreading from the upper air-tracts, whereas in this epidemic he had seen very few cases of complications in the upper respiratory tract, although pus had been very frequently found post

mortem in the sphenoidal sinus. He thought that Pfeiffer's bacillus opened the way in the upper air-passages, and then the pneumococcus, which was always present in the healthy nose, spread to the lungs.

Dr. R. MURRAY LESLIE said that practically no reference had been made to a very formidable late complication—pulmonary tuberculosis. A large number of cases occurred exhibiting symptoms and signs of tuberculosis, including positive bacillary sputum, some months after an attack of influenza. He had had under his care at a metropolitan military hospital during the past few months young soldiers who showed symptoms and signs of tuberculous disease within periods varying from a fortnight to four or five months after an attack of influenza, some of the influenzal histories coinciding with the April and June epidemics at the front. He thought that true influenza often acted as the spark which lights up the conflagration, and that it was a wise precaution to be doubly careful in the convalescent stage of influenza in the case of patients with a constitutional or family predisposition to tuberculosis. In a few instances influenza might actually determine the onset of a fresh infection, though in most cases it might merely light up old quiescent or latent disease. Its action was comparable to that of measles and whooping-cough in children. A series of curves similar to those shown by Sir Arthur Newsholme and Dr. T. H. C. Stevenson, showing the incidence and mortality from tuberculosis, taken at monthly or three-monthly intervals after the recent epidemics of influenza, might throw valuable light upon the actual relationship between influenza and tuberculosis, and the degree of importance to be attached to this acute disease as the determining cause of tuberculosis.

Major F. MEADER, U.S.M.C., said that Transport No. 56 left the United States on Sept. 14th and arrived at port of debarkation on the 21st, with 5951 troops. On the day the transport arrived 574 cases of acute respiratory disease began among the troops. Debarkation was completed on Sept. 25th, and by Oct. 25th 1688 cases had developed. This was about 28 per cent. of the total number of troops. Of those who became ill, 534 developed pneumonia, or 32 per cent. Of those who developed pneumonia 317 died; this was 19 per cent. of the total number of cases and 59·3 per cent. of the cases of pneumonia.

Experience with "Mixed Influenza Vaccine."

Captain W. E. CARNEGIE DICKSON gave an account of his experience in the use of his "mixed influenza vaccine." This was made from about 50 cases, throat swabs being taken from some 20 cases with high temperature before the onset of complications, and washed sputum and throat mucus from about 30 cases with bronchitis, broncho-pneumonia, &c. Its approximate composition, taking the whole at 20, was: streptococci, 5 parts; staphylococci, 5 parts; pneumococci, 3 parts; minute Gram-negative influenza-like bacilli, 3 parts; Friedländer's bacilli, 2 parts; other organisms (*M. catarrhalis*, &c.), 2 parts. For prophylactic use 60, 100, and 150 millions were given to adult males at weekly intervals, 40, 60, and 100 millions to adult females, and the amount of reaction produced by these doses appeared suitable in the majority of cases. After testing the dose on healthy persons it was tried on influenzal cases with temperature but no pulmonary complications. The results were considered beneficial, in most cases apparently the disease was shortened and the occurrence of complications was prevented. The vaccine was then tried on cases of purulent bronchitis, broncho-pneumonia, &c., beginning with doses of 20, 40, 60, 80 millions, at intervals of 3 to 4 days according to the severity of the case, with some success when the patients were not actually moribund, though there were not yet a sufficient number of cases upon which to base a scientific opinion. He had given the vaccine prophylactically to about 150 persons, and, so far as he could ascertain, only two had developed anything resembling influenza, and these were doing well. Captain Dickson also referred to the question of the influenza carrier. In his hospital practice one of the most noticeable features was the frequent occurrence of small Gram-negative influenza-like bacilli in many of the cases of chronic bronchitis in which, clinically, the suspicion of the presence of influenza had not arisen. They conformed culturally and morphologically with Pfeiffer's bacillus, and these patients constituted, he was convinced, the reservoir of influenzal infection in this country.

Prophylactic Vaccination.

Surgeon-Captain P. W. BASSETT SMITH, R.N., gave an account of the prophylactic vaccine which had been prepared in quantity at the Royal Naval College, Greenwich, and distributed to the depôts and to ships of the Grand Fleet to be given to all on a voluntary basis. Its composition was as follows:—

B. influenzæ (3–5 strains)	60 million per c.cm.
Streptococci (,,)	40 ,, ,,
Pneumococci (,,)	200 ,, ,,

Dose: 1st inoculation, 0·5 c.cm.; 2nd inoculation, 1 c.cm.

In sending out the vaccine directions were given that it was not to be used if acute catarrhal symptoms or fever were present. One medical officer reported that in the course of the inoculations 10 cases occurred. Four of these had received one dose on the day of onset only. All ran a very mild course. Of the 6 not inoculated 2 were mild and 4 severe, with one death. This pointed to the value of the vaccine even in the early stage. At Greenwich 1000 boys at the Royal Hospital School had received both inoculations and no case had occurred among them, though the disease was prevalent in the district. Amongst the thousands who had been inoculated the reaction, with one exception, had been slight, and there had been no evidence of an increased susceptibility or negative phase.

Further Investigations of Prophylactic and Curative Vaccination.

Captain H. E. WHITTINGHAM gave an account of the vaccine prepared by him and Dr. Carrie Sims and the results of treatment with it. It was made from organisms isolated from severe cases in the present epidemic and was used as a prophylactive and as a curative vaccine. It consisted of the following organisms: Streptococcus, 50 million per c.cm.; pneumococcus, 50 million per c.cm.; *Micrococcus catarrhalis*, 50 million per c.cm.; meningococcus, 20 million per c.cm.; and *Bacillus influenzæ*, 20 million per c.cm. The first dose was ½ c.cm., the second, given 7–10 days later, 1 c.cm. The curative dose was made up 1/10 of this strength and given daily in some cases, in others every second day. The prophylactive vaccine had been administered to several hundred people, the local and general reaction being slight. In one institution 156 people were inoculated, 149 were uninoculated—total 305. The case incidence of the inoculated was 8 in 156 (i.e., 5 per cent.), amongst the uninoculated 18 in 149 (12 per cent.). All the inoculated persons who developed influenza had only slight attacks, the febrile period terminating in 48 hours and convalescence being well established by the end of a week. The 18 uninoculated persons who fell victims to the disease had typical attacks with a 5–7 day course in the milder and a more prolonged one in the complicated cases. Pulmonary involvement was distinct in seven of the cases. They did not claim that the vaccine was an absolute preventive, but thought that it would abolish or modify considerably the toxic type of the disease. The dose used as a curative vaccine was in all cases 1 c.cm., containing 5 million each of streptococcus, pneumococcus, and *M. catarrhalis*, and 2 million each of meningococcus and *B. influenzæ*. The first injection was given as soon after admission as possible and repeated daily until the temperature fell to normal. The results showed that cases which were seen early might have their course cut short by a large dose of the vaccine before toxæmia had time to set in. In toxic cases, or those with high pyrexia, antistreptococcal serum 20 c.cm. was given, and 10 c.cm. thereafter daily for 3 to 4 days; vaccine might be given also. As regards serum treatment, cases treated early in the disease had a far greater chance of recovery than those treated late. All cases were severe. Of those injected with serum before the sixth day all recovered—i.e., 6 out of 6, whilst those injected after that day—6 all told—died.

Serum Treatment.—Salicin.

Major G. NEWTON PITT, R.A.M.C., said that hæmorrhagic sputum occurred with streptococcal infection, rusty sputum with pneumococcal, and purulent sputum was invariable with streptococcal infection combined with that of *B. influenzæ*. He regarded the toxic and lethargic cases as almost hopeless from the first. He had seen some benefit occasionally in the lethargic and toxic cases from antistreptococcal serum, 20–40 c.cm.

Lieutenant-Colonel C. E. COOPER COLE, C.A.M.C., spoke of 125 cases treated by polyvalent antistreptococcal serum as supplied by Burroughs and Wellcome or Parke, Davis & Co.

The best time for administration was the earliest possible after onset. Early mild cases cleared forthwith. In extremely toxic cases there appeared to follow a reduction in the toxæmia; many patients who appeared about to die in two or three days held on for about ten days.

Mr. E. B. TURNER gave his experiences of treatment by salicin, which seemed to have a remarkable effect in cutting short the disease, preventing complications, and destroying the infectivity of the patient. The longer the treatment was delayed the longer the disease lasted. Very large doses were necessary (ordinary doses being quite useless), so that from the beginning the patient was drenched with salicin. He began by giving 20 gr. hourly for 12 hours. Less than this was of no value. It was best given in a cachet. He had tried salicylate of soda, but the effect was not so good. There was buzzing of the head and sometimes delirium. He had used these large doses of salicin in patients with heart disease with no ill-effects whatever.

MEDICAL SOCIETY OF LONDON.

Inheritance and Acquirement of Disease: A Study of the Rejected.

A MEETING of this society was held on Nov. 25th, Dr. A. F. VOELCKER, the President, in the chair, when Colonel J. G. ADAMI, C.A.M.C., gave an address on the Physical Census.

With the onset of the war, Professor ADAMI said, we were fully prepared for the preliminary physical examination of the would-be soldier, and when from voluntary we passed to what may be termed, if not "impressed," certainly "impressive" service, and from this to conscription of all men of serviceable age, it was scarcely noticed that at a bound we had established, under the Ministry of National Service, a physical census of the active manhood of the British Isles, and in November, 1917, for the first time, had placed ourselves in a position to gain a comprehensive grasp of the quality of that manhood, of its efficiency and its deficiencies. No civilised country has so dense a population, and none so large a section of population which for an equal number of generations has led a factory existence with all its known attendant effects upon the physical well-being of the individual and his offspring. The figures collected have not yet been fully analysed, but certain National Service Commissioners have already made the necessary analyses for their districts, showing results gravely below the average. Thus for a small West Midland group of those of 18 years one Commissioner finds 660 per mille in Grade I. From a Northern city another obtained 531; in a busy manufacturing town of the Midlands the number was 573; whereas in certain Midland country districts it rose to 805 and 819 per 1000. With such figures as these last it cannot be said that Dr. Keith has placed too high his "Bogey," based on an analysis of the measurements of 1000 Cambridge students.[1]

Statistics of a Representative Section of England.

I am indebted to Sir James Galloway for the monthly statistics for the first half of this year of all the districts in a representative section of England—representative in that it embraces areas which are some of them predominatingly agricultural, others mining, others industrial, among the latter one of the greatest textile centres, and one of our most noted centres for munition factories and workers in metal; along with these there is an important seaport. Taking the Grade I. men alone for April, we have the following figures:—

—	No. examined.	No. Grade I. per mille.
A mining area	7030	703
A munition (metal work) area	8919	660
An industrial area (cotton, jute, &c.)	5295	623
An agricultural area	2871	613
A seaport and shipping area	1238	491
A textile area (woollens)	5001	405
A textile area („)	2933	384

Here, granting that we deal with men of the same age-period, we have indications to an even greater extent of the loss of effective man-power in certain classes of the community, and these indications are supported by the fact that it is not in one month's returns only, but month after month the proportion of Grade I. men are materially lower in certain districts than they are in others. The indications are those of a condition so serious that for this reason alone it is essential that the Ministry of National Service continue its work after the war, if only to probe thoroughly into this matter of the relative health and efficiency of our manhood in different districts engaged in different occupations. As a basal investigation it is evident that what is now needed is an analysis of the medical history sheets for 1918, if not of the whole country, at least of areas devoted to special pursuits, or, better still, of those engaged in special occupations, in order to observe the primary condition of those engaged and the progressive effect of those occupations upon the physical state of the workers. We need an analysis of the physical state of, say, 1000 workers in each important occupation belonging to the quinquennia 18–23, 23–28, 28–33, and so on. With this we will possess a sound foundation, and provided with this we will for the first time be able to make positive statements regarding the state of our adult population.

Causes of Rejection in an Industrial Area.

Between Jan. 1st and June 30th, 1918, 24,281 men between the ages of 18 and 51 were examined in a large Yorkshire town. Of these, 1770 (or 72·8 per mille) were placed in Grade IV. There were in addition 74 class M. men so "obviously unfit" that medical examination was dispensed with. It is to be noted that in this area several thousands of miners were called up for examination up to the age of 35 years, and the Deputy Commissioner calls attention to the fact that the majority of the rejections occurred between the ages of 20 and 30. I have arranged his data, not as he did according to relative frequency, but in classes according to the cause of rejection.

Analysis of Main Headings of Causes of Rejection in 1844 Cases in an Industrial (Mining) Centre.

I.—*Infections and their Results.*

—	No. of cases.	Percentage of rejections.	Percentage of total examined.
Tuberculosis (Pulmonary tuberculosis, 468 cases or 25·3 per cent.)	584	31·6	2·3
Valvular disease of heart	188	9·0	0·7
Infantile paralysis	69	3·7	0·29
Otorrhœa	41	2·2	0·17
Chronic bronchitis	39	2·1	0·15
Rheumatoid arthritis	26	1·4	0·1
Disordered action of heart	10	0·5	—
Totals	957	50·5	—

II.—*Injuries and Occupational Conditions.*

Amputations	104	5·6	0·42
Varicose veins	98	5·3	0·4
Injuries (head, back, and extremities)	81	4·9	0·33
Opacity of cornea	12	0·6	0·04
Miner's nystagmus	11	—	—
Flat foot	11	0·6	0·04
Hallux valgus	11	0·6	0·04
Ventral hernia (post-operative)	7	0·4	0·02
Totals	335	18·0	—

III.—*Nutritional and Chronic Disorders and Intoxications.*

Chronic nephritis	48	2·6	0·19
Knock-knee	11	0·6	0·04
Cataract (excl. congenital)	10	0·5	0·03
Amblyopia and amaurosis	6	0·3	0·02
Exophthalmic goitre	1	—	—
Totals	76	4·0	—

IV.—*Conditions in the Main of Antenatal and Natal Origin.*

Epilepsy, major and minor	70	3·7	0·29
Idiocy and arrested mentality	53	2·8	0·2
Talipes	18	0·9	0·07
Myopia	18	0·9	0·07
Dumbness	10	0·5	0·03
Diabetes	6	0·3	0·02
Neurasthenia	5	0·2	—
Other inherited and congenital conditions	11	0·6	—
Totals	191	10·0	—

V.—*Conditions in Part of Antenatal Origin, in Part Nutritional, Occupational, or Infective.*

Curvature and deformity of spine	34	1·9	0·14
Poor physique	30	1·5	0·13
Inguinal hernia	11	0·6	—
Totals	75	4·0	—

[1] THE LANCET, Oct. 19th, p. 542.

The outstanding feature in this analysis is that eminently preventable causes constitute much the greater portion of the headings. Infectious disorders and their results constitute more than half, tuberculosis of all orders roughly one-third, pulmonary tuberculosis just over one quarter. Here in an industrial centre injuries and amputations constitute one-tenth of the causes. What I would urge as the programme for the new future is: Continue the physical examination of young manhood; from its results determine where we are at fault, ruthlessly wage war against those conditions which lower the vitality of our people, and thereby raise the general level of health and strength of our people. And with this, by the establishment of adequate grading, recognise and encourage the best and strongest among our people to the end that, mating worthily, they may propagate a sound, strong stock, and lead in the improvement of the race.

Discussion.

Sir JAMES GALLOWAY referred to the need for secrecy during the war concerning the strength of the drafts for the front which the country was able to send, for no civil department's information would have been of more value to the enemy. The facts supplied to the Premier, on which he based his remarks on the nation's physique, may have been given with the same predominant idea, though Mr. Lloyd George's instinct enabled him to approach surprisingly near to the truth. At that time, however, our enemies were too much concerned with the immediate prospect to pay much attention to that declaration. Now that hostilities were at an end the information which had been collated during recruitment, and which was now being collected and analysed by the Scientific Committee of the Advisory Board, should be presentable to the nation, and he hoped these statistics would form one of the most useful bodies of figures for the hoped-for Ministry of Health. Sir James Galloway described the way in which the National Service medical boards were set up and the careful selection of examiners for the work was made. A very workable scheme of codification had been set up as a result of 12 months' industry, and he distributed among Fellows copies of the schedule in which this was set forth. He spoke also of the work of examination of women in the W.A.A.C. —a less numerous body—under Miss Turnbull, who was assisted by Miss Cameron. A special type of medical man and woman was needed for this work, and those selected had had 12 months of careful training. Consequently, information of vital character was available for 2½ to 3 million people. Concerning many of the results obtained, the Premier's term "appalling" was not in any way too strong, though the results and the proportions of fit men varied very steadily with the kind of occupation followed. Among colliers 72 per cent., 77 per cent., and in one case 81 per cent. were Grade I. men—i.e., men of military age. In contrast to these gratifying figures, cotton weavers yielded 19·6 per cent. Grade I., while Grades III. and IV. amounted to 58·2 per cent. of the whole. In view of the unexpected nature of these figures, a visiting commissioner was sent down, and he reported that the grading carried out by the Board was, in general, correct. Of one day's batch of 59 men only three were found to be in fairly good physical condition. The people here were said to be hard-working and industrious from an early age; they had no time for games, and were content to be earning good money. Tuberculosis, rheumatism, and valvular disease of the heart were very rife. The people worked in a heated and vitiated atmosphere, and on emerging into the outer air easily became subject to bronchial and other troubles. Of 470 examined between two dates 218 were found to have unsuspected tuberculosis. These figures Sir James Galloway further elaborated from his returns. All this surely emphasised the need for carrying on this work of examining and codifying, and he would like to see an examination made of all at about 18 and again when they had had eight or ten years' experience of their life's work. He hoped the medical profession would do their best to make this effort a success.

Mr. D'ARCY POWER spoke of the ease with which thorough examinations could be made. The Special Appeal Board on which he sat was able to make difficult examinations in eight to ten minutes. No provision was made in Sir James Galloway's schedule for mental conditions, but perhaps that would be provided for.

Professor F. W. MOTT spoke of his work on the mental side. He was surprised to find among the inhabitants of a large asylum that 3·5 per cent. were so closely related as parent and offspring, brothers and sisters. One-seventh of the discharged men from the Army were released because of psychoses or neuroses.

Sir ROBERT ARMSTRONG-JONES spoke of the great importance of drill in young life, as shown by the remarkable fitness of the inmates of Dr. Barnardo's Homes.

Dr. E. C. MORLAND, referring to the suggestion that two or three generations of industrialisation damaged the germ cell, asked whether Professor Adami considered such damage to be permanent or was it redeemable.

Sir STCLAIR THOMSON also commented on the importance of the work, of which the medical profession had long been well aware.

Professor ADAMI replied.

LONDON ASSOCIATION OF MEDICAL WOMEN.—The meeting adjourned from Nov. 5th was continued on Nov. 19th.—After a resolution had been unanimously passed that Regulation 40 D of D.O.R.A. was useless for the purpose of diminishing venereal diseases, constructive proposals were discussed, having as their object the arrest of the present widespread increase of these diseases. The proposals included: regulations for keeping the public thoroughfares free from solicitation by either sex and the knowing transmission of venereal diseases, the raising of the age of consent, the registration of lodgings for young people, compulsory secondary technical education for young people under 18. The punishment of brothel-keepers by imprisonment without option of fine, the provision of adequate numbers of women police and the presence of women in police-courts when cases concerning women and children were being taken were also strongly urged. The conclusions reached by the association are being sent to the general meeting of the Medical Women's Federation.

Reviews and Notices of Books.

Emergency Surgery. By JOHN W. SLUSS, A.M., M.D., F.A.C.S., Associate Professor of Surgery, Indiana University School of Medicine; ex-Superintendent, Indianopolis City Hospital; Surgeon to the City Hospital. Fourth edition. London: William Heinemann. (Rebman, Ltd.) Pp. 848. 17*s.* 6*d.* net.

A BOOK on Emergency Surgery may attempt either to include an account of all surgery of an urgent nature, or to limit itself to such of the emergencies of surgical practice as may reasonably be undertaken by the general practitioner. Can it be doubted that the latter is the more useful intention, as it will be the easier of accomplishment? For such a volume is essentially one for the use of the general practitioner, the circumstances of whose work may necessitate his undertaking at short notice, and perhaps far from expert assistance, operative or other treatment which, but for the urgency of the case, he would be glad to leave to others. If, on the other hand, the author is to concern himself with every surgical emergency his book will be loaded and its more important parts obscured by descriptions of cases so rare that no practitioner may expect to meet with them, or of operations so intrinsically difficult that the danger of inexpert performance of them may be actually greater than the risk incurred in waiting for the arrival of one whose training and experience in general surgery fit him for the treatment of such cases.

In our opinion the volume under consideration falls short of success by attempting to be too comprehensive; its author clearly stated, in the preface to the first edition, that "this is surgery for the general practitioner," and so little knowledge is assumed that even a method of making an incision is described and figured, and some of the most ordinary bandages are shown (though we see no reference to the useful many-tail). But, on the other hand, we find accounts and figures of operations so difficult as exposure and suture of the heart and as cervical œsophagotomy, and of such magnitude as amputation at the hip-joint; or, again, of so little urgency as wiring of the patella. Yet there are

omissions, and the reader will search in vain for guidance in a case of perforation of a gastric or duodenal ulcer. While much of the matter is admirably sound and sufficiently lucid, much, again, is too superficially dealt with to be very helpful. Considerable attention has been devoted to the section on military surgery. The book is profusely and for the most part well illustrated, but gains nothing from the inclusion of the coloured figures 420 and 432.

A Preliminary Course of Surgery. By R. L. SPITTEL, F.R.C.S. Eng., Surgeon to the General Hospital, Colombo; Lecturer on Operative Surgery, Ceylon Medical College. With 111 figures in the text. London: Butterworth and Co. 1918. Pp. 466. Rs. 6.6.

THIS book is intended to set forth for the student the first principles of surgery, and to be an introduction to the subject for those beginning their studies. Its author hopes, however, that, as almost the entire field of general surgery has been covered, it will serve as a text-book of surgery for that class of student in India and Ceylon whose limited years of apprenticeship preclude him from the study of larger works. This hope, we think, is too ambitious for fulfilment by the book in its present form; no reasonable limitation of a student's years of study, even though the standard aimed at be not a very high one, should prevent his acquaintance with larger works than this. For the representation of the principles of surgery in this volume is too superficial to be either clear or interesting, while the development of those principles in the later chapters form little more than a collection of lecture notes.

The Practical Medicine Series. Comprising Eight Volumes on the Year's Progress in Medicine and Surgery. Vol. II.: *General Surgery.* Series 1918. Edited by ALBERT J. OCHSNER, M.D., F.R.M.S., LL.D., F.A.C.S.; Major, U.S.M.R.C.; Surgeon-in-Chief, Augustana and St. Mary's of Nazareth Hospitals; Professor of Surgery in the Medical Department of the State University of Illinois. Chicago: The Year-Book Publishers. Pp. 627. $2.50.

THIS volume contains a comprehensive review of the literature on general surgery for the year 1917. The publishers call attention to the fact that although the series is intended primarily for the general practitioner, yet the arrangement in several volumes enables those interested in special subjects to buy only the parts they want. And this volume is well worth buying, either by the general practitioner or by the professed surgeon, for few, especially in these busy times, are so well up in surgical literature as to have no need of such a résumé as this.

We have said that the book is comprehensive; in addition to that it is excellently arranged, with a good table of contents and an index; it is of convenient size, well got up, and with no less than 231 reproductions of figures and 49 plates. The volume is cheap at the price and is cordially to be recommended.

Simple Experimental Hygiene, Physiology, and Infant Management for the Use of School Teachers. By K. M. CURWEN. London: Charles Griffin and Company, Ltd. 1918. Pp. 352. 6*s*.

Miss Curwen possesses varied qualifications as a teacher; she was at one time headmistress of a provincial girls' school in Egypt, and has also been a lecturer in hygiene for the West Riding Education Committee, Her book admirably serves the purpose for which it is intended—namely, to assist teachers to make their hygiene lessons appeal forcibly to their pupils. Dr. G. W. Reid, who contributes a preface, tells us that Miss Curwen was one of the pioneers in the movement for making hygiene a live subject in elementary schools. The book is divided into five parts dealing with (1) the body, (2) food and clothing, (3) the house, (4) vaccination and the prevention of consumption, (5) the care of infants, and an appendix gives some practical hints for laboratory technique. A large number of line drawings illustrate the text, and here we believe that the author would be well advised to obtain a collaborator who will in a future edition make the pictorial part of the book as practical and up to date as the letterpress. We find specially helpful the description of apparatus required at the beginning of each chapter and the blackboard summary at the end. Into a book covering so much ground it is inevitable for a few questionable statements to slip. The infant mortality-rate is now, thank Heaven, not "160 to 170." We do not know what is the "wrong kind of sugar" in tinned milks. The child of 12 months age would, we feel sure, be better for some "hard food." And one or two names are wrongly spelled. But the whole book gives evidence of great care and accuracy, and we can cordially recommend it to school teachers, whether elementary or higher.

Applied Anatomy: The Construction of the Human Body considered in Relation to its Functions, Diseases, and Injuries. By GWILYM G. DAVIS, Pennsylvania. Fifth edition. London and Philadelphia: J. B. Lippincott Company. 1918. Pp. 630. 30*s*.

THE object of this work is to show the relation of structure to function, whether it is normal function or function disturbed or impaired by injury or disease. The present-day medical student is greedy of the practical application of his theoretical studies, and Dr. Davis's book satisfies this praiseworthy greed in complete fashion. The errors and omissions in the book when it first appeared have been more than made good in the later editions, and we can cordially recommend the work to medical students who wish to vivify their anatomical studies, and to practitioners for the purpose of recalling a sound anatomical basis for their practical deductions.

A Junior Course of Practical Zoology. By the late A. MILNES MARSHALL and the late C. HERBERT HURST. Eighth edition. Revised by F. W. GAMBLE, D.Sc., F.R.S. London: John Murray. 1918. Pp. 515. 12*s*. 6*d*.

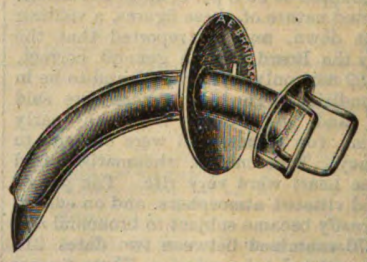
ALL Manchester medical students and many others were brought up on "Marshall and Hurst," and the book in Professor Gamble's hands meets their need now as completely as did the first edition 32 years ago. The war has even introduced a little romance into the study of biology by stopping the usual supplies of material, and Professor Gamble has found, as might have been expected, that the study of unhackneyed types has a stimulating influence on learners and teachers. For instance, the fluke to be found in the frog's intestine now replaces the liver fluke.

The book is an admirable introduction to the study of zoology; whether an elaborate study of selected types is precisely the kind of introductory biological course for medical study is another matter.

New Inventions.

A NEW LARYNGOTOME AND TRACHEOTOME.

THIS instrument is a modification of Fuller's bivalve tracheotomy tube. One valve made of the hardest steel is rendered 5/16 of an inch longer than the other and the concave edge of this prolongation is ground to form a "scalpel-edge." All the remaining borders are rounded off in the usual way. The tip of the smaller valve is made to fit accurately into the groove of the larger valve of the instrument. The inner tube projects slightly beyond the outer, which then lies in close apposition to it, so that, with the inner tube in place, the "scalpel-edge" is thrown completely out of action. The object of the instrument is to do away with the interval between the tracheal or laryngeal incision and the insertion of the tube, thus rendering the operation far more rapid, and consequently less dangerous to the patient. It prepares and accurately fits its own incision, thus allowing no escape of air or blood, and no ill-effects have been found to follow its use.



The laryngotome is made by Messrs. A. E. Braid and Co., Ltd., Gower-place, London, W.C.

A. LAWRENCE ABEL, M.B. Lond.,
Temporary Surgeon, R.N.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

Professor CHARLES ACHARD, PROFESSOR OF PATHOLOGY AND THERAPEUTICS IN THE UNIVERSITY OF PARIS.

AND

Dr. CHARLES FLANDIN, D.S.O., MÉDECIN-MAJOR DE 2ME CLASSE; CHEF DE CLINIQUE À LA FACULTÉ DE PARIS.

GENERAL REVIEW OF FRENCH CARDIO-PATHOLOGY DURING THE WAR.

By CH. LAUBRY,

PHYSICIAN OF THE HÔPITAUX DE PARIS; MÉDECIN MAJOR OF THE SECOND CLASS.

IN considering the abundant output of French works on cardiac pathology during the past four years the preponderant influence of the war must be recognised. The war has disturbed the heart by its fatigues and emotions; it has created various lesions on a vast scale by the epidemic infectious diseases which it has engendered; and, lastly, by its duration and its consumption of effectives it has rendered daily more urgent the question of the functional aptitude of the heart in terms of aptitude for military service. It is owing to the war that methods of investigation have been revised and established, and new ideas have been acquired on the prognosis of valvular and arrhythmic affections.

Overshadowed by this actual war pathology, whose chapters, inevitably arbitrary, would thus have treated of general symptomatology, organic cardiopathy, acquired or infectious, and functional disturbances, research less concerned with the pre-occupations of the moment has continued without a break. The essentials of this research will not be lost sight of, but only a brief allusion will be made thereto.

Diagnosis of Murmurs.

Search for an indisputable objective sign of a cardiac lesion should first be made by means of clinical examination, and especially by auscultation. This method seems somewhat discredited among certain of our colleagues abroad by reason of its disappointments and of the difficulties of diagnosing certain murmurs, which appear insurmountable. To avoid overcoming these difficulties it is alleged that it imports less to know the significance of a murmur than the functional capacity of the heart which produces it. Indeed, the existence of an inorganic murmur does not, as Josué has well said,[1] inevitably indicate unfitness for military service, but every case of organic murmur should be exempted from active service. We hold that, with certain experience and adhering to the principles to which Potain devoted minute study, it is nearly always possible to establish this capital distinction. I have attempted to render it accessible and practicable[2] by showing, firstly, that the important character of a murmur is indicated by the moment of its appearance in the cardiac cycle. If it is diastolic, no matter where its situation, it is always organic and betrays aortic insufficiency. Trémolières[3] thought that the situation of the diastolic murmur varied with the age of the lesion; it should have its maximum at the second right intercostal space when the lesion is old, and is accompanied by dilatation of the right cavities; it would be to the left of the sternum or mediosternal when only the left ventricle is hypertrophic. In reality the variability of this murmur is such that it appears to me to escape classification; it is sufficient to recognise it in order to avoid an error of diagnosis without seeking for the reason.

Systolic murmurs have two important characteristics, the time of their appearance and their locality; if they are holo-systolic—i.e., prolonged and heard in the whole systole—they are certainly of an organic nature; if they are situated at the base and are not followed by a diastolic murmur they are inorganic. I have ventured to differ from the opinion of Aubertin,[4] who attributed the very frequent isolated systolic murmurs of the base to aortitis in course of development. With regard to this point, it is necessary to distinguish between proto-, meso-, and tele-systolic murmurs, the last two being easily recognisable and always extra-cardiac, the first alone bearing on the discussion in exceptional cases—for instance, of cardiac acceleration. It is especially on their account that attempts have been made to modify the conditions of the occurrence of the murmur.

P. Emile Weill[5] has succeeded, by reducing the cardiac rhythm by ocular compression, in causing inorganic murmurs to disappear, which suggests a diagnostic procedure which would be simple, but is, unfortunately, not infallible. In seeking to apply it I have noticed with Harvier[6] that ocular compression modified, not only the rhythm, but also the energy of the cardiac contraction, and, consequently, certain abnormal bruits (*souffles et roulements*) of organic origin. But in these latter effects, as in its well-established manifestations, the oculo-cardiac reflex is inconstant, varying with each individual,[7] and is capable only of furnishing contingent, and not absolute, data.

The diagnosis of a murmur is almost always possible by means of its intrinsic characteristics, and it should precede other methods. The latter are no less useful, and among them radioscopy should rank first.

Radioscopy.

In their classic treatise[8] Vaquez and Bordet have already formulated the rules of the orthodiagraphic investigation of the heart and the aorta, which furnishes exact indications of the cavities in form, volume and significance, and renders control thereof obligatory in every question of fitness. Beaujard[9] has emphasised its utility in an important memoir, in which he gives a series of measurements of the ventricles, describing, with Caillods,[10] certain forms of isolated left or right hypertrophy, designating the latter "transverse heart." It is owing to radioscopy that Vaquez and Donzelot[11] were able to criticise the regrettable facility with which a soldier was said to have idiopathic cardiac hypertrophy, often said to be developmental. Very often, on the contrary, among young individuals with elongated thorax the heart is small and vertical. Vaquez and Bordet[12] have furnished a new factor, suggested by the method of localisation of projectiles—appreciation of the volume of the left ventricle, which they designate index of depth. By means of other research work they have collected these new data in the second edition of their treatise recently completed.

Arterial Tension.

The measurement of arterial tension should be the usual complement of every cardiac examination. It is practised in France with the aid of the apparatus of Vaquez and of Pachon, each constructed on a different principle. The former estimates by means of palpation of the radial artery the disappearance of the beats of the brachial artery by a counter-pressure equal to the maximum tension; the latter registers and amplifies the oscillations obtained by compression of the artery, the feeblest indicating systolic tension, the strongest diastolic. Without disparaging the excellent apparatus of Pachon, the sensitiveness of which is often deceptive for the evaluation of systolic tension, I have attempted to popularise the auscultatory method, the advantages and precision of which have been shown by Tissier (of Nevers)[13] in a series of technical articles. I have therefore adapted to Vaquez's apparatus a fixed instrument, a sort of stethoscope of resonance, by which can be noted the phases of the superjacent pressure and the data of auscultation and palpation combined. Marfan and Dorlencourt in their memoir,[14] notwithstanding their predilection for Potain's sphygmomanometer, have acknowledged the advantages of my apparatus.

The problem of graphic registration of arterial tension demands no less attention. Barré and Strohl[15] have endeavoured to find an elegant solution without adapting it to the exigencies of current practice. The auscultatory method continues to be preferred, whether my routine is adopted or whether, as Cottet desires,[16] it is limited to the binauricular stethoscope. It may and should be controlled, particularly for the measurement of diastolic pressure, by the employment of Pachon's oscillometer. The latter offers the further advantage of giving, by means of the degree of oscillations and the possibility of applying it to various limbs and segments of limbs, indications of local circulatory disturbances, of the comparative pressure of the various arteries (Cawadias[17]), and of the measurement of tension in the lower limbs, which no other apparatus can give. Heitz has employed it with success for the following purpose: to establish the average diastolic pressure in the lower limbs among normal individuals[18] and to show that in case of aortic

insufficiency, even when diastolic pressure remains invariable, relative systolic hypertension is the rule.[19] This technique has permitted him, with Babinski, to pursue his research on circulatory disturbances in paralysis of a reflex nature.[20]

Arrhythmia.

The graphic method should be reserved for the study of arrhythmia. It is regrettable that we cannot employ an apparatus as ingenious, portable, and practical as that of Mackenzie, the readings of which are practically sufficient. We remain faithful to Marey's polygraph, which has at once the precision and the faults of a laboratory apparatus. The excellent instrument recently designed by Mougeot,[21] with rectilineal tracing, may be substituted for it with advantage. The precise measurements of tracings which it is possible to obtain by means of a sliding-rule have furnished Mougeot and me[22] with information, as faithful as that of an electro-cardiogram, on cardiac energy, on the nature of extrasystoles or of bradycardia, and on the existence of scarcely perceptible alternations.

Functional Tests.

The defaults of methods of investigation has brought back into favour a series of tests the inexactitude of which was long ago pointed out by Merklen[23] and Vaquez,[24] based on modifications in the state of the pulse and arterial tension provoked by effort. Martinet,[25] Lian,[26] and Aubertin,[27] after a course of work agreed upon, drew up the curves of the acceleration of the pulse, of hypertension, and of return to the normal, the slowness of which would be the objective criterion (at once safe and simple) of the insufficiency of the heart and of the circulation in reserve energy.

Vaquez and Donzelot,[28] to whom military fitness as concerns the heart is determined from the combination of facts, do not share this enthusiasm. Lidy and the present writer,[29] in applying these tests to normal subjects and to others suffering from various heart affections, have observed contradictory and paradoxical results which have caused me to accept it with reserve. Tachycardia and arterial tension result from conditions too numerous to draw from their variations an absolute conclusion on the functional capacity of the heart. Vaquez and Donzelot add judiciously that one could do so were it not that information merely relating to insufficiency of the left ventricle cannot furnish an indication of cardiac insufficiency. These authors, though less eclectic than ourselves, like us, accord a certain value to functional tests on condition that they are interpreted in the light of a comparison with other factors. In a concise critical study Esmein[30] justly points out that they have reference to a limited and special effort. The results are inevitably inferior to those that our English colleagues obtain in their training centres and those that a wise medical man may observe in a field of manœuvres or in a barrack yard.

Brachycardia and Tachycardia.

In diagnosis of brachycardia, for the graphic method should be substituted the atropine test or amyl nitrite (Josué), injection of the former or inhalation of the latter producing acceleration of the heart in the case of brachycardia of nervous or sinus origin. Frédéricq criticises these methods in favour of experimental tests.[31] Josué and Belloir,[32] while recognising the justice of his line of argument, nevertheless maintain that a positive reaction to amyl nitrite indicates the excitation of a wave, that it results in total brachycardia, or in exceptional cases of dissociation, and that a negative reaction is proof of a lesional or toxic myocarditic brachycardia. More recently Loeper[33] used the vaso-constrictive properties of adrenalin, measuring the degree of cardiac resistance by the modifications of volume, registered by an orthodiagram, which followed upon a subcutaneous injection, and Mougeot has made attempts in the case of tachycardia with moderating injections of eserine, which promise well.[34]

Organic Cardiopathy in relation to Military Service.

The war has confirmed in an astonishing manner the fact of the remarkable tolerance of organic cardiopathy in regard to excessive fatigue. Aubertin[35] first drew attention to this in the matter of aortic insufficiency and has since confirmed it in cases of all varieties of chronic endocarditis.[36] Doctors who have been able in their hospitals at the front or at home to bring together a number of cardiac cases have drawn up suggestive statistics in this connexion (P. E. Weill,[37] Etienne,[38] Ch. Laubry[39]).

In spite of the conclusions to be drawn therefrom, which are all the more reassuring because dealing with aortic or congenital affections (Grenet,[40] Augé and Nobécourt,[41] Ch. Laubry and Marre[42]), it would appear that the authors agree in omitting to study the bearing, and in neglecting the existence of a valvular lesion in estimating fitness for military service.

As a sequel to the recent communications of Lafosse,[43] Clerc and Aymé,[44] and Gouget,[45] a discussion took place at the Société Médicale des Hôpitaux, and all agreed in excluding cases of valvular affection of the heart from active service; but some, judging by experience and allowing for certain conditions of adaptation, advise for heart cases modified auxiliary service; others, having regard to the difficulties of a rational method of recruiting these cases, request that they should be discharged.

The gravity of a valvular lesion at the front lies less in the cardiac miopragia, which is often nil or negligible, than in the vulnerability of a case of endocarditis to rheumatismal relapse, and also to all kinds of infectious attacks. One heart, the lesion in which has been definitely determined, will behave like the normal; with another, apparently less acutely affected, progressive palpitation, whether obvious or insidious, warrants a grave prognosis.

Relation between Injections and Cardiac Lesions.

In connexion with their genesis acute articular rheumatism is of the first importance, inasmuch as it has grave effects in an endemic condition, and is prevalent in trench warfare. Sometimes its onslaught is evident, at others it is masked by manifestations whose rheumatismal nature is less apparent—e.g., angina, gastric derangment—while yet at other times cardiopathy alone exists or develops, affected by salicylate (Josué, Parturier, and Berrut[46]). One of the predisposing forms, according to Nobécourt and Peyre,[47] is cervical rheumatism associated with sciatic neuralgia, in the course of which almost invariably an augmentation of volume by dilatation of the heart is discernible, either isolated or accompanied by endocarditis or acute endo-pericarditis.[48]

Scarlatina does not spare the heart, and its cardiac manifestations are as frequent among the military as among children. They may supervene in the course of a rheumatismal complication (Nobécourt, Jurie des Camiers, and Tournier,[49] Nobécourt and Gimbert,[50] Florand and Merklen[51]), or they may appear at the outset (Nobécourt,[52] Florand and Paraf,[53] de Massary[54]). They are marked by abnormal and persistent acceleration of the pulse (Nobécourt and Gimbert[55]), by endocarditis, especially mitral, occasionally by pericarditis, with the myocardiac syndrome uncertain.

The epidemics of typhoid fever which raged at the beginning of the war have confirmed the gravity and the persistence of cardiac disturbances which are frequent sequelæ thereof.[56] They similarly accompany complications of paratyphoid, but in this case are more benign and superficial, being limited at the acute stage to feebleness and inequality of the pulse and dullness of the sounds, with embryocardia (Minet[57]), rarely deep-seated, accompanied with phlebitis (Nobécourt and Peyre,[58] Parisot and Orticoni,[59] Etienne[60]). The grouping of these cardio-vascular lesions is the subject of a notable memoir by Carles and Marcland.[61]

In typhus, on the other hand, severe cardiac symptoms are the rule and myocardiac insufficiency and arrhythmia of unfavourable import. We owe to Danielopol a complete account of them, with successful attempts at treatment with strophanthin and adrenalin.[62]

Finally, mention must be made of infectious endocarditis. One form of this, which is less known in France and to which Osler in England had the distinction of drawing attention—the subacute or chronic form—has been the subject of numerous publications. Debré,[63] Denéchau and Picard,[64] Fayolle,[65] Roger,[66] have observed cases which they have studied from a clinical, anatomical, and bacteriological point of view, of which Debré gives a general summary.[67] Achard and Foix[68] have emphasised the anæmic form, Claude[69] the nervous form, of the affection. Lastly, Vaquez,[70] by means of copious valuable documentary evidence and statistics of 17 cases, brings into prominence the fatal prognosis at the expiration of a period varying from 4–14 months and two years. During the war the relation between infection and cardiac lesions, especially valvular, has been established and confirmed.

Effect of Traumatisms.

Traumatisms, in spite of their frequency and their violence, play only a negligible part in the etiology of heart disease. As a result of violent disturbance aortic insufficiency may be seen to develop (Bensaude,[71] Alex. Cramer,[72] Brossard and Heitz,[73]), but these cases, which seem *bona fide*, are excep-

tional. The question may always be asked, in the absence of necropsic findings, whether the traumatism has acted by damaging the tissues or by encouraging a latent infection, as in traumatic aneurysms or syphilis is nearly always the case. In this sense traumatic pericarditis without tissue damage has been mentioned[74]; the accuracy of this view is doubtful.

Functional Disturbances.

Acute diseases may not only create grave and distinct cardiac lesions, valvular or otherwise, but especially may cause a series of functional disturbances which will increase or diminish according as the soldier is exposed anew to the fatigues of the military life or is exempted from them. He enters in that case into the huge group of cases of palpitation or tachycardia through the gateway of infection. But that is far from being the only way of access. Sometimes it is a case of over-exertion and of an actually over-worked heart; at others the organ, affected by a violent disturbance, becomes henceforth continuously tachycardiac (Dejerine and Gascuel,[75] Laignel-Lavastine,[76] Charon and Halberstadt[77]); again, the action of asphyxiating gases may be in question (Heitz,[78] Lian[79]); while yet again, emotions whose repetition may act as a substitute for acuteness may produce progressively a condition which the emotion produced at the outset.[80]

The war has by no means created this category of patients in its entirety, as Gallavardin has justly remarked.[81] It has often merely revealed them. In time of peace these cases existed, but the subjects adapted themselves to their hearts; they adjusted their efforts and occupations to their functional capacity and thus experienced no need to have recourse to medical aid. We considered them as emotional and unstable folk; we recognised willingly the sincerity of their sufferings. But in the absence of any objective symptom we supplied a favourable prognosis and gave them as sole treatment congenial and comforting assurances. The new and onerous obligations of military life have literally encumbered the hospitals with these types of neglected cases, and on account of their frequency it has been urged that they should no longer be viewed with scepticism. In England they have called forth discussions and been the object of an authoritative report by Dr. Thomas Lewis (see THE LANCET, 1917, i., 580).

In France, too, there have been attentive observers to whom the only reproach that can be addressed is that they have not coördinated their efforts or classified their conclusions. One may recall the works of Martinet,[82] Lian,[83] Aubertin,[84] Clerc and Aymé,[85] and especially the critical review of Gallavardin,[86] in which the eminent cardiologist of Lyons does not merely analyse in detail the work of Lewis, but also furnishes a personal study, a model of brevity and modesty. Arterial hypertension appeared to Gallavardin to occur more frequently than Lewis had suggested, a view with which Aubertin agrees,[87] as also Du Castel[88] and especially Merklen,[89] who makes of it the characteristic of the syndrome and a factor in classification. It is, in fact, a contingent symptom which we have never been able to distinguish clearly, and which appears to us fleeting, transient, and often as unstable as the heart itself. When it exists it is systolic tension alone which is the cause, for we refuse to admit to this group, as Merklen does, the cases of minimum tension remaining raised in a perceptible and permanent manner. It is a question from that time of true hypertension, from varying causes, which has become tachycardiac.[90]

Diagnosis of Disturbances of Function.

It is necessary to obtain for each patient, as Gallavardin advises, with minuteness and patience a series of curves which will demonstrate the manner of the rhythm, normal curve, curve of situation, nycthemeral curve, and even the curve of emotivity. By means of this analytical study, somewhat opposed to the synthetic study, the problem of aptitude is solved, not mathematically, but clinically, in accordance with Lewis's recommendations. By making use, as I did in the hospital of Professor Vaquez, with the coöperation of my collaborators, Esmein, Mougeot, and Bordet, of a thorough clinical and radioscopic examination of the heart, by hunting out thus the cases of slight endocarditis, incipient valvular lesions, isolated dilatations of the cardiac cavities, myocarditis in course of development, which in cases over 40 years of age frequently conceals itself under a mask of tachycardia, and by eliminating cases of true and permanent hypertension, we concentrated our attention on a group of pure instabilities whose importance was easily established, and our military decisions are rarely nullified by the subsequent conduct of the subject. Our decisions are also in agreement with the discreet conclusions of Gallavardin, Clerc and Aymé, and Aubertin.[91] We decide upon discharge, auxiliary service, or modified active service either with mounted troops, or in training under surveillance, according to the gravity or persistence of the tachycardia, or to the degree of instability which is either calmed definitely by rest or in a period of a few seconds changes its rhythm in a disconcerting manner. For each case it is a question of the species of disturbance, and it is the same from the pathogenic standpoint. It must be ascertained whether the disturbances of function arise from an infection, from slight myocarditis (Lian[92]), from toxæmia, or from nervous loss of equilibrium, either constitutional or acquired, which is itself controlled by a disturbance of the internal secretory glands. In considering merely the polymorphism of the etiological factors, the dissimilar indirect elements of a syndrome, which is only uniform in appearance and of which ultimate research should tend to dissociate the constituents, the divergence of authors and the impossibility of adopting a uniform theory become comprehensible.

Tachycardia is not the only form of cardiac instability that concerns the soldier. On the other hand, arising from the same origins, but not on so vast a scale, is brachycardia analogous to the brachycardia of convalescence. It should end in recovery after a sufficiently long period of time (Binet,[93] Gouget,[94] Hirtz[95]). Several forms of this, as we have observed with Esmein,[96] are the expression of a total and persistent atrio-ventricular dissociation.

Progress of Current French Work on Cardiac Pathology.

The advance in cardiology brought about by the war, of which we have attempted to sketch the amplitude in outline, has but momentarily and feebly disturbed the normal current of French work on cardiac pathology. After a stationary period brought about by events there have appeared memoirs on the vexed questions of the physiology of the heart, its functional localisations, and the pathogenesis of certain forms of arrhythmia, as well as of others more exclusively clinical or therapeutic, and of others in which the mechanical point of view is abandoned for the humoral. It concerns us less here to analyse them than to allude to them briefly.

Petzetakis has studied the effect of the section of the cervical marrow on the rhythm,[97] and, pursuing his observations of arrhythmia, has demonstrated the possibility of an inverse cardiac conductibility with retrograde extrasystoles and post-extrasystolic ventricular automatism.[98] Pezzi,[99] by registering graphically the effects of ocular compression, has remarked the production of extrasystoles, thus contributing to the elucidation of the mechanism of the latter, which the experimental research of Pletnew has since crystallised.[100] We owe, further, to Pezzi's work a new interpretation of the gallop rhythm and the rolling sound of Flint—viz., aortic insufficiency—which he attributes, on the evidence of the tracings, to auricular hypertrophy. I will pass over the numerous irregularities which occupy so much space in the periodicals, while mentioning the form of cardiac inversion reported by Clerc[101] in a discourse on pathogenesis and embryology, which exhibited the peculiarity of not being accompanied by visceral transposition.

The variations of azotæmia among cardiac cases may arise from simple oliguria or from defective functioning of the kidney or liver. Josué and Parturier,[102] for instance, have described an azotæmia from oliguria without affection of the kidney, a renal azotæmia, as well as azotæmia from relative oliguria among cardio-renal cases and also among cardio-hepatic cases oliguria without azotæmia. The first naturally subsides under the influence of digitalis.[103]

Ch. Achard and Leblanc,[104] who have given attention to the same phenomena, assign a rôle to the variations of renal concentration, the stasis when prolonged diminishing temporarily the concentrating power of the kidney.

In conclusion, Vaquez, in elaborating his treatise on "Diseases of the Heart," adds to his records the most original chapters on his conception of angina pectoris,[105] on the symptoms of resorption of an œdema,[106] in which he traces the effect of phenomena, not merely mechanical but also toxic, analogous to anaphylactic shock, and has recently produced his "Introduction to the Study of Diseases of the Heart."[107]

This documented review of the men and methods which have gradually transformed cardiac pathology could not be better concluded than by recalling the new therapeutic methods of Vaquez. For the efficacious but dangerous

intravenous injections of strophanthin Vaquez has substituted Arnaud's injections of "onabaine," extract of strophanthus kombe, and has made from it an active medicament, not destined to supplant digitalis, but having, along with it, its proper indications, represented by a rational appreciation of the insufficiency which it is intended to combat, and which is more especially insufficiency of the left heart.[108]

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METHODS OF ESTIMATING AUGMENTATION IN DEPTH OF VOLUME OF LEFT VENTRICLE.

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If it is usually easy to determine by percussion the area of cardiac dullness and to estimate the degree of augmentation of the left ventricle in cases of considerable hypertrophy of this cavity, it is often impossible to obtain by clinical means a satisfactory estimation of the volume of the heart when it has only suffered slight modifications. Radiological methods of precision—i.e., radiography at a distance of three metres—and orthodiagraphy are the only means of obtaining information of great exactitude.

The augmentation of the longitudinal diameter of the cardiac area, the lengthening of the left margin and the accentuation of its convexity, the globular appearance of the point and its depression constitute objective signs of left ventricular hypertrophy. These signs may always be insufficiently characterised, and may occasionally be lacking when there does, in fact, exist a certain degree of hypertrophy. If, therefore, it escapes radiological investigation it is because it is not sought in the part of the organ where it manifests itself anatomically. The anterior or posterior view of the cardiac shadow indicates the dimensions of the heart in a longitudinal and transversal direction; it does not reveal its development at all in an antero-posterior direction. Thus, if it is taken into account that the left ventricle occupies but a narrow strip of the left margin and that it is situated almost entirely on the posterior portion of the organ, the conclusion suggests itself that it is in depth that this cavity develops when it becomes augmented in volume. Every method, therefore, which has for its aim the determination of the variations in volume of the left ventricle, in the direction of its principal development, will lead to the recognition of cardiac hypertrophy as early as possible after its commencement. Professor Vaquez and I[1] make use of the two following radioscopic methods:—

1. *Estimation of the angle of the disappearance of the apex of the heart in the right posterior oblique position.*—In examining an individual on the screen, placed in the dorsal position, if the body is made to describe a rotatory movement from right to left the pictures of the heart and the vertebral column travel in an inverse direction; the former is displaced towards the right, the latter towards the left, and a moment arrives when the external profile of the apical zone before disappearing becomes level with the spinal apophyses. The angle at which the shadow of the apical zone disappears increases with the extent of the globular condition of the apex of the heart and its development in depth.

To calculate this angle a goniometer is used, which gives the degree of obliqueness of the bi-scapular line with the margin of the screen. Multiple observations have led us to the conclusion that the angle of disappearance in normal individuals is 25-30°. Beyond 30° authorises the conclusion that there is an augmentation of the ventricular volume.

2. *Ascertaining the index of depth.*—This method does not require the use of any special measuring apparatus. The patient to be examined is placed in the direct anterior position, the region of the sternum in contact with the screen. The normal projection of the apical zone of the heart and its deformation by an oblique ray resulting from the lateral displacement of the tube over a fixed distance are marked off successively. It is a method well known to radiologists for the locating of foreign bodies. The conditions necessary for the experiment are obtained by a fixed screen placed at a certain distance from the tube. The greater the depth of the ventricular development the sooner will the oblique ray meet the posterior contour of the heart and the further from the normal point will its projection be. The distance between the two points of projection, marked on the screen by a pencil, constitutes the index of depth. It varies among normal adults from 7-14 mm., the screen being at 60 cm. from the focus and the displacement of the tube 10 cm. Beyond 14 mm. the development of the depth of the left ventricle is exaggerated. In cases of acute hypertrophy it reaches 20, 25, or 30 mm.

These two methods give analogous indications. They exercise mutual control, and recourse should always be had to one at least to complete a volumetric examination of the heart. The measurement of the index, on account of its great rapidity, appears to us a very advantageous method in a military centre of cardiology, where numerous radioscopic examinations must be effected daily.

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THE LANCET.

LONDON: SATURDAY, NOVEMBER 30, 1918.

The Antiscorbutic Factor.

WE publish this week a Memorandum on Food and Scurvy issued by the Food (War) Committee of the Royal Society. Comment has already been made in these columns on the practical manner in which the highest scientific authorities in this country have placed their special knowledge at the disposal of the Government, and the Memorandum is one instance of many which show how valuable the services so rendered have been. This document has been based chiefly upon investigations which have been carried out at the Lister Institute, and the statement as to the cause of scurvy has nothing new about it save the definite recognition of the presence in many foods of certain accessory basic substances the exact nature or composition of which remains obscure, but whose benign influence is indubitable. These substances are present in a number of fresh foods and are a special characteristic of oranges, lemons, and fresh green vegetables, though swedes, potatoes, and other roots and tubers contain them; they are present in traces also in fresh meat and milk. They are deficient in all dried and preserved foods, and they are destroyed, we are reminded in the Memorandum, by prolonged heating. It is further pointed out that there is no association between scurvy and tainted food, and that as alkalies destroy antiscorbutic properties soda should not be added to the water used for the cooking of vegetables. The one new observation by the Committee with regard to the cause of scurvy, it will be observed, is an omission and not an assertion; in discussing etiology the word "limes" is absent. This is significant, because the popular view, and one endorsed until lately by the medical profession, has been that lime juice, as ordinarily prepared, is a specific; it is now found to be useless for the prevention of scurvy in the preserved form which it usually takes in the Navy.

Such, at any rate, are the irresistible conclusions of the interesting communication entitled "The Relative Content of Antiscorbutic Principle in Limes and Lemons," which we publish this week, by Dr. HARRIETTE CHICK, Miss E. MARGARET HUME, and Miss RUTH F. SKELTON on the experimental side of the question, Mrs. ALICE HENDERSON SMITH contributing a historical report. The work emanates from the Lister Institute, Director's Department, and is, in fact, the careful and illuminating investigation upon which the Memorandum of the Food (War) Committee of the Royal Society is based. It was found that when the antiscorbutic value of the juice of fresh limes was compared experimentally with that of fresh lemons the former fruit was distinctly inferior. The experiments were made on guinea-pigs and monkeys. Volume for volume fresh lime juice possesses, we are told, a potency of about one-fourth that of lemon juice, and in one instance severe scurvy, which had developed in a monkey on a diet containing a small daily ration of fresh lime juice, was cured by an equal ration of fresh lemon juice. Preserved lime juice was found quite useless for the prevention of scurvy, even when the dose was pushed to the toleration limit. The experiments allow that here the age of the samples might have been held to account for their inefficiency. Experiments still in progress with preserved lemon juice have given promise already of good results.

A reference to the history of the treatment human scurvy completely confirms the experimental findings, and Mrs. HENDERSON SMITH is to be congratulated on a valuable and amusing piece of research. At the period when scurvy was eliminated from the British Navy by the agency of "lime juice" that term was applied to the juice of lemons, and it was not until the second half of the nineteenth century that the juice of West Indian limes was adopted in the Navy and Mercantile Marine. In her historical inquiry Mrs. HENDERSON SMITH quotes the history of two Arctic expeditions—that of the *Investigator* in 1850 and that of the *Alert* and *Discovery* in 1875. The former, supplied with lemon juice, experienced remarkable immunity from scurvy during the first two years of great difficulty and privation; the latter, supplied with lime juice, suffered severely from scurvy at the end of the first winter spent in the Arctic regions. The coöperation of the four authors completely establishes their theses, so exactly does the historical evidence bear out the biological research. And once again we are reminded that man is not a steam engine, though in discussions on diet the comparison is generally convenient. The calorific value of food rightly enough claims first consideration when discussing questions of efficient dietary, but it is clear that the calorie avails nothing without the coöperation of accessory substances. This is where the analogy between the requirements of the human machine and the steam engine breaks down.

The Inheritance of Abnormalities.

DAY by day cripples almost beyond number are leaving hospital or returning from distant prison camps. Some of them are already married men; many of the remainder will have the immediate opportunity of marrying. Doubt has been widely expressed in regard to the effect of such unions on the coming generation. Few, even of the uninformed, think that a wooden leg or a glass eye is handed on to offspring, but ignorance is widely spread in regard to the inheritance of abnormalities, and the present is a suitable time for re-stating our knowledge on the subject. We take as our text the interesting communication which appears on another page from Dr. VOORHOEVE, of Amsterdam, on a pedigree showing hereditary abnormalities of

several kinds—blue sclerotics, brittle bones, hæmophilia, and others. Dr. VOORHOEVE suggests as a tentative hypothesis that all these abnormalities are due to congenital inferiority of the embryonic mesenchyme, leading to abnormal effects of different kinds in the several members of the family. Whether this hypothesis is well-founded or not, the pedigree is undoubtedly of great interest, as showing the manner in which several uncommon congenital defects are transmitted. In recent years much work has been done on the inheritance of congenital abnormality, and the excellent pedigrees collected, for example, by NETTLESHIP in various affections of the eye, DRINKWATER and others in brachydactyly, and those issued under Professor KARL PEARSON'S direction in the "Treasury of Human Inheritance," show that quite a considerable number are inherited according to MENDEL'S law. Those that do so fall into three classes: (1) those in which the defect behaves as a Mendelian dominant; (2) those which are recessive; and (3) those which are "sex-limited" in transmission. A dominant character is transmitted only from an affected parent, and when the other parent is normal the expectation is that it will appear on the average in half the children. Examples of this class are brachydactyly, "split-foot," congenital cataract, retinitis pigmentosa, and a number of other abnormalities are almost certainly transmitted in the same way. In none of these does an unaffected member of an affected family ever transmit the defect. Recessive characters, on the contrary, only appear if the "factor" for the defect is received by the child from both parents. Each parent may thus unwittingly bear the "factor" without showing any trace of it, but if the germ-cells which unite in fertilisation both possess it, the child will show the defect. The best-known example of this class is albinism; others that are said to be transmitted in the same way are some forms of deaf-mutism, hereditary epilepsy, and insanity. Rare affections of this class are liable to appear most commonly in the children of first-cousins, for it is more likely that the factor will be present in both parents if each receives it from a common ancestor. Affections of the third group, showing sex-limited transmission, occur chiefly in males, very rarely in females, and are transmitted from an affected man through his daughters to half their sons. The sons of an affected man are normal and do not transmit; his daughters appear normal, but on the average half their sons are affected and half their daughters are again transmitters. Only if an affected man marries a transmitting woman can the affection appear in a female. The best known examples of this class of hereditary defect are green-red colour-blindness, horizontal nystagmus associated with deficient pigment, night-blindness, and hæmophilia.

In addition to the abnormalities which are certainly or probably inherited, according to MENDEL'S law, there are a number of others, such as, if we are not mistaken, hare-lip and cleft palate, which are undoubtedly hereditary, but which are irregular in their appearance, being sometimes transmitted direct from parent to child, and sometimes appearing in the children of normal persons who belong to affected families. It is not impossible that the explanation of this irregularity is that the character requires for its manifestation the presence of two independent hereditary "factors," neither of which alone is sufficient to produce it. When such a condition exists in animals or plants it is easy by experimental breeding to demonstrate that the coöperation of two factors is required, but when our only means of investigation is limited to the collection of pedigrees the analysis of such examples is fraught with considerable difficulty, and in many instances no definite solution can yet be offered. Only by the collection of carefully verified pedigrees can a complete analysis be hoped for, and for that reason especially we welcome Dr. VOORHOEVE'S contribution. His family illustrates one of these anomalous cases. The blue sclerotic is transmitted sometimes direct from parent to child, but there are two instances in which members of the family recorded as unaffected have affected children. Since the abnormality is mentioned as varying in intensity it is possibly irregularly dominant, or dominant only when some other factor is present in addition. The brittleness of bones is recorded only in persons having blue sclerotics, and is transmitted direct from parent to child, but there are a number of persons with blue sclerotics and no bone-brittleness. Another interesting feature is the manner of occurrence of hæmophilia. This pedigree supplied by Dr. VOORHOEVE resembles the classical examples in showing the disease confined to males, but differs from them in the manner of its transmission. The disease presumably came into the family through the male ancestor, since one of his sister's sons is recorded as being affected, and yet it appears in his sons and is also transmitted through one of his grandsons to a male child. Evidently, therefore, hæmophilia in this family is not transmitted according to the normal rule of sex-limited inheritance in which an affected man never transmits either to, or through, his sons but only through his daughters. Experiments on animals, especially those of T. H. MORGAN on the fly *Drosophila*, have shown that characters which superficially are so alike as to be easily confused, may be inherited quite differently, and from this and other anomalous cases that have been recorded, it seems not improbable that there are at least two forms of hæmophilia, due, perhaps, to different ultimate causes, and differently inherited, but clinically showing similar symptoms. Only the careful collection of pedigrees by qualified observers can elucidate such problems as these. The invitation to further research is pressing.

About the origin of these inherited defects nothing is known. It may be safely asserted that mutilations are never transmitted, and most biologists would say with equal confidence that no effects impressed on the body from without can influence the offsprings. A few keen observers find contradiction here in the depreciation of human stock under industrial conditions. Speaking on Monday evening at the Medical Society of London of the painful impression left on his mind when visiting the industrial centres of northern England after a long absence, Professor J. G. ADAMI went on to say:

> The stunted appearance of the workpeople in spite of apparently abundant food, and of cottages no longer back to back, but in fair sanitary condition, lead to the conclusion that we have to deal, not with a condition of individual acquirement, but with a germinal defect: fathers and mothers engaged day in, day out, at indoor occupations, undergo a slow sapping of their strength and a low form of intoxication which tells on the germ cells as on the body in general, so that the offspring comes into the world in an enfeebled condition and with incomplete endowment of cellular activity.

Experiments like those of STOCKARD on the production of defective descendants from guinea-pigs treated with alcohol also suggest that it may happen that toxic substances circulating in the body will so affect the germ cells as to give rise to abnormalities which reappear, sometimes even intensified, in later generations. But whether such causes as these, or accidental abnormalities in the nuclear division of a germ cell, are responsible for the first appearance of congenital abnormalities is at present entirely beyond our knowledge, and is one of the most pressing problems which biology has to face.

Annotations.

"Ne quid nimis."

UNIVERSITY REPRESENTATION.

IT is clear that there can be no representation of the medical profession in Parliament as a profession, but university constituencies are the ones which, on the one hand, are most likely to send Members to Parliament who understand medical questions in relation to general sociology, and which, on the other hand, offer the best chance to the medical man of election in recognition of his equipment. It appears that there will be contests in all the university constituencies in Great Britain. In the University of London there are four candidates for the single seat—Sir Philip Magnus (Coal. U.), Mr. Sidney Webb (Labour), Mr. A. A. Somerville (Teachers), and Major-General Sir Wilmot Herringham, physician to St. Bartholomew's Hospital and consulting physician to the Forces in France, who declines to label himself as of any party, but who will support the present Government in its efforts to complete the war. For the three seats of the four combined Scottish universities there are seven candidates—Sir Henry Craik and Sir Watson Cheyne, the sitting Members, are again candidates, as well as Dr. P. Macdonald and Mr. T. M. Watson, of the Labour Party, Mr. D. M. Cowen, of the Council of Teachers, and Professor W. R. Smith. There are several medical men who would be willing to stand even at this late hour if constituencies were available, but the lateness of the attempt to organise medical candidatures prevents assistance being rendered, while the candidates for university suffrage have been arranged. The Medical Parliamentary Committee is endeavouring to arrange for a supply of medical speakers to assist candidates as required, and to this end the coöperation of the British Medical Association, the National Medical Union, and the Medico-Political Union has been invited.

THE PROBLEM OF A CLEAN MILK-SUPPLY.

IT has been demonstrated again and again that our milk supplies are collected and delivered under most reprehensible conditions, and yet no serious step has been taken towards reform. But the urgency of the problem has, at all events, received the recognition of the Ministry of Food, which has recommended the Government to take over the wholesale distribution of milk, a proceeding which ought to result in the delivery of a clean supply. The Manchester City Council are contemplating dealing with that city's milk-supply in the same way, and under the instructions of a subcommittee appointed by the sanitary committee of the council Professor S. Delépine has presented a report on two important matters connected with the problem. These are (1) the best method of determining the degree of contamination of samples of milk for administrative purposes; and (2) the actual state of the Manchester milk-supply. Taking the second point first because it can be dismissed in a few words, the results shown by Professor Delépine as regards contamination by dirt of Manchester milk "are deplorable." The contamination progresses from collection to delivery. Seriously contaminated at the stations, the condition of the milk is much worse by the time it gets into the shops and worse still by the time it arrives at the actual consumer. In deciding upon the best administrative procedure for determining the purity of the milk-supply Professor Delépine is led to recommend two methods: (1) the counting of the number of bacteria per c.cm. of milk, which, of course, involves time and the services of a skilled bacteriologist; and (2) an incubation method in which is recorded the time required for the milk to go sour under certain conditions. It is suggested that this latter method, if worked out and standardised, might provide a reliable test as to the purity of the milk, which could be carried out after a short period of training by almost unskilled persons. We believe this to be a valuable suggestion, for in this way the farmer who is anxious to supply a clean article might be furnished with a reliable and comparatively simple test and means of control. Particulars are set out by Professor Delépine as to how and why contamination takes place at the farm, on the railway, at the dealer's shop, and during distribution, and the steps that should be taken to prevent contamination at all points are described. The report, enforced by much painstaking work, presents the results of very careful and extensive scientific investigation.

TREATMENT OF GANGRENE OF THE LUNG BY INDUCTION OF PNEUMOTHORAX.

THE treatment of gangrene of the lung remains disappointing, in spite of much research given to it both on the medical and surgical side. Excision has proved too dangerous even in the most skilful hands. At a recent meeting of the Académie de Médecine of Paris M. P. Émile Weill claimed good results from the induction of pneumothorax. This procedure, which has found an assured place in dealing with caseating lung tissue, is alleged to act on the gangrenous focus by causing its discharge with formation of a cavity, the walls of which subsequently adhere to one another, the patient being cured in a short time. For the practice of this treatment it is necessary, as soon as the diagnosis is made, to examine the affected lung with the X rays, which will show the position of the focus and the condition of the pleura. In one of M. Weill's cases there was a large serous effusion, but usually the pleura contained only a few cubic centimetres of serous or sero-hæmorrhagic fluid. It is then easy to remove the fluid and insufflate under the control of the screen. In the rare cases in which the pleura has not reacted with effusion nitrogen is injected into the potential pleural cavity under manometric control in the same way as for the treatment of pulmonary tuberculosis. If there are pleuritic adhesions the injection would be performed at a point where the lung is not adherent, and it probably would not be difficult to break down fresh adhesions. M. Weill generally found it necessary to renew the pneumothorax after a few days. This is not surprising in view of the fact pointed out in our present issue by Dr. Claude Lillingston that irreparable

harm may be done by too long spacing of the injections, while their frequent repetition appears to be quite free from risk. In pulmonary gangrene when a complete pneumothorax is produced M. Weill finds that the temperature falls, the expectoration dries up, the fœtor of the breath disappears, and a complete cure, functional and anatomical, which may be followed on the screen, is brought about in less than a fortnight. Even when other gangrenous processes complicate the pulmonary gangrene temporary improvement results. The temperature then falls for a short time but rises again, in spite of the cessation of the expectoration and fœtor, and the fatal progress is resumed. It is therefore important to diagnose pulmonary gangrene early, and to intervene before complications have transformed a curable into a fatal malady. The method may be assisted by the usual medical treatment. In the case of a man suffering from pulmonary gangrene complete radiographic and clinical cure was produced in 11 days. Pneumothorax was twice induced at an interval of five days. The first operation led to the formation of a cavity with fall of temperature, the second to cessation of expectoration and apyrexia. In another case there were the complications of serous pleurisy and gangrenous pericarditis. The pneumothorax suppressed the pulmonary disease, cicatrisation of which was found beginning at the necropsy, but the cardiac complication was not influenced, and, after a brief improvement, it proved fatal. Gangrene of the lung is fortunately a rare condition, but M. Weill's experience should direct attention to a possibly effective method of dealing with it.

LIGHT AND HEALTH.

IN Switzerland cow-byres are lighted by electricity. Some of the pig-styes are also so lighted, presumably more for the convenience of the caretakers than of the actual inhabitants. In the rural parts of our own country such amenities are not available even for the human population. The horrible darkness of the country is, indeed, the townsman's chief complaint when he is forced to live under rural conditions. Darkness cripples all his activities and reduces him to a partial state of hibernation. The inability of the town-dweller to see in the dark constituted a grave difficulty in the training of troops for trench warfare, where to take prompt advantage of the slightest glimmer of light is a military asset of enormous importance. Possibly the troops now returning home may have learned their lesson so well that darkness will no longer be a serious bar to rural life—possibly, too, the born countryman may scarcely be conscious of the drawback—but since the population is so largely urban we are in entire agreement with Sir H. Rider Haggard, who, in a letter to the *Times* of Nov. 19th, ascribes the desertion of the rural districts in large part to their appalling darkness during the long winter months. If it is technically possible, there seems no conceivable reason why, in fairness to the rural dweller, the village street and the village house should not be as brightly lighted as those of the towns. If it is merely a question of distribution, the problem has long been solved in other countries by the overhead conduction of high-tension current. The plea of danger has been negatived by experience. No Swiss village is without its brilliant electric illumination, while every tenth house has its telephone, by means of which conversation can be carried on with neighbouring valleys which might take 10 or 12 hours to reach by rail or road. But Swiss boys, although no mean climbers of electric standards, are not electrocuted, and even birds perch unscathed. If it is a question of quantity of current and of resulting cost, then the towns might well spare some of their garish brilliancy to the villages. Natural water-power, as everyone knows, answers many questions about cost, but surely we need not stand with folded hands neglecting all things because one natural advantage is denied us. We do not know whether it would be possible to light country highways, but short of this the finger-posts at corners should be made easily readable by night as by day and all dangerous crossings illuminated. Some may hold that these are merely questions of convenience, but the effect of light on health is one that cannot be gainsaid. The winter gloom of day-time in Marylebone and Kensington, in Lancashire manufacturing centres, and on the dockyards of the Clyde must result in a general lowering of vitality which predisposes to disease—we are not referring to the artificial darkness of wartime, but to the climatic amenities of these islands. It is not direct sunlight alone which is beneficial; bright diffused light invigorates even when the sun itself is obscured. The "artificial sun" of the mercury-vapour lamp has been shown to take the place in part of the real orb. Brightly lighted play centres for town children will probably demonstrate the same truth. Something should be done, and done quickly, to remove the day-time gloom of our cities and the night-time gloom of our villages. They constitute one of the greatest impediments to healthy outdoor life in the long winter months. We commend the subject to the consideration of those who are planning central power-stations.

THE MEDICAL INSURANCE AGENCY.

A MEETING of the committee of the Medical Insurance Agency was held at 429, Strand, on Thursday, Nov. 21st, under the chairmanship of Dr. G. E. Haslip. The financial position was found to be quite favourable, the prosperity of the committee having been well maintained in the last year of the war, while promises of future development are sound. The committee decided, having regard to the funds at their disposal, their commitments on the one hand and their impending receipts on the other, that a further distribution of £500 should be made to medical charities. This is the same sum, it will be remembered, as was dealt with in the interim distribution in May of this year, the result being that the Medical Insurance Agency has been able in the fourth year of the war to give £1000 in aid of first-class medical charities while continuing rebates to their clients of a highly satisfactory nature. The second £500 was allocated as follows: Royal Medical Benevolent Fund, £100; Royal Medical Benevolent Fund Guild, £100; Epsom College Benevolent Fund, £100; Royal St. Ann's School, £100; War Emergency Fund, £50; Birmingham Medical Benevolent Society, £25; and the Royal Medical Benevolent Fund of Ireland, £25. As a result of this distribution the total of sums allocated to medical charities has reached £4405. In the course of the meeting the chairman stated the position that had arisen between two medical charities—the Royal Medical Benevolent Fund and Epsom College—in regard to difficulties arising over testamentary benefactions. When the exact distinction of bequests by will has been made doubtful between these two bodies by the wording

of the testator's wishes, legal trouble has arisen and much expense has been incurred for legal costs, all of which was a dead loss to one or other or both parties. On the suggestion of the Medical Insurance Agency a joint committee has now been formed comprising three representatives of each party, and it may be confidently hoped that the deliberations of this committee will lead to satisfactory arrangements. The chairman reported to the committee with great regret the death of one of their members, Major Betham Robinson, and the acting secretary of the agency was asked to express to Major Robinson's relatives the sympathy and the real sense of loss felt by the committee.

THE MICHELL CLARKE MEMORIAL FUND.

A STRONG Appeal Committee has been formed with the object of raising a fund to be entitled "The Michell Clarke Memorial Fund," and to be used in behalf of the Medical Library now controlled by the University of Bristol and the Bristol Medico-Chirurgical Society. The late Dr. John Michell Clarke was a distinguished native and citizen of Bristol, who for 30 years worked at the Bristol General Hospital as physician, investigator, and teacher; he was Pro-Vice-Chancellor of the University, as well as joint Professor of Medicine. His energies were largely devoted to the cause of medical education, and the Appeal Committee feel that his memory can be best perpetuated by identifying the Fund with that cause. One phase of higher medical education—to which, moreover, Michell Clarke attributed great importance—is the provision of the best medical literature for the use of practitioners and students. But the Bristol Medical Library, though serving the locality to the top of its powers, rests upon no specific endowment, and the provision of such, it is believed, would fulfil Michell Clarke's wishes. A sum of £2500 will be necessary. Mr. James Rafter, M.A., Registrar of the University, is acting as honorary treasurer, and subscriptions should be forwarded to him at the University, cheques being made payable to the "Michell Clark Memorial Fund."

THE ETIOLOGY OF OVERLAYING.

Dr. F. J. Waldo, coroner for the City of London and borough of Southwark, in his annual report to the corporation of the City, calls attention to the inquests held by him upon the bodies of children suffocated while in bed with their parents or others. These inquests were seven in number, verdicts of accidental death being returned in all cases and the fact of death being due to suffocation proved by post-mortem examination. Dr. Waldo makes a practice of ordering such examinations upon all occasions when suffocation has apparently taken place owing to the child not having been provided with a cot, and it is perfectly clear that he is right. Without post-mortem examination there can be no certainty that the child did not die from natural causes; while, in instances where there is evidence that the adult occupant or occupants of the bed were intoxicated when the death took place, an undeserved charge of manslaughter might follow. It is an opinion held by Dr. Waldo that the intoxication of parents is seldom the cause of infants being overlaid, and naturally it is a matter as to which proof is not always forthcoming. In this connexion, however, it may be pointed out that a post-mortem examination not having taken place when parents have been committed for trial for manslaughter, might lead to the acquittal of guilty persons, as counsel for the defence at their trial would hardly fail to notice the omission of an inquest and to take full advantage of it. It is satisfactory to note that the increased use of cots for their children at night by the humbler classes has led to a very appreciable diminution in the inquests held upon deaths ascribed to suffocation in bed. The number of inquests of this class in England and Wales declined from 1660 in 1904 and 1098 in 1914 to 585 in 1917.

A RETURN TO WHITE BREAD.

THERE is evidence, at all events from some quarters, that the bread supplied now is getting increasingly white in appearance. If that is so, the decisions of the Cabinet announced by the Food Controller in the House of Commons a week ago as to allowing a reduction in the percentage of flour to be abstracted from wheat are being acted upon. Mr. Clynes explained that this step had been taken as a result of the relief of the tonnage situation and because it would release approximately 18,000 tons of offal weekly for farmers, pig-keepers, and others to feed their animal stock, and a certain amount of barley. An economic necessity appears, therefore, to have led the Food Controller to revert to the old order of things in regard to the making of bread from wheat flour, which was alluded to by the Government's own scientific authorities, who, in an official statement issued to the public, said:—

> "We have become accustomed to eat bread made from the inner two-thirds of the wheat grain, the outer third having been given to animals. But at the present time it is important to use as much as possible of the grain for human food, so that wheat flour is ground to contain four-fifths or more of the whole grain. This is an advantage, not only because we get more food, but because the part of the grain which was formerly rejected contains valuable flesh-forming material and salts."

There is a contradiction here in theory or in action which will need further explanation.

FIRST-AID IN ORDINARY LIFE.

DURING the summer we reported briefly in these columns a series of lectures, delivered at the College of Ambulance by representative medical men, the purpose of which was to show the advantage to the community of first-aid on the farm, in the factory, and, generally, in mitigating the results of accidents to life and limb in daily life. In factories and workshops such provision is obligatory under the terms of Home Office regulations, but apart from organised industry, how few are the facilities provided for emergency treatment before the doctor's arrival, even though delay in their application may well make the difference between life and death. We heartily endorse, therefore, the plea of the St. John Ambulance Association that every encouragement should be given to those who desire to gain a competent knowledge of first-aid, home nursing, and hygiene, the Association expressing its willingness to hold classes wherever there is a demand for them. We should like, too, to emphasise the fact that with the cessation of hostilities the knowledge of first-aid and elementary nursing acquired by V.A.D.'s and thousands of others should not be cast off as a garment, but rather put to the gentler uses of peace.

MEMORANDUM ON FOOD AND SCURVY.

BY THE FOOD (WAR) COMMITTEE OF THE ROYAL SOCIETY.

IN view of the fact that outbreaks of scurvy have occurred at various times, both in this country, and abroad in His Majesty's Forces, and in order to guard against a recurrence of such outbreaks, especially at places far removed from sources of supply, the Royal Society Food (War) Committee have issued the following Memorandum, based chiefly upon investigations carried out at the Lister Institute:—

THE CAUSE AND PREVENTION OF SCURVY.

1. Scurvy, like beri-beri, is a "deficiency disease," and is due to the long-continued consumption of food lacking in an accessory food substance or vitamine. The view that scurvy is due to tainted food must be abandoned.

2. This vitamine is contained in a number of fresh foods: in largest amount in oranges, lemons, and fresh green vegetables; in considerable amount in roots and tubers, such as swedes, potatoes, &c.; and in small quantities in fresh meat and milk. It is deficient in all dried and preserved foods.

3. It is destroyed by prolonged heating, such as takes place during stewing. Thus, potatoes in stews would be devoid of vitamine, but if boiled rapidly will still contain some quantity. Alkalies rapidly destroy antiscorbutic properties. Soda should therefore not be added to the water in which vegetables are soaked or boiled.

4. Before the onset of definite symptoms of scurvy there is a period of debility and weakened resistance to disease. The occurrence of cases of debility in any body of troops without sufficient cause should at once direct the medical officer's attention to the sufficiency of the diet.

Prevention of Scurvy.

5. West Indian lime juice, as ordinarily prepared, is useless for the prevention of scurvy. Fresh limes have an antiscorbutic action, but their efficiency is only one-fourth that of lemons. The so-called "lime juice," by the regular administration of which scurvy was eliminated from the Navy during the first half of the nineteenth century, was really lemon juice obtained from the Mediterranean. The history of Arctic exploration affords numerous examples in which scurvy was prevented for long periods of time by the agency of lemon juice regularly taken. Nares's expedition of 1875, notorious for the serious outbreaks of scurvy encountered, was the first to be provisioned with "lime juice" prepared from West Indian limes. Orange juice is as effective as lemon juice.

6. Potatoes and root vegetables have a distinct value in the prevention of scurvy, much less, however, than green vegetables or fresh fruit juices. A daily ration of 14 oz. of potatoes, boiled rapidly but not stewed, will suffice to prevent scurvy.

7. Pulses, beans, peas, and lentils in the dried condition have no antiscorbutic properties. If, however, the dried seeds are soaked in water and are allowed to germinate for a short period, one or two days, they develop the antiscorbutic vitamine. At the same time these pulses are also rich in the vitamine which prevents beri-beri, and are, moreover, valuable foods.

The method adopted for germination is as follows. The beans, peas, or lentils are soaked in water at room temperature (60° F.) for 24 hours. The water is then drained away and, to permit germination, the soaked seeds are spread out in layers, not exceeding 2 to 3 inches in depth, and kept moist for a period of about 48 hours at ordinary room temperature (60° F.). They should not be allowed to dry after this operation, but should be cooked as rapidly as possible (lentils, 20 minutes; peas, 40 to 60 minutes).

8. The antiscorbutic value of fresh meat is very low in comparison with that of fresh vegetables and fruit. If fresh meat is consumed in large quantities, 2 to 4 lb. a day, scurvy will be prevented. Tinned and preserved meat possess no antiscorbutic value. Frozen meat, while more valuable than preserved meat, must be considered inferior to freshly killed meat in this respect.

Methods of Cooking.

9. The destruction of the antiscorbutic properties depends rather upon the time than the temperature employed. All foods, especially vegetable, should be cooked for as short a time as possible at boiling-point. Slow methods of cooking, such as stewing with meat or simmering below boiling-point, should be avoided. Potatoes should be plunged into boiling water and the boiling continued for 20 to 30 minutes after the boiling-point has again been reached. Frozen meat should be roasted when practicable.

The Memorandum closes with a summary of measures recommended for the prevention of scurvy when fresh vegetables are unobtainable: (*a*) The lime-juice ration should be replaced by lemon juice; the ration should be 1 oz. daily served with sugar. (*b*) Cooked germinated peas, beans, or lentils should form part of the regular daily ration. (*c*) Attention should be paid to the methods of cooking employed, as set forth under 9.

THE PARLIAMENTARY REPRESENTATION OF THE SCOTTISH UNIVERSITIES.—Professor William R. Smith requests us to intimate that he will address the graduates of the Scottish Universities at the Royal Institute of Public Health, London, to-day (Saturday) at 4 P.M.

Correspondence.

"Audi alteram partem."

DISPENSARY SUPERVISION IN PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—I can cordially endorse everything written in the article under this heading by Dr. G. Jessel published in your columns on Oct. 26th. This may possibly be the more valuable as the experience which endorses it is obtained in the county borough of Middlesbrough with a population of 126,000 in an area of 6¾ square miles against Wigan's 40 square miles. The same method of home treatment with dispensary attendance and constant nursing supervision has been in operation here for the last four years, and the nursing element is continually growing and still insufficient, although we have three dispensary nurses employed. Recently we have instituted monthly nursing reports on all insured cases, however well they are, with most valuable results. This has been specially demonstrated in controlling the tendency to deteriorating health in the two influenza epidemics. We have also recently added three weeks' holiday in a suitable locality, when needed, paid for by after-care scheme, which is really an essential in those stabilised, if home treatment is to be efficiently carried out. The result of this experiment was very interesting; at first it seemed rather a failure, but a review of the cases two months after demonstrated its unexpected value. The disappointment was due to the fact that only 50 per cent. of the cases sent away were immediately benefited; the unexpected and gratifying result was that in the two months' revision subsequent to their return 75 per cent. were benefited, and this in spite of the fact that we went through the first "flu" epidemic during the holiday period. As this result is rather opposed to sanatorium results the suggestions are very interesting.

There is one other matter suggested by Dr. Jessel's article. During the reconstruction period after the war, with its large housebuilding schemes, it would be worth while considering whether it would not be advisable, when so many of the houses in which the tuberculous live are so unsuitable for their residence, for the local authorities who are rebuilding to reserve certain houses in each area, to be let at a lower rental if necessary to those tuberculous families in need of other quarters, as one of the most economic expenditures in the control of tuberculosis. It is not suggested that these houses should be segregated, unless the local bodies were prepared to spend an extra sum on the beautifying of the area to overcome the natural tendency there would be to consider it a leper area, and so defeat its own ends. May I say that home treatment, to be properly carried out, needs a home, not a hovel, and tuberculosis does not require this more than other diseases.

For home treatment to be successful there must be constant supervision according to the requirements of the case, reasonable freedom from anxiety, and a possibility of removal to a sanatorium, when the extra rest there obtained is an essential consideration. In Middlesbrough the results are fully justifying the idea that the only real way in which tuberculosis can be controlled is by making home treatment and supervision the foundation-stone of the whole structure. Sanatoria, hospitals, and farm colonies should be only separate rooms in the structure for special use; home treatment and supervision must be the foundation of the whole.

I am, Sir, yours faithfully,

H. A. ELLIS,
Tuberculosis Medical Officer.

Middlesbrough, Nov. 16th, 1918.

PS.—Since writing the above I have read Dr. F. E. Wynne's letter in your issue of Nov. 16th. Surely he hardly makes out a case. While admitting the failure in present methods of dealing with tuberculosis, as "vital statistics show no decline whatever, either in the incidence of tuberculosis or the mortality from this cause," he depreciates a method which has at least demonstrated that it has attained the supervision of 1615 cases where before only 1164 were supervised, or that a third of the cases were previously not supervised. At least home supervision does away with many present extravagant and irksome methods, which apparently, in Dr. Wynne's belief, are entirely useless. Whether home supervision and treatment

is the right path remains to be proved, and will in the very nature of things require about ten years to show results. My own, in spite of war food difficulties and influenza, show this year so far a reduction of 20 per cent. on the mortality of 1914, and the more serious cases are undoubtedly diminishing in the district. It is bad policy for those who have so far admitted failure to condemn a method before a reasonable test has been made. War should surely have taught us not to condemn new methods before trial where present procedures are not equal to the undertaking. I trust Dr. Jessel will continue and give us the results of his increased home supervision.

To the Editor of THE LANCET.

SIR,—Your issue of Nov. 16th contained an interesting letter from Dr. F. E. Wynne, medical officer of health of Wigan, on the subject of dispensary supervision in pulmonary tuberculosis. Dr. Wynne maintains that consumptives in Lancashire will not, or do not, carry out such common-sense hygienic methods as they have been taught to do. I have, of course, no knowledge of the county borough of Wigan, but as regards the administrative county as a whole I am convinced Dr. Wynne underrates the average intelligence of Lancashire men and women.

It is a mistake to take dispensary supervision or any other single item in a comprehensive scheme and expect the death-rate from tuberculosis to be much raised or lowered as a consequence of its adoption. In Lancashire, in 1917, no less than 256 persons died from pulmonary tuberculosis who had not been notified, 19 died before receipt of notification, and 433 within three months of notification. Such a reservoir of infection, coupled with other war conditions, makes a much smaller death-rate compared with pre-war years most unlikely, but surely every effort to enable persons suffering from open consumption to have a separate bedroom, as carried out so admirably by Dr. Jessel and the other county tuberculosis officers in the county areas under their charge, helps in the right direction and not in the wrong —I am, Sir, yours faithfully,

G. LISSANT COX,
Central Tuberculosis Officer, Lancashire County Council;
Medical Adviser, Lancashire Insurance Committee.
County Offices, Preston, Nov. 25th, 1918.

TREATMENT OF INFLUENZA.

To the Editor of THE LANCET.

SIR,—Sir Thomas Horder's stimulating article upon the treatment of influenza in your issue of Nov. 23rd will, no doubt, have been read with interest by many of those who are engaged in dealing with the epidemic from the purely clinical side. He rightly points out that there are no reliable short cuts in the treatment of these cases, and emphasises the great importance of skilled nursing and efficient treatment on general lines, especially in the management of the more serious type of case. He speaks of the importance of "the promptness with which the general conduct of the case is established and the thoroughness with which it is carried out," and goes on to add that "every case of the disease treated upon sound principles is a contribution to preventive medicine." The value of such observations cannot be overestimated. Sir Thomas Horder's paper, however, would have been still more helpful if he could have formulated for us a workable scheme for the handling of the many serious cases amongst the poorer classes of the community. His remarks and suggestions about aerotherapy, hydrotherapy, poultices, cradling, inhalations, Gamgee jackets, hypodermic and intravenous medication, to say nothing of the turtle soup, show that he is thinking rather of the patient who is already surrounded by conditions which in themselves tend towards a favourable issue. What, however, are we to do with the serious cases occurring amidst surroundings which from the start are all against recovery? And I take it that these cases are in the majority. Many doctors have by this time realised the hopelessness of treating cases of influenzal pneumonia under such conditions. An abundance of fresh air has been almost unobtainable; efficient nursing in 19 cases out of 20 out of the question, and for those cases—and there have been many of them—situated in houses where the majority of the domestic circle have been laid aside even the elementary requirements of sick nursing have been absent. The harassed doctor has been able to do little more than pay a hurried daily call, prescribe medicine, feel the pulse, and with a word of encouragement pass on to his next patient. Although district nurses have been here and there available—and they have done splendid work under trying conditions—yet for many cases an occasional visit from a kindly neighbour has been all that has been possible. The civilian population has suffered severely, not so much because we have been unable to make up our minds as to the actual causative agent of the disease, or whether one should administer a dose of 10 million or 500 million dead influenza bacilli, or even because we have been unable to provide a definitely curative agent against the virus, but rather owing to the distress and misery caused by the apparent helplessness of the public health, Poor-law, and hospital authorities to do anything adequate to deal with a situation where nursing and care of acutely ill people have been an urgent need.

The difficulties, of course, have been great, but failure to cope with the problem has obviously been due to want of organisation rather than of beds, doctors, and nurses. The war has clearly demonstrated that in the hands of a central authority organisation can overcome everything, and the medical and nursing professions have been able to successfully meet situations of unparalleled difficulty. In one way, therefore, the epidemic has done good. It has proved the urgent need for an efficient State Medical Authority. The existence of such an authority would have made it possible for a clear-cut line of campaign to have been immediately instituted. It would have been possible for that authority to have at once ordered the closing of every hospital and infirmary bed to all but urgent cases. In this way wards could have been set apart and nurses set free for the care of large numbers of influenzal pneumonias. Under such conditions it would have been reasonably possible to attempt to carry out Sir Thomas Horder's most excellent principles of treatment and so give the patients a better chance, and at the same time to have saved many families from the distress and misery produced by attempting to look after acutely ill relatives under conditions that are all against recovery.

I am, Sir, yours faithfully,

Leeds, Nov. 25th, 1918. C. W. VINING, M.D.

PARLIAMENTARY REPRESENTATION OF DUBLIN UNIVERSITY.

To the Editor of THE LANCET.

SIR,—I wish to remind medical graduates of Dublin University that by recent legislation all graduates who register their names have the right to vote; the franchise is not, as heretofore, confined to holders of the higher degrees. In order to register, a graduate not already registered should send without delay to the Assistant Registrar of University Electors, Trinity College, Dublin: (1) his name in full; (2) his address; (3) the registration fee of £1; (4) a declaration that he, or she, is of the required age and a British subject. Women graduates have the same rights as men.

Sir Robert Woods, who received wide support at the last election, has announced his intention of contesting the vacant seat. If Dublin University is to return a medical man as one of its Members it is incumbent on medical graduates to register as voters at once. It is not necessary to impress on readers of THE LANCET the importance of returning an increased number of competent medical men to Parliament.

I am, Sir, yours faithfully,

Dublin, Nov. 25th, 1918. ROBERT J. ROWLETTE.

THE INTRAMUSCULAR ADMINISTRATION OF NOVARSENOBILLON.

To the Editor of THE LANCET.

SIR,—As the method which I have adopted of administering novarsenobillon intramuscularly appears to be practically painless, and as other practitioners may be interested, may I be allowed to state the technique employed? The successful and comparatively painless administration of novarsenobillon depends in the first place upon a satisfactory solvent being used for the drug. Many solvents and methods were tried at St. Thomas's Hospital, with the result that a solution of guaiacol in liquid glucose proved to be the most satisfactory. The solution is thus prepared:—

Guaiacol	1 part.
Liquid glucose	50 parts.
Water (recently sterilised)	to 100 parts.

The water and glucose are sterilised and the guaiacol is added when cold.

It is to be noted that the solution is prepared without the addition of any anæsthetising agent, such as stovaine or novocaine. Experiments made with higher percentages of both guaiacol and liquid glucose were found to be unsatisfactory.

There are many qualities of liquid glucose, varying in colour from dark brown to yellow, but the product used should be the pure substance, which is clear and colourless. Of this solvent, 10 to 20 minims are taken and the novarsenobillon powder is dissolved in it, which it readily does, even when the dose is as large as 0·75 g. With this amount of liquid the injection is made. This amount is very small, which is of great importance, as the least bulk of fluid possible should be injected into the tissues.

I do not consider the addition of a local anæsthetising agent necessary, for with intramuscular injections pain makes no appearance until several hours after giving the drug, and by that time the effect of a local anæsthetic has disappeared. If the injection is skilfully administered there is no pain at the time of administration and the insertion of the needle is not felt.

The method recommended is to take a 1 c.cm. tuberculin or intramuscular syringe fitted with a fine intramuscular needle. Separating the needle from the syringe and holding it between the thumb and forefinger, it is stabbed with a rapid movement of the wrist into the glutei in the upper and outer quadrant of the buttock, causing it to enter the tissues at right angles to the skin. The depth to which the needle is inserted—usually from three-quarters up to the hilt—can only be gauged by practice. The buttock should be carefully palpated beforehand to ascertain the best position for inserting the needle and the force requisite to drive the needle to the desired depth. When this has been done the syringe is fitted on to the needle, care being taken that the needle is kept stationary while it is in the tissues and while the plunger is being pushed down. The needle and syringe are then withdrawn as one, as rapidly as possible to prevent any solution remaining along the track of the needle. The buttock is then gently massaged for five minutes.

Although a few patients have complained of pain lasting for two or four hours this is exceptional. By this method I find that patients are spared the intense pain which often attends the administration of the drug with the solvents generally in use.

I am, Sir, yours faithfully,

THOS. ANWYL-DAVIES,

In charge of the Venereal Department, St. Thomas's Hospital.

13, Park-place, St. James's, S.W., Nov. 23rd, 1918.

SECURITY OF TENURE FOR MEDICAL OFFICERS OF HEALTH AND INSPECTORS OF NUISANCES.

To the Editor of THE LANCET.

SIR,—As the time is approaching when, I think, an application might be made to the Local Government Board for the issue of the Order referred to in the enclosed letters, I send you copies of the letters for publication.

I am, Sir, yours faithfully,

Nov. 23rd, 1918. PHILIP MAGNUS.

[ENCLOSURES.]

Local Government Board, Whitehall, S.W. 1,
30th December, 1915.

MY DEAR MAGNUS,—In accordance with the decision of my predecessor, which was contained in his letter to you of February last, my Department have prepared an Order giving security of tenure to whole-time medical officers of health and inspectors of nuisances in the future.

I entirely agree with the decision at which Mr. Samuel arrived, and am strongly in favour of security of tenure for these officers, but I must confess that my own feeling is that the present is hardly the most appropriate time for the issue of such an Order, in view of the fact that so many of our best men have given up local work for service with the Army or Navy, and that the conditions are now quite abnormal.

Perhaps you would kindly let me know what your views are and whether in the circumstances you would see any objection to the issue of the Order being further postponed.—Yours sincerely,

(Sgd.) WALTER H. LONG.

Local Government Board, Whitehall, S.W. 1,
7th January, 1916.

MY DEAR MAGNUS,—Many thanks for your letters with respect to the tenure of office of medical officers of health and inspectors of nuisances. I felt sure you would agree that there were good grounds for postponing the intended change.

I see no objection at all to your publishing our correspondence.

Yours sincerely,

(Sgd.) WALTER H. LONG.

I am very grateful to you for your most valuable and friendly coöperation.—W. H. L.

The War and After.

SUMMARY OF TOTAL WAR CASUALTIES.

WE gave last week Mr. Macpherson's statement to the House of Commons regarding the total British casualties, including those of Dominion and Indian troops, up to Nov. 10th. This referred to land warfare. The Secretary of the Admiralty has issued a corresponding statement regarding naval losses. From the outbreak of the war up to Nov. 11th last there was a total of 39,766 casualties in the Royal Navy and Royal Marines, excluding the Royal Naval Division (included in the War Office figures), but including the Royal Naval Air Service up to the end of last March. The figures also include a certain number of officers and men of the Mercantile Marine injured while serving on commissioned vessels. The total naval casualties are analysed as follows:—

Naval Losses.

	Officers.	Men.
Dead (including died from wounds and from other causes)	2,466	30,895
Wounded	805	4,378
Missing	15	32
Interned and prisoners of war	222	953
Total	3,508	36,258

In addition to these, 14,661 officers and men of British merchant ships and fishing vessels have lost their lives through enemy action, and 3295 others have been captured and detained in enemy countries as prisoners of war.

Canadian Losses.

An official statement gives the total casualties to Nov. 5th last in the Canadian Overseas Forces as 213,268:—

Killed in action	35,128	Missing	842
Died of wounds	12,048	Wounded	154,361
Died of disease	3,409	Prisoners of war	2,860
Presumed dead	4,620		213,268

American Losses.

In an interview given at Washington, General Peyton March gave the casualties during the war in the U.S.A. Army:—

Killed or died of wounds	36,154	Wounded	179,625
Died of disease	14,311	Prisoners	2,163
Deaths uncertified	2,204	Missing	1,160

Indian Casualties.

The total number of casualties among the Indian troops up to Sept. 30th last has been officially given as 101,439, viz.:—

	Killed.	Wounded.
In Mesopotamia	14,742	30,589
In France	6,900	16,380

THE CASUALTY LIST.

The following medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. R. Clark, R.A.M.C., attached Hussars.

Died of Wounds.

Lieut.-Col. P. S. O'Reilly, C.M.G., R.A.M.C., qualified in Ireland in 1899, and joined R.A.M.C. shortly afterwards. He took part in the South African War, and at the time of his death was senior medical officer at the Royal Arsenal, Woolwich.

Died.

Capt. M. W. Miles, R.A.M.C., qualified in London in 1917, and thereupon joined up. He died in England of pneumonia following influenza.

Capt. E. D. Keane, R.A.M.C., was a student at Aberdeen University and qualified in 1901. He held appointments at the County Asylum, at Chalmers' Hospital, and at the Dispensary, Banff, and was in practice at Kensington at the time of joining the R.A.M.C.

Major W. S. MacDonell, Canadian A.M.C.

Capt. M. S. K. R. Rao, I.M.S.

Major G. G. Anderson, R.A.M.C.

Surgeon-Lieut. J. F. Howell, R.N.

Surgeon Sub-Lieut. J. D. Gear, R.N.V.R.

Wounded.

Capt. J. J. B. Edmond, R.A.M.C., attached K.R.R.C.

Capt. G. Robinson, R.A.M.C.

Lieut. W. H. Ross, R.A.M.C., attd. Devonshire Regiment.

Capt. A. W. Raymond, M.C., R.A.M.C., attd. Rifle Brigade.

Capt. Santokh Singh, I.M.S.

Capt. W. G. MacKenzie, M.C., R.A.M.C.

Previously Reported Wounded, now Reported not Wounded.

Capt. W. G. Shakespeare, R.A.M.C.

OBITUARY OF THE WAR.

JAMES MURRAY McLAGGAN, M.B., CH.B. ABERD.,

MILITARY CROSS,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. M. McLaggan, who was killed in action on Oct. 4th, was elder son of James McLaggan, of Torphins, Aberdeenshire. He was educated at Gordon's College, Aberdeen, and graduated M.B., Ch.B. at the University in July, 1913. He was then appointed house physician at the Royal Infirmary, and was holding this post when, at the outbreak of war, he received a commission in the R.A.M.C. After a period of service at Netley Hospital he was attached to the Royal Fusiliers, serving with his battalion in Egypt, Salonika, and France for three and a half years. At the battle of Loos he was awarded the Military Cross—

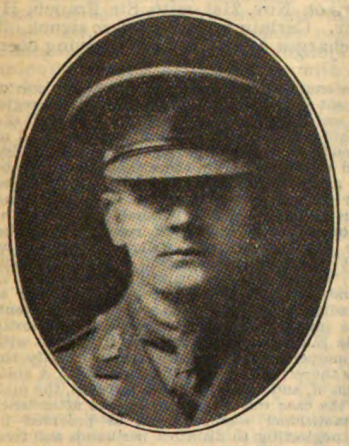
"For conspicuous gallantry and devotion to duty during the operations 27th to 30th September, 1915, when he attended to the wounded in the firing line under heavy shell and rifle fire. His coolness and skill undoubtedly saved many lives. For three days and four nights he worked incessantly with unflagging energy."

He was killed by a machine-gun sniper. The A.D.M.S. of the division writes: "Captain McLaggan had a very high sense of duty, and his constant thought was for the well-being of the men. The manner of his death was exactly like his life—with complete disregard of his personal safety he went to attend to his fallen C.O. when he himself fell a victim."

FRANK OSWALD SPENSLEY, M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain F. O. Spensley, who died at Weymouth on Oct. 23rd, at the age of 39 years, was youngest son of the late Rev. James Spensley, of Reeth, N. Yorks. Educated at Kingswood School, Bath, and at St. Thomas's Hospital, London, he held a house appointment at Lowestoft Hospital before being appointed in May, 1908, assistant medical officer to the Darenth Asylum. Four years later came his promotion to the senior post. He was keenly interested in the scheme of industrial training for the feeble-minded, and assisted wholeheartedly in making Darenth a success as an industrial colony. His paper read before the Medico-Psychological Association was noticed in our columns (THE LANCET, 1913, i., 711). Volunteering for active service on the outbreak of war, he was at first rejected on medical grounds, but received a commission in the R.A.M.C. in November, 1916, and served for a year with the Salonika Force, when he was invalided home. After working at Aldershot and at Wareham he was attached to the R.A.F. at Blandford, where he was at work until Oct. 22nd. On the following day he died of pneumonia at the Borden Military Hospital, Weymouth. Captain Spensley's constant thought, both at Darenth and at the camp, was for his patients, by whom he was much beloved. His chief at Darenth writes: "He had qualities which eminently fitted him for that branch of work—I mean a large sympathy and a keen interest in the lives of the patients. He was consequently very popular among them."



HUGH BERNARD GERMAN, M.R.C.S. ENG.,

MILITARY CROSS,
MAJOR, ROYAL ARMY MEDICAL CORPS.

Major H. B. German, who was killed in action in France on Sept. 18th, was eldest son of the late George Alexander German, of Southsea. He was educated at Portsmouth Grammar School, where he was distinguished in games, and took his medical course at Guy's Hospital, London, qualifying in 1904. He then entered the Royal Navy and was serving on H.M.S. *Orontes* in the Mediterranean at the time of the Calabrian earthquake, when he was in one of the first relief parties which reached the scene of disaster. For his services on this occasion he received the Messina Medal and the Order of the Crown of Italy. In 1913 he went into private practice at Waltham Abbey, surrendering it in 1916 when offered a temporary commission as captain in the Royal Army Medical Corps. He was sent to France attached to the 17th Field Ambulance, was mentioned in despatches in 1917, and in November of the same year was awarded the Military Cross for gallantry in the field, to which he added a bar in March, 1918. He met his death while going to the succour of a wounded officer. His brother officers write of the esteem and respect in which Major German was held by all ranks. "He was fearless and untiring in his efforts for the wounded."

JAMES HARRIS CONNOLLY, M.D. EDIN., F.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. H. Connolly, who died on active service on Oct. 23rd, was second son of James Connolly, of Putney. He was educated at the Royal Academical Institution and at Queen's College, Belfast, going on to Edinburgh University, where he qualified M.B., Ch.B. in 1902 and M.D. with honours four years later. During these years he acquired his surgical experience, which was considerable, at the Devonport and Chesterfield Hospitals. The next 18 months he spent at the Golden Square Throat Hospital, and his interest in special surgery thus aroused he took his F.R.C.S., and was appointed honorary assistant throat and ear surgeon to St. Bartholomew's Hospital, London, and to the Hackney Hospital for Children. He was securing a position as a consultant in this branch when, on the outbreak of war, he offered his services, and was at first placed in charge of wounded officers at the Royal Herbert Hospital, Woolwich. He was in Egypt for some months, but for the greater part of the four years was working at a C.C.S. in France, exposed to great climatic hardships. In March, 1917, he was invalided after a severe chill and later, having collapsed while operating, was found to have albuminuria. After six months at the Acheson Hospital in London he returned to France and died of exhaustion at the C.C.S., where he was surgeon-specialist. Captain Connolly's friends one and all write of his forgetfulness of self and devotion to duty. His work always took the first place with him and he was a very skilful surgeon. "He was too much wrapped up in his work to have a large circle of friends, but to those with whom he was intimate he was geniality itself."

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Capt. H. P. D. Helm, R.A.F., late Border Regiment, died from illness contracted on active service, eldest son of Dr. R. D. Helm, of Carlisle.

Lieut. M. E. J. Moore, M.C., Royal Irish Rifles, died of wounds, only son of Dr. E. E. Moore, of Donegal Asylum, Letterkenny.

Capt. H. T. F. Russell, M.C., R.A.F., late Royal Welsh Fusiliers, killed in an aeroplane accident, third son of Dr. W. F. Russell, of Holyhead.

Lance-Corpl. T. P. Clark, Royal Fusiliers, killed in action, only surviving son of the late Dr. A. W. Clark, of Wisbech, Cambs.

Lieut.-Col. A. Thorp, D.S.O., R.A., killed in action, eldest surviving son of the late Dr. C. W. Thorp, of Todmorden, Lancs.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Licences in Dental Surgery were recently conferred upon 19 candidates (including two women) who have passed the requisite examinations and have complied with the necessary by-laws. The following are the names of the successful candidates:—

Douglas William Smale Adams and John Frederick Batsford, Guy's Hosp.; Isaac Myer Benischowitz, Middlesex and Royal Dental Hosps.; Iris Elizabeth Gardiner, Royal Free and National Dental Hosps.; Myer Garfinkel, Univ. Coll. and National Dental Hosps.; Mabel Francis Humby, Royal Free and Univ. Coll. Hosps.; John James and Elisha Clemens Keet, Guy's Hosp.; Frank Lawrence, Lond. Hosp.; Harold James Lyon and Amin Maher, Guy's Hosp.; Cornelis Hermanus Oliver, Middlesex and Royal Dental Hosps.; Charles Lindley Donald Pasmore, Guy's Hosp.; Clifford Thomas Plimsoll, Charing Cross and Royal Dental Hosps.; Bertram Adolphe Siedle, Univ. Coll. and National Dental Hosps.; and William Wallace Harold Truscott, William Henry Turner, and Richard Murray Underwood, Guy's Hosp.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

THIRD (M.B., B.S.) EXAMINATION FOR MEDICAL DEGREES.

Loveday Shackell Banes, St. Mary's Hosp. and Lond. Sch. of Med. for Women; Irene Bastow, Lond. Sch. of Med. for Women; Stanley Batchelor, Lond. Hosp.; Alethea Josephine Bolton, Birm. Univ.; Philip Crawford Conran, Middlesex Hosp.; Hilda Margaret Denton and Susan Alfreda Finch, Lond. Sch. of Med. for Women; Humphrey Leonard George Foxell, Univ. Coll. Hosp.; Maud Gazdar, Lond. Sch. of Med. for Women; Johan Coenraad Gie, Guy's Hosp.; Lionel Bernard Goldschmidt, King's Coll. Hosp.; Charles Hamilton Gould and Walter Henry Grace, Guy's Hosp.; Blanche Aspasie Marion Henderson, Charing Cross Hosp.; William Broke Heywood-Waddington, St. Bart.'s Hosp.; Robert Hamer Hodges, King's Coll. Hosp.; Edwin Augustus Hutton-Attenborough, London Hosp.; Muriel Elsie Landau, Lond. Sch. of Med. for Women; Janet McAllister McGill, St. Mary's Hosp. and Lond. Sch. of Med. for Women; Maurice William Holt Miles, St. Thomas's Hosp.; Ludlow Murcott Moody, King's Coll. Hosp.; Percival George Quinton and Walter Murad Abdul Rahman, Univ. Coll. Hosp.; Olive Rendel, Lond. Sch. of Med. for Women (honours, distinguished in pathology); Enid Eleanora Sanger-Davies, Lond. Sch. of Med. for Women; Stanley Nahum Sennett, London Hosp.; Joseph Harold Sheldon, King's Coll. Hosp.; Aubrey Leonard Telling, Leeds Univ.; and Gladys Millicent Rutland Webster, Lond. Sch. of Med. for Women.

B.S. EXAMINATION.

Thomas Henry Sanderson-Wells, Middlesex Hosp.

The following candidates have passed in one of the two groups of subjects:—

Group I.—Simon Cyril de Silva Wijeyeratne, Univ. Coll. Hosp.; Alice Muriel Griffiths and Mary Isabella Hounsfield, Lond. Sch. of Med. for Women; Francis Reginald Law, Leeds Univ.; Annie Lloyd, Lond. Sch. of Med. for Women; Thomas Dawson Pratt, Leeds Univ.; and Henry Bret Russell, St. Thomas's Hosp.

Group II.—Charles Yarrow Eccles, St. Thomas's Hosp.; Albert William Holgate, Univ. Coll. Hosp.; Ifor Hughes Lloyd, Westminster Hosp.; Alice Lloyd Lloyd-Williams, St. Mary's Hosp. and Lond. Sch. of Med. for Women; Adeline Mabel Matland and Enid Maud Pfeil, Lond. Sch. of Med. for Women; and Montagu Cecil Polhill, Univ. Coll. Hosp.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—M. Girgis (Sect. II.), Univ. Coll. Hosp.; D. M. Howard (Sects. I. and II.), St. Mary's Hosp.; and T. T. Tiplady (Sect. I.), Durham.

Medicine.—D. M. Howard (Sects. I. and II.), St. Mary's Hosp.; S. Robinson, St. Thomas's Hosp.; S. H. Robinson (Sects. I. and II.), Guy's Hosp.; and G. E. Spero (Sect. I.), London Hosp.

Forensic Medicine.—D. M. Howard, St. Mary's Hosp.; W. A. Jones, Glasgow; S. H. Robinson, Guy's Hosp.; and C. de B. Thomson, Middlesex Hosp.

Midwifery.—R. A. D. J. Bernhardt, Middlesex Hosp.; J. Crawford, Royal Free Hosp.; D. M. Howard, St. Mary's Hosp.; T. T. Tiplady, Durham; and J. Yates, Manchester.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: M. Girgis and D. M. Howard.

ROYAL INSTITUTION OF GREAT BRITAIN, ALBEMARLE-STREET, PICCADILLY, W.—A general monthly meeting of the members will be held on Monday, Dec. 2nd, at 5 P.M.

ROYAL MEDICAL BENEVOLENT FUND.—At a meeting of the committee, held on Nov. 8th, 30 cases were considered and £249 15*s.* voted to 24 of the applicants. The following is a summary of some of the cases relieved:—

L.R.C.P. & S. Irel., aged 34, unmarried, and practised in India, where he contracted fever, and as a ship's surgeon. Suffered from insomnia and had to discontinue work owing to the morphia habit. Now reported cured, and wishes to start a practice. Quite without means. Voted £5.—Widow, aged 47, of L.R.C.P. & S. Edin. who practised at Walthamstow and died in 1916, and was an annuitant of the Fund. Applicant left entirely without means, and finds it difficult to obtain suitable employment. Relieved three times, £18. Voted £12 in 12 instalments.—M.R.C.S. Eng., aged 49, married, and practised at Birmingham. Suffering from disseminated sclerosis. Has no income beyond 10*s.* a week from friends and 5*s.* a week earned by his wife by making shell jewellery. Rent £6 a year. One son, aged 11, a foundation scholar at Epsom. Relieved twice, £44. Voted £26 in 12 instalments.—Widow, aged 43, of L.R.C.P. & S. Edin. who practised in Ireland and died in 1912. Applicant obtained a living by keeping a sweet shop, but owing to the war had to give it up. Now earns 10*s.* a week by sewing. Has three children, ages 13–18. The eldest in the Army, from whom she receives 3*s.* 6*d.* a week, and a daughter aged 16, who earns 12*s.* a week. Recommended by the Edinburgh Branch of the Guild. Relieved twice, £25. Voted £15 in three instalments.—Daughter, aged 66, of L.F.P.S. Glasg. who practised at Widnes and died in 1863. Applicant has two pensions bringing in £40 a year and has two unfurnished rooms rent free. Owing to the high cost of living unable to manage. Relieved five times, £25. Voted £5.—Widow, aged 55, of M.B. Aberd. who practised at Watlington and died in 1912. Owing to ill-health unable to work. Sister-in-law allows 10*s.* a week. Rent 5*s.* a week. Relieved three times, £34. Voted £12 in 12 instalments.—Widow, aged 37, of L.R.C.P. Edin. who practised at Edinburgh and died in 1916. Applicant was left with very limited means with four children, now aged 4–12 years. Tries to supplement her income by taking in boarders. Relieved twice, £27. Voted £15 in 12 instalments.—Daughters, aged 56 and 44, of L.S.A. Lond. who practised in London and died in 1903. Both are chronic invalids and unable to work, and their joint income is less than £70 a year. Relieved ten times, £119. Voted £18 in 12 instalments.—Widow, aged 81, of M.D. Lond. who practised in London and died in 1895. Suffers from chronic rheumatism. Total income £44 a year. Relieved ten times, £65. Voted £10 in two instalments.—Widow, aged 73, of L.R.C.P. Edin. who practised in East London and died in 1913. Owing to long illness of husband was left quite unprovided for. Has three daughters, but none able to help. Brother who used to help her now dead. Only income a pension from a City Company. Relieved five times, £60. Voted £12 in 12 instalments.—Widow, aged 55, of M.D. Edin. who practised at Newcastle and died in 1896. Was left with one daughter entirely unprovided for. Has recently fractured her leg, which has prevented her from working. Receives a little help from daughter. Relieved four times, £48. Voted £12 in 12 instalments.—Daughters, aged 67 and 58, of M.R.C.S. Eng. who practised in Cornwall and died in 1873. Endeavour to make a living by taking in paying guests, but cannot make sufficient to pay expenses. Relieved nine times, £154. Voted £18 in 12 instalments.

Subscriptions may be sent to the acting honorary treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W. 1.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Queen Anne's Gate-buildings, Westminster, on Nov. 21st, with Sir Francis H. Champneys in the chair. Certain midwives were struck off the Roll, the following charges, amongst others, having been brought forward:—

Being in attendance at a confinement, and the case being one of abortion, the midwife did not explain that the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (2), and the case being as aforesaid she neglected to band to the husband or the nearest relative or friend present the form of sending for medical help, properly filled up and signed by her, in order that this might be immediately forwarded to a medical practitioner or to an approved institution, as required by Rule E. 21.—A midwife when attending her patients did not wear a clean dress of washable material, as required by Rule E. 2; she did not take and record the pulse and temperature of her patients at each visit, as required by Rule E. 14; she did not enter her records of pulse and temperature in a note-book or on a chart carefully preserved, as required by Rule E. 14, and did not keep her register of cases as required by Rule E. 24. Medical aid having been sought for a patient, the midwife neglected to notify the local supervising authority thereof, as required by Rule E. 22 (1) (*a*); having been in contact with a patient suffering from puerperal fever, she neglected to notify the local supervising authority thereof, as required by Rule E. 6. A child suffering from inflammation of, and discharge from, the eyes, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5). A midwife neglecting to disinfect her hands and forearms on each occasion before touching the generative organs of the patient, as required by Rule E. 4.; neglecting to wash the patient's external parts with soap and water and then to swab them with an efficient antiseptic solution on the occasions required by Rule E. 8, and attempting to assist delivery of the placenta by traction on the cord, being thereby guilty of malpractice within the meaning of Section 8 (2) of the Midwives Act, 1902. A midwife being

drunk and incapable of giving proper attention to the patient; neglecting to examine the placenta and membranes and to satisfy herself that they had been completely removed, as required by Rule E. 10. That medical advice on account of serious skin eruptions having been sought for the infant children of three women upon whom she was in attendance as a midwife, the midwife neglected to notify the local supervising authority thereof, as required by Rule E. 22 (1) (a). That when called to a confinement the midwife did not take with her the appliances and antiseptics required by Rule E. 3. In disregard of Rule E. 12 the midwife discontinued her attendance at a time when the condition of the child was not normal.

At a meeting held on the same day a letter was read from the Local Government Board asking the Central Midwives Board to consider the advisability of framing a new rule in terms similar to the corresponding rule of the Central Midwives Board for Scotland, which required a midwife to notify the local supervising authority in the following case: "Artificial feeding: Whenever under Rule 19 (b) she has advised the substitution of artificial feeding for breast feeding." The Board decided that the Local Government Board be informed that the Central Midwives Board, having considered the question of framing a new rule in terms similar to the corresponding rule of the Central Midwives Board for Scotland, is prepared to submit such a rule for the approval of the Privy Council.—A letter was considered from the secretary of the Four Boroughs Maternity Clinics bringing to the notice of the Board a scheme for the payment of midwives for antenatal visiting. The Board directed that the secretary of the Four Boroughs Maternity Clinics be thanked for her communication, of which the Board takes note. The Board fears that any scheme by which additional payment is made to midwives for bringing patients to a clinic can hardly fail to be utilised for the notification of pregnancy, and therefore to prevent early engagement of midwives. It is strongly in favour, however, of promoting the coöperation of midwives in antenatal and maternity care.—A letter was considered from the secretary of the National Poor-Law Officers' Association asking the Board to amend Rule C. 1 (2) (b) by deleting the words "and maintaining a resident physician or house surgeon and a matron or superintendent nurse." The Board decided that the secretary of the National Poor-Law Officers' Association be informed that the Board is not prepared to amend Rule C. 1 (2) (b) in the sense suggested by his letter.

THE INSURANCE OF DISABLED MEN.—The Government has decided to apply the Workmen's Compensation Act to disabled sailors, soldiers, and airmen returning to civilian employment, it being understood that the State bears any increased charge incurred for compensation which arises out of the disability. The ordinary rates of insurance are to rule, the Government reimbursing the loss, if any, to the insurance company or to the large firm which undertakes the insurance of its own workpeople. All men in receipt of disability pensions from the Ministry of Pensions are regarded as disabled men for the purposes of the scheme. The details of the scheme are still to be published.

DEARTH OF WOMEN DOCTORS.—A scarcity of women medical assistants for maternity and child-welfare schemes is recorded by the Leeds Health Committee. There were only two applications in response to an advertisement for a woman medical assistant. Only one of the applicants was deemed suitable, but she failed to attend for an interview. The medical officer reported that Dr. Amelia Sharp had intimated her willingness to undertake a certain amount of work in connexion with infant-welfare centres, and the committee has agreed to ask her to attend at three afternoon clinics a week and to pay her at the rate of 1 guinea per clinic. The medical officer has been empowered to make such arrangements with other medical practitioners of carrying on the work at the centres temporarily at a similar rate of remuneration.

CLERICAL, MEDICAL, AND GENERAL LIFE ASSURANCE SOCIETY.—The report of this society presented at the ninety-fourth annual general meeting, which was held at the Society's office, 15, St. James's-square, S.W. 1, on Nov. 1st, showed a satisfactory development of the business and of financial progress during the year ending June 30th. The new assurances were 808, for a total sum of £1,122,937. The premium income was £476,311, showing an increase of £7966, and the gross interest income rose by £7072 to £292,412. The claims by death, including £43,199 directly due to war, amounted to £323,633, which is £36,851 below the total recorded last year. The surplus income of the year's transactions amounted to £217,150, and the life assurance fund was thereby raised to £6,312,720. The society has resumed its pre-war practice of granting whole-world and unconditional policies on the lives of civilians at the ordinary rate, and it also grants whole-world and unconditional policies at extra premiums on the lives of naval and military officers serving at home and abroad.

THE SERVICES.

ROYAL AIR FORCE.

A LIST of some 200 officers of different ranks in the Naval and Army Medical Services who have received temporary commissions in the Royal Air Force (Medical Branch) will appear in a subsequent issue of THE LANCET.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeon-Lieutenants: J. Nicol, A. W. McRorie.

ARMY MEDICAL SERVICE.

Col. J. Meek, C.B., is placed on retired pay.

ROYAL ARMY MEDICAL CORPS.

To be temporary Colonels whilst specially employed: Major G. R. Murray, R.A.M.C., T.F.; Temp. Lieut.-Col. E. F. Buzzard (Captain, R.A.M.C., T.F.).

Major R. N. Hunt relinquishes the temporary rank of Lieutenant-Colonel on re-posting.

Temp. Lieut.-Col. T. D. Acland (Major and Brevet Lieutenant-Colonel, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

Capt. A. D. Fraser relinquishes the acting rank of Lieutenant-Colonel and reverts to the acting rank of Major.

Major W. Davis to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Temp. Capt. W. F. Neil and Capt. C. J. O'Reilly relinquish the acting rank of Major on re-posting.

To be acting Majors: Capts. J. Y. Moore, W. F. Christie; Temp. Capts. S. J. L. Lindeman, W. G. Waugh, S. W. McLellan, A. J. M. Wright, R. E. Cree, N. S. Carmichael.

Capt. (acting Major) A. G. Wells to draw the pay and allowances of his acting rank whilst specially employed.

Temporary Captains to be acting Majors whilst specially employed: C. S. Gideon, R. W. Sutherland, L. J. Spence.

The undermentioned late temporary Captains are granted the honorary rank of Captain: M. M. Townsend, T. E. Hammond, G. Holroyd.

Temp. Hon. Lieut. J. R. Beaven to be temporary honorary Captain.

Officers relinquishing their commissions: Temp. Major B. G. Elliott (on account of ill-health contracted on active service, and is granted the honorary rank of Major); Temp. Capts. (acting Major) W. P. Ker, N. C. Rogers, C. F. Curtis, H. Dearden (on account of ill-health caused by wounds, and is granted the honorary rank of Captain), W. Russell, D. G. M. Munro, J. W. O. van Millingen (on account of ill-health contracted on active service, and is granted the honorary rank of Captain), W. H. Bennett (on account of ill-health contracted on active service, and is granted the honorary rank of Captain), J. St. P. Knight, L. C. Smith (on appointment to R.A.F.), W. Allan (on account of ill-health contracted on active service, and is granted the honorary rank of Captain), T. B. Carlyon (on account of ill-health, and is granted the honorary rank of Captain).

SPECIAL RESERVE OF OFFICERS.

Capt. T. F. Corkill to be acting Major.

Capt. J. A. L. Wilson to be acting Major whilst specially employed.

Capt. J. MacD. Clark relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

To be Lieutenants:—L. Hardy. From University of London Contingent, O.T.C.: E. A. Clegg, A. Eidinow, S. V. Goldhurst, G. G. Havers, W. S. Herman, C. P. Hines, C. G. J. Rayner, M. S. Thomson, J. Whittingdale. From Birmingham University Contingent, O.T.C.: E. E. R. Spurway.

TERRITORIAL FORCE.

Lieutenant-Colonels, from the Sanitary Service, to be Lieutenant-Colonels: P. C. Smith, J. R. Kaye, A. K. Chalmers, D. Smart, and C. Averill.

The undermentioned Majors to be acting Lieutenant-Colonels whilst specially employed: W. H. M. Telling, W. Thompson, W. M. Stevens, P. R. Griffiths, B. Riddell, G. N. Biggs (to remain seconded), D. J. Graham, H. A. Ballance, H. B. Roderick, and L. Humphry.

Capt. (Brevet Major) E. H. Fenwick to be acting Lieutenant-Colonel whilst specially employed.

Captains to be acting Majors while specially employed: R. C. Elsworth, W. J. Greer, T. M. Thomas, E. Reid, J. Henderson, H. J Gorrie, F. S. Carson, (Brevet Major) A. G. R. Foulerton, (Temp. Major) A. A. McWhan, J. H. Cobb, A. J. Jex-Blake, J. H. Thursfield, J. R. Levack, R. Ritson, J. Everidge, M. G. Foster, H. A. Cookson, R. Whittington, W. H. Brailey, A. L. Whitehead, L. R. Braithwaite, R. A. Veale, C. W. Vining, A. H. Horsfall (to remain seconded).

Lieut. C. H. Gibb to be Captain.

Restored to the establishment: Major (Brevet Lieut.-Col.) T. D. Acland; Capts. N. S. Finzi, A. McLennan.

TERRITORIAL FORCE RESERVE.

Capt. H. G. Butterfield relinquishes his commission on account of ill-health, and is granted the honorary rank of Captain.

Capt. A. L. McCully, from Attached to Units other than Medical Units, to be Captain.

INDIAN MEDICAL SERVICE.

Cols. C. C. Manifold and P. Hehir to be Major-Generals.

Hon. Temp. Lieut. Behramji Pestonji Sabawala to be honorary temporary Captain.

THE British Red Cross Society have conferred the honour of honorary life membership upon Mr. John Hatton, director of the baths of Bath, in recognition of the work done at the bathing establishment for wounded and invalided soldiers of all ranks. Immediately after the outbreak of war the Bath Corporation placed the facilities of the city's bathing establishment at the disposal of the War Office and Admiralty.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

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TUESDAY, NOV. 26TH.

THE General Medical Council commenced its winter session at its offices, Hallam-street, W., Sir DONALD MACALISTER, the President, being in the chair.

Presidential Address.

Sir DONALD MACALISTER opened his address with an expression of thanksgiving for the assured peace, and of grateful acknowledgment to those who by their devotion and sacrifice had redeemed civilisation from ruin. He continued:—

Not least we recognise with pride the great part performed by the men and women of our profession, both at home and abroad, in preserving the health of the Forces and of the people during the struggle. In the King's words, they have made a "notable contribution to the common welfare," "fearlessly exposing themselves to danger in their task of mercy." The profession as a whole is the nobler for their nobility, and will face the grave tasks of reconstruction with fresh courage, informed by their example and experience.

Sir Donald MacAlister went on to mourn the loss to the Council in the death of Mr. Meredith Townsend, who joined the Council last year, and of his former colleagues, Mr. Brudenell Carter and Dr. Robert Saundby, each of whom had given many years of valued service before retirement. He reported the death, in advanced age, of Mr. James Robertson, Registrar of the Branch Council for Scotland. He regretted the absence of two members of the Council—Sir Frederick Taylor and Professor Symington—owing to ill-health.

The Effects of the War and Reconstruction.

The effects of the war, which were still felt by the medical profession, were then referred to.

The strain upon medical men in civil practice, already severe enough, has been increased by the prevalence of epidemic illness. There is good hope, he said, that this strain will speedily be relieved by the release of medical officers from military service at the rate of some hundreds every month. The Professional Committees in Great Britain, which, with the able guidance of members of this Council, have so effectively aided the Government in recruiting for the medical services during the war, are coöperating with the authorities in solving the scarcely less difficult problems of demobilisation and resettlement. In particular, it has been arranged that the release of teachers in our medical schools and hospitals shall have special consideration. The influx of students returned from active service, with a view to the early completion of their professional course, makes it urgent that the sadly depleted staffs of skilled instructors should be reinforced without delay.

Sir Donald MacAlister then referred to the census of medical students which was completed in June, recapitulating the figures which have already appeared in our columns (THE LANCET, July 27th, p. 113, August 31st, p. 308). On the basis of these figures he had suggested to the Minister of National Service that, so far as the immediate requirements for junior students were concerned, it was unnecessary to extend beyond the original term—namely, July 31st, 1918—the instruction conferring exemption from military service on first-year men. This suggestion had been adopted. Sir Auckland Geddes had now, he added, become President of the Local Government Board, retaining the direction of the National Service Ministry for the present, and it was gratifying to the medical profession that during the period of transition and rebuilding the responsible administrator should be a registered medical practitioner of high distinction as a teacher and an organiser.

The number of newly qualified practitioners would this year be below the average, notwithstanding the steps taken to recall senior students from the Army to the medical schools. Somewhat tardy measures had been adopted to maintain the supply of senior dental students, but so far the qualified dentists added to the Dentists' Register had been few. The number attending the schools of dentistry with a view to qualification was also very small indeed. The prospect of a considerable addition to the ranks of qualified dentists, plainly required to meet immediate wants, was not encouraging. The Report of the Departmental Committee on the Dentists Act, which he had hoped might be before the Council this session, had not yet appeared. The problem the Committee was set to discuss did not become simpler with the rapid growth of the national demand for healthier conditions. A solution, Sir Donald MacAlister remarked, becomes every day more necessary.

Ministry of Health.—Other Legislative Measures.

Regarding the proposals for a Ministry of Health, he said:—

The Lord President has been moved to forward, for the observations of the Council, the text of a Bill which proposes to establish a Ministry of Health for England and Wales and a Board of Health for Scotland for the exercise of powers with respect to health and local government. The Bill has been read a first time in the House of Commons, but will not be further proceeded with until the new Parliament meets. I suggest that the Council should first consider *in camerâ* the manner in which it may with most advantage conduct the discussion of the Bill, with a view to formulating such observations thereon as it may wish to submit to the Lord President. The Bill, it will be found, is rather an enabling than an enacting measure. Certain medical functions of other departments are forthwith transferred to the new authority. Others may be transferred by Order in Council. Time will be given for the public discussion of such Orders before they take effect, and it is obvious that in many cases the terms of the Order may be of cardinal importance for medical science and practice. The Bill as it stands contains little that explicitly affects this Council, though I observe that it is made the duty of the Minister of Health to take steps for the effective carrying out of measures conducive to the health of the people, including "the training of persons engaged in health service." It should, I think, be made clear whether this phrase would or would not cover the functions exercisable by the Privy Council and this Council in relation to medical and dental education, to public health diplomas, to rules framed by the Central Midwives Boards, and the like. I am advised that it would not; but the Council will, no doubt, consider the point to be of some importance.

Other legislative measures were briefly alluded to:—

The Midwives Acts for Scotland and Ireland, passed during the war as urgently necessary in the public interest, have now been supplemented by an Act amending the English Act of 1902. The amendments tend to harmonise the three laws and to fill up lacunæ in the latter Act which experience of its administration had disclosed. In it provision is at length made for the remuneration of English practitioners called in to deal with emergencies arising in the practice of certified midwives. The Central Midwives Board for Ireland has framed rules for governing such practice in that country. The Privy Council, in accordance with the Irish Act and with the new English Act, has submitted the rules to the Executive Committee for comment. They follow, in the main, the pattern of the Scottish Board's rules, which have been already approved by the Council.

Certain Bills have been before Parliament dealing with the grave question of venereal disease and its prevention. A Joint Committee of both Houses has been considering them in their bearing on the important Act passed last year. You will remember that under its provisions the practice of unqualified persons professing to treat these diseases was legally prohibited in certain areas. The Bills in question propose to extend the prohibition to all parts of the country, and to impose penalties on unqualified persons who publicly advertise themselves as prepared to treat or to supply "cures" for this class of maladies. As your President I was asked to give evidence before the Committee, and testified to the various aspects of the matter brought to the notice of the Council by Dr. Langley Browne's Unqualified Practice Committee and otherwise; and to the enactments of the Overseas Dominions respecting unqualified practice in general, as extracted from the Council's minutes. Although the Bills will not proceed this session of the Council, I understand the evidence given will be printed, and that the Committee will probably be reconstituted and report to the next Parliament.

Examination in General Education.—Training in Preventive Medicine.

The President then went on to record the progress made by the English Board of Education with the elaboration of its scheme for a general school examination to take the place of the multiple examinations in general education with which teachers and scholars have too long been burdened. Dr. Mackay, on behalf of the Education Committee, is charged with a report on the subject. Meanwhile the four Scottish Universities had received from His Majesty in Council a new Ordinance which establishes a common Entrance Board, empowered to accept the leaving certificates of the Scotch Education Department as the normal qualification for admission to the universities in all faculties. This would liberate the Faculty of Medicine from the obligation, hitherto imposed upon it by Ordinance, to accept a lower standard of preliminary education than that required for degrees in arts or science. "I am," he said, "sanguine enough to believe that the so-called 'Junior' Preliminary Examinations for students of medicine will cease to be recognised in Scotland before they are extinct elsewhere." The large and indeed embarrassing affluence of students much below the age of 18 who were now entering the medical schools made the change more than ever expedient on educational grounds.

Training in preventive medicine had been considered during the recess by the members of the Education Committee, and proposals would be submitted. He called attention to the remarkable Memorandum on Medical Education in England, addressed to the President of the Board of Education by Sir George Newman, setting forth the changes that have gradually been made in the duties and responsibilities of the medical practitioner with

reference to public health and public administration, and the grounds for requiring that a corresponding change should be made in the manner and matter of his training for their fulfilment.

In forecasting the programme of the session Sir Donald MacAlister expressed gratification that complaints of laxity in granting certificates had practically ceased, a testimony to the efficacy of the warning notices issued.

Appointment of Officers.

The names of Mr. Robert Howden, Dr. David Hepburn, Sir Bertram C. A. Windle, Dr. N. P. Walker, Mr. H. J. Waring, Mr. J. W. B. Hodsdon, and Sir Arthur Chance were added to the Anatomy Acts Committee.

Dr. Norman Moore was appointed treasurer in succession to Sir Frederick Taylor, retired, and Dr. Norman Walker chairman of the Business Committee.

WEDNESDAY, NOV. 27TH.

The Council proceeded to the consideration of penal cases. At the conclusion of the sitting reports of the Public Health, Examination, and Education Committees were received and entered on the minutes, as well as a letter from the Privy Council asking for comment upon the Ministries of Health Bill, 1918.

URBAN VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING OCTOBER, 1918.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 5·9 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 3·5, 3·2, and 4·7 per 1000. Among the metropolitan boroughs the lowest rates from these notified diseases were recorded in Chelsea, the City of Westminster, St. Marylebone, Hampstead, and the City of London; and the highest rates in Hackney, Bethnal Green, Stepney, Southwark, and Bermondsey. The prevalence of scarlet fever was 60 per cent. higher than in the preceding month; this disease was proportionately most prevalent in Hammersmith, Shoreditch, Bethnal Green, Stepney, Southwark, and Bermondsey. The Metropolitan Asylums Hospitals contained 1184 scarlet fever patients at the end of the month, against 753, 690, and 931 at the end of the three preceding months; the weekly admissions averaged 178, against 105, 101, and 164 in the three preceding months. The prevalence of diphtheria was about 50 per cent. higher than in September; the greatest proportional prevalence of this disease was recorded in Stoke Newington, Hackney, Bethnal Green, Stepney, and Woolwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 918, 886, and 1051 at the end of the three preceding months, had further increased to 1155 at the end of October; the weekly admissions averaged 169, against 122, 107, and 166 in the three preceding months. The prevalence of enteric fever was nearly double that in each of the two preceding months; of the 50 cases notified during October, 6 belonged to Islington, 6 to Deptford, 4 each to Bethnal Green and Hackney, and 3 each to Paddington, Kensington, Hammersmith, and Camberwell. There were 56 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 23, 32, and 43 at the end of the three preceding months; the weekly admissions averaged 9, against 6 in each of the two preceding months. Erysipelas was proportionally most prevalent in Islington, Hackney, Bethnal Green, Stepney, Southwark, Wandsworth, and Camberwell. The 12 cases of puerperal fever notified during the month included 3 in Southwark and 2 each in Shoreditch and Wandsworth. Of the 14 cases of cerebro-spinal meningitis 4 belonged to Stepney and 2 to Lewisham, and 4 of the 11 cases of poliomyelitis were notified in Islington.

The mortality statistics in the table relate to the deaths of civilians belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased had previously resided. During the five weeks ended Nov. 2nd the deaths of 10,559 London residents were registered, equal to an annual rate of 27·3 per 1000; in the three preceding months the rates had been 14·8, 10·1, and 11·4 per 1000. The death-rates ranged from 16·5 in Hampstead, 19·6 in the City of Westminster, 21·2 in Hammersmith, 21·3 in Chelsea, and 22·2 in Fulham, to 34·9 in Hackney, 35·0 in Stoke Newington, 35·8 in Battersea, 36·0 in Woolwich, and 38·2 in St. Pancras. The 10,559 deaths from all causes included 334 which were referred to the principal infectious diseases, and included 22 from measles, 24 from scarlet fever, 90 from diphtheria, 17 from whooping-cough, 10 from enteric fever, and 171 from infantile diarrhœa. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Chelsea, Hampstead, Finsbury, Wandsworth, and Lewisham; and the highest in Stoke Newington, Hackney, Bethnal Green, and Greenwich. The 22 deaths from measles were 27 below the average number in the corresponding period of the five preceding years, and included 6 in St. Pancras, 3 in Lewisham, and 2 each in St. Marylebone and Battersea. The 24 fatal cases of scarlet fever were 6 above the average, and included 6 belonging to Bethnal Green, 4 to Southwark, and 3 to Islington. The 90 deaths attributed to diphtheria were 18 in excess of the average, and included 22 in Hackney, 6 each to Stoke Newington, Stepney, Lambeth, Wandsworth, and Woolwich, and 5 to Southwark. The deaths from whooping-cough numbered 17, and showed a decline of 18 from the average; of these, 4 belonged to Camberwell and

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING OCTOBER, 1918.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1917.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.									
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.
LONDON	4,026,901	—	1031	937	—	50	—	12	214	14	11	2269	5·9	—	22	24	90	17	10	171	334	0·9	10559	27·3
West Districts:																								
Paddington	122,507	—	32	22	—	3	—	—	4	—	—	61	5·2	—	—	1	1	1	1	3	7	0·6	291	24·8
Kensington	151,535	—	19	23	—	3	—	1	6	1	—	53	3·6	—	—	1	2	1	—	10	14	1·0	329	22·6
Hammersmith	114,952	—	40	11	—	3	—	—	2	—	—	56	5·1	—	—	—	—	1	—	6	7	0·6	234	21·2
Fulham	145,186	—	18	21	—	1	—	1	5	1	1	48	3·4	—	1	—	1	—	1	8	11	0·8	309	22·2
Chelsea	57,368	—	8	5	—	—	—	—	3	—	—	16	2·9	—	—	—	1	—	—	—	1	0·2	117	21·3
City of Westminster	122,046	—	4	8	—	2	—	—	1	—	2	17	1·5	—	1	—	—	—	—	8	9	0·8	229	19·6
North Districts:																								
St. Marylebone	92,796	—	12	9	—	1	—	—	4	—	—	26	2·9	—	2	—	1	—	—	3	6	0·7	211	23·7
Hampstead	75,649	—	4	13	—	1	—	—	2	1	—	21	2·9	—	—	—	2	—	—	—	2	0·3	120	16·5
St. Pancras	186,600	—	52	43	—	2	—	—	5	1	1	104	5·8	—	6	2	3	1	—	9	21	1·2	683	38·2
Islington	297,102	—	76	55	—	6	—	—	14	—	4	155	5·4	—	1	3	4	3	2	11	24	0·8	890	31·2
Stoke Newington	47,426	—	9	19	—	—	—	—	1	—	—	29	6·4	—	—	—	6	—	—	2	8	1·8	159	35·0
Hackney	196,598	—	45	133	—	4	—	1	12	—	1	196	10·4	—	—	2	22	1	—	6	31	1·6	658	34·9
Central Districts:																								
Holborn	35,303	—	3	10	—	1	—	—	1	—	—	15	4·4	—	—	—	—	1	2	1	4	1·2	103	30·4
Finsbury	68,011	—	8	13	—	—	—	—	4	—	—	25	3·8	—	1	—	—	—	—	1	2	0·3	194	29·7
City of London	16,138	—	1	3	—	—	—	—	—	—	—	4	2·6	—	—	—	—	—	—	—	—	—	41	26·5
East Districts:																								
Shoreditch	89,675	—	39	18	—	—	—	2	7	—	—	66	7·7	—	—	—	—	—	—	10	10	1·2	247	28·7
Bethnal Green	107,362	—	81	36	—	4	—	—	18	—	—	139	13·5	—	—	6	2	—	—	7	15	1·5	302	29·3
Stepney	232,010	—	70	98	—	—	—	—	15	4	1	188	8·4	—	1	—	6	—	—	14	21	0·9	585	26·3
Poplar	143,443	—	34	35	—	2	—	1	9	1	—	82	6·0	—	1	—	2	—	—	8	11	0·8	451	32·8
South Districts:																								
Southwark	167,936	—	107	41	—	—	—	3	25	—	—	176	10·9	—	—	4	5	1	—	8	18	1·1	385	23·9
Bermondsey	107,635	—	51	35	—	1	—	—	8	—	1	96	9·3	—	—	—	2	1	—	8	11	1·1	260	25·2
Lambeth	272,038	—	79	46	—	1	—	—	11	1	—	138	5·3	—	1	1	6	—	—	9	17	0·7	603	23·1
Battersea	150,023	—	18	20	—	—	—	—	5	—	—	43	3·0	—	2	1	2	1	—	4	10	0·7	515	35·8
Wandsworth	300,787	—	73	41	—	2	—	2	18	1	—	137	4·7	—	1	—	6	1	1	8	17	0·6	684	23·7
Camberwell	239,461	—	57	60	—	3	—	—	20	—	—	140	6·1	—	1	2	3	4	—	11	21	0·9	573	25·0
Deptford	103,527	—	22	22	—	6	—	—	5	—	—	55	5·5	—	—	—	2	—	—	4	6	0·6	244	24·6
Greenwich	90,440	—	20	26	—	2	—	—	2	—	—	50	5·8	—	—	—	3	—	2	7	12	1·4	288	33·2
Lewisham	161,405	—	24	29	—	—	—	1	3	2	—	59	3·8	—	3	—	2	—	—	2	7	0·4	398	25·7
Woolwich	131,942	—	25	42	—	1	—	—	4	1	—	73	5·8	—	—	1	6	—	1	3	11	0·9	456	36·0
Port of London	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

3 to Islington. The 10 fatal cases of enteric fever were one less than the average number, and included 2 each in Islington, Holborn, and Greenwich. The 171 deaths from infantile diarrhœa were no fewer than 256 below the average; this disease was proportionately most fatal in Kensington, the City of Westminster, Shoreditch, Bethnal Green, Bermondsey, and Greenwich. In conclusion, it may be stated that the aggregate mortality from these principal infectious diseases in London during October was 45 per cent. below the average.

(Week ended Nov. 23rd, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 43·8 and 38·7 per 1000 in the two preceding weeks, further declined to 36·3 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 36·8 or 7·2 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 11·8 in Wallasey, 12·9 in Portsmouth, and 13·3 in Gloucester, to 71·1 in Walsall, 74·6 in Nottingham, 76·9 in Stockport, 78·8 in Dewsbury, and 80·7 in West Bromwich. The principal epidemic diseases caused 207 deaths, which corresponded to an annual rate of 0·7 per 1000, and included 60 from infantile diarrhœa, 53 from diphtheria, 44 from measles, 25 from whooping-cough, 18 from scarlet fever, and 7 from enteric fever. Whooping-cough caused a death-rate of 1·4 in Blackburn and 1·5 in Preston, and measles of 1·7 in Wolverhampton and 3·6 in Walsall. The deaths from influenza numbered 5106, against 5916 in the preceding week, and included 1178 in London, 311 in Manchester, 280 in Birmingham, 207 in Nottingham, 164 in Sheffield, 163 in Leeds, and 121 in Bradford. The 1149 cases of scarlet fever and 1062 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 22 and 24 below the respective numbers remaining at the end of the previous week. The causes of 96 deaths in the 96 towns were uncertified, of which 17 were registered in Birmingham, 13 in Nottingham, 8 in South Shields, and 6 in West Bromwich.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 24·3 per 1000, against 27·0 and 23·9 per 1000 in the two preceding weeks. Of the 1121 deaths from all causes, 29 were classified to influenza, which was also stated as a contributory cause in 252 deaths classified to other diseases; in the previous week these numbers were 46 and 331 respectively. The 502 deaths in Glasgow corresponded to an annual rate of 23·5 per 1000, and included 7 from diphtheria, 6 from whooping-cough, 4 from infantile diarrhœa, and 1 from scarlet fever. The 208 deaths in Edinburgh were equal to a rate of 32·5 per 1000, and included 5 from whooping-cough, 2 each from scarlet fever and infantile diarrhœa, and 1 from diphtheria.

Irish Towns.—The 244 deaths in Dublin corresponded to an annual rate of 31·9, or 13·7 per 1000 below that recorded in the previous week, and included 67 from influenza and 1 from infantile diarrhœa. The 490 deaths in Belfast were equal to a rate of 65·0 per 1000, and included 2 from infantile diarrhœa.

EDITORIAL NOTICE.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Communications, Letters, &c., to the Editor have been received from—

A.—Capt. G. K. Aubrey, late R.A.M.C.; Mr. J. H. Allan, Liverpool; Col. J. G. Adami, A.D.M.S.; Miss Lena Ashwell, Lond.; Messrs. Allen and Hanburys, Lond.

B.—Capt. T. G. Brown, R.A.M.C.; Board of Education, Lond.; Mrs. S. H. Burns, Dublin; Dr. G. Blacker, Lond.; Messrs. Burroughs Wellcome and Co., Lond.; Dr. M. F. Boulenger, Dartford; Mrs. G. C. Brownson, Bristol; British Museum (Natural History), Lond., Director of; Lady Barrett, Lond.

C.—Dr. H. Chick, Lond.; Mr. P. C. Cowan, D.Sc., Dublin; Capt. C. M. Craig, R.A.M.C.; Dr. G. L. Cox, Preston; Clerical, Medical, and General Life Assurance Society, Lond.

D.—Mr. H. Dickinson, Lond.; Dr. R. Donaldson, Reading; Lieut.-Col. J. F. Donegan, C.B., R.A.M.C.(R.); Mr. L. Doncaster.

E.—Major-General G. J. H. Evatt, C.B.

F.—Food (War) Committee, Royal Society, Lond.; Dr. R. F. Fox, Lond.; Dr. H. French, Lond.; Fiji Legislative Council, Medical Dept. of.

G.—Dr. J. O. Gavronsky, Lond.; Dr. A. G. Gibson, Oxford.

H.—Capt. C. W. Hutt, R.A.M.C.; Capt. J. A. Hadfield, R.A.M.C.; Mr. W. B. Hardy, Lond.

I.—Insurance Committee for the County of London; Incorporated Institute of Hygiene, Lond.

J.—Mr. M. H. Judge, Lond.; Dr. G. Jessel, Wigan.

L.—Dr. A. E. T. Longhurst, Chandler's Ford; Local Government Board, Lond.; Liquid Air and Rescue Syndicate, Lond.; Dr. R. E. Lord, Colwyn Bay; Major F. W. Lewis, R.A.M.C.(T.)

M.—Mr. J. B. Macalpine, Manchester; Sir Philip Magnus, M.P., Lond.; Medical Research Committee, Lond., Sec. of; Dr. W. C. Minchin, Herstmonceux.

N.—National Baby Council Week, Lond., Sec. of.

O.—Mr. F. H. Oates, Lond.; Mrs. O'Reilly, West Wellow.

P.—Capt. A. Patrick, R.A.M.C.; Major J. Phillips, R.A.M.C.; Penal Reform League, Lond.

Q.—Mr. J. H. Quastel, Reading.

R.—Miss M. F. Rutherfoord, Lond.; Royal Society of Arts, Lond.; Mr. D. D. Robertson, Lond.; Royal Society of Medicine, Lond.; Reading Pathological Society, Sec. of; Royal Institution of Great Britain, Lond.; Dr. R. J. Rowlette, Dublin; Mr. P. B. Roth

S.—Prof. J. W. Simpson, C.M.G., Lond.; Dr. G. A. Sutherland, Lond.; Capt. J. L. Stoddard, M.C., U.S.A.; Society of Apothecaries of London; Prof. J. W. W. Stephens, Lond.

T.—Dr. A. H. Thompson, Lond.; Dr. A. B. M. Thomson, Pietermaritzburg; Dr. J. Tatham, Oxted.

V.—Dr. C. W. Vining, Leeds.

W.—Dr. F. P. Weber, Lond.; Dr. L. Williams, Lond.; Mr. C. H. Walker, Bristol.

Y.—Dr. R. A. Young, Lond.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2

Appointments.

RUSEMBEKER, Dr., has been appointed Assistant Medical Officer at the City Hospitals of the Sheffield Corporation Health Committee.

STEWART, A. G., Lieutenant-Colonel, to the command of Paddington Military Hospital.

Vacancies.

For further information refer to the advertisement columns.

Barnstaple, North Devon Infirmary.—H.S. £150.
Birkenhead Borough Hospital.—Jun. H.S. £170.
Birkenhead Union.—Res. Asst. M.O. £300.
Birmingham City, Pensioners' Hospital.—M.O. £500.
Bournemouth, Crag Head Military Hospital.—H.S. £200.
Bridgend, Glamorgan County Council.—Temp. Asst. M.O. 6 gs. p.w.
Bury St. Edmunds, Suffolk Hospital, Ampton Hall.—Res. M.O. £400.
Colchester, Essex County Hospital.—Female Jun. Res. M.O. £350.
Dorchester, Dorset County Council Education Committee.—School Dentist. £350.
Dorset County Council.—Female Temp. Asst. M.O. £400.
Dumfries and Galloway Royal Infirmary.—Res. H.S. £150.
Halifax County Borough Education Committee.—School M.O. £500.
Hampstead General and North-West London Hospital.—H.S. and H.P. £200.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. 30 gs.
London County Mental Hospital, Essex.—Temp. Asst. M.O. 7 gs. a week.
London Female Guardian Society.—M.O. 35 gs.
Manchester, Baguley Sanatorium.—Med. Supt. £550.
Ministry of Pensions.—Res M.O. for Allerton Tower Home of Recovery, Liverpool.
Northampton General Hospital.—Jun. H.S. £150.
Nottingham General Hospital.—Female H.P. and H.S. £250.
Oxford, Radcliffe Infirmary and County Hospital.—H.P. £200.
Paisley Corporation Infectious Diseases Hospital.—Resident. £250.
Rochdale Infirmary and Dispensary.—Sen. H.S. £300.
Royal College of Physicians, Pall Mall East.—Milroy Lecturer.
Royal Free Hospital, Gray's Inn-road, W.C.—Female Medical and Gynæcological Registrar.
St. Bartholomew's Hospital.—Res. Anæs. £80.
St. Marylebone Health Society.—M.O. Also Asst. M.O.
Samaritan Free Hospital for Women.—Registrar. £50.
Sheffield Royal Infirmary.—Two H.S.'s. £150.
Shrewsbury Dispensary, 43, St. John's-hill, Shrewsbury.—Locum M.O.
Southampton, Shirley Warren Infirmary.—Res. Asst. M.O. £250.
Victoria Hospital for Children, Chelsea, S.W.—Sen. Res. M.O. £250.
Wigan Infirmary.—Sen. H.S. £250.
Wolverhampton and Staffordshire General Hospital.—H.S. £200.

Births, Marriages, and Deaths.

BIRTHS

CHARTRES.—On Nov. 24th, at Dodbrook Manor, Devon, the wife of Lieutenant-Colonel E. Acheson Chartres, R.A.M.C., of a son.

HARE.—On Nov. 23rd, at Cheltenham, the wife of Captain (acting Major) W. T. Hare, M.C., R.A.M.C., of a son.

SMITH.—On Nov. 24th, at Queen's-drive, Mossley-hill, Liverpool, the wife of Captain George F. R. Smith, R.A.M.C. (T.F.), of a daughter.

WOODSEND.—On Nov. 21st, at East Bridgeford Manor, Notts, the wife of R. N. Woodsend, M.B., B.S., Catterick, Yorks, Captain, R.A.M.C., of a son.

MARRIAGES.

HUGHES—MAINWARING.—On Nov. 23rd, at St. Clement Danes Church, London, Captain Frank Mainwaring Hughes, R.A.M.C. (T.F.) (Legion d'Honneur, Croix de Chevalier), to Mary, elder daughter of Mr. and Mrs. Frederick Hope Mainwaring, of Northfleet, Kent.

LARGE—COWAN.—On Nov. 25th, at St. Paul's Church, Edinburgh, Lieutenant-Colonel Stanley Dermott Large, D.S.O., M.C., R.A.M.C., to Violet Muriel Elise (Mona), youngest daughter of David Cowan, Esq., J.P., M.Inst.C.E., of Coulport, Cove, Dumbartonshire, and Abernethy, Perthshire.

PETERS—BENNETT.—On Nov. 21st, at St. John's Church, Cambridge-square, W., by the Rev. H. F. S. Adams, vicar, Haydn Peters, Captain, R.A.M.C., to Violet Mona, daughter of the late Mr. Justice T. R. Bennett, of Pietermaritzburg, Natal. South African papers please copy.

DEATHS.

GARDINER.—On Nov. 20th, at Mount Adon Park, Lordship-lane, Dulwich, Bruce Hubert John Gordiner, M.D.

HOPE.—On Nov. 21st, at Fernley Hotel, Bath, from pneumonia contracted when doing National Service work, James William Hope, F.R.C.P. Edin., D.P.H., late Principal Medical Officer and Commissioner of Public Health, Western Australia.

JAMES.—On Nov. 16th, at Upper Holloway, London, of pneumonia following influenza, M. B. James, M.B., Ch.B., aged 49 years.

MILES.—On Nov. 25th, at Pinfold-road, Streatham, S.W., of pneumonia following influenza, Maurice W. Holt Miles, Captain, R.A.M.C. (late), S.R., aged 25.

O'REILLY.—On Nov. 18th, at Holmwood, North Park, Eltham, Lieutenant-Colonel P. S. O'Reilly, C.M.G., R.A.M.C., aged 41 years.

REID.—On Nov. 18th, suddenly, James More Reid, Lieutenant-Colonel, R.A.M.C., aged 62.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

MEETINGS OF SECTIONS.

Tuesday, Dec. 3rd.

PATHOLOGY (Hon. Secretaries—Gordon W. Goodhart, J. A. Murray): at 5.30 P.M.

Discussion on "The Pathology of Gas Gangrene."

It is hoped that the following will speak:—Prof. Weinberg (Paris), Major J. W. McNee, Dr. McIntosh, Dr. Henry, and Dr. Bulloch.

Wednesday, Dec. 4th.

SURGERY (Hon. Secretaries—V. Warren Low, Cyril A. R. Nitch): at 5.30 P.M.

Papers:

Lieut.-Col. Percy Sargent, D.S.O., R.A.M.C.: The Closure of Cavities in Bone.

To be followed by a discussion in which the following gentlemen will take part:—Major Oswald Shields, R.A.M.C., Capt. Simmonds, R.A.M.C., Mr. E. Gillespie, F.R.C.S., Capt. Z. Mennell, R.A.M.C.(T.)

Major John Robert Lee, M.D., B.S., R.A.M.C.: Compound Fractures of the Femur in its Upper Third, and demonstration of new Thigh and Arm Splints.

Thursday, Dec. 5th.

OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—Comyns Berkeley, J. S. Fairbairn): at 8 P.M.

Short Communications:

Dr. Drummond Robinson: A Case of Paraplegia in a Pregnant Woman.

Mr. Clifford White: On Sections of Kidney removed by Operation from Two Cases of Puerperal Suppression of Urine.

Specimens will be shown by—

The President (Mr. J. D. Malcolm): An Unusual Concretion in a Fibroid.

Dr. Drummond Robinson: (1) A Skiagram of Foreign Body in the Gravid Uterus; (2) Uterus showing changes taking place as the result of Procidentia.

Mr. T. G. Stevens: Foreign Bodies in the Bladder.

Friday, Dec. 6th.

LARYNGOLOGY (Hon. Secretaries—Frank A. Rose, Irwin Moore): at 4 P.M.

Discussion on "Dilatation of the Œsophagus without Anatomical Stenosis," to be opened by Dr. Brown Kelly and Dr. William Hill.

ANÆSTHETICS.

Discussion on "The Present Position of Spinal Anæsthesia," to be opened by Dr. F. S. Rood.

N.B.—A résumé of Dr. Rood's paper will be in the Library for reference a week before the meeting.

Will Members please note that abstracts of papers to be read at meetings are placed in the Library for reference a week before the meeting at which they are to be read.

SURGERY.—Members of the Section of Surgery are specially invited to attend the above discussion.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W. 1.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.

MONDAY, Dec. 2nd.—8.30 P.M., Discussion on Reconstruction in Medical Education and Practice, to be introduced by Col. H. J. Waring, R.A.M.C.(T.)

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

WEDNESDAY, Dec. 4th.—4.30 P.M., Paper:—Mr. B. S. Rowntree: Housing after the War.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY, Dec. 2nd.—2 P.M., Medical and Surgical Clinics. X Rays Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY, Dec. 5th.—5 P.M., Chesterfield Lecture:—Dr. M. Dockrell: The Papular Eruptions.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures on Public Health Problems under War and After-war Conditions (each Lecture will be followed by a Discussion):—

WEDNESDAY, Dec. 4th.—4 P.M., Lecture IX.:—Prof. E. W. Hope: The Rôle of the Ports in the Protection of the Health of the Nation.

Notes, Short Comments, and Answers to Correspondents.

THE CARE OF THE DISABLED.

Sir John Collie was to have read a paper on the care of pensioners and disabled combatants in relation to national health and wealth at the Royal Institute of Public Health on Nov. 21st, with Mr. John Hodge in the chair. Neither was able to keep his engagement, and the paper was read in truncated form by Major Basil Rhodes, who indicated the magnitude of the task before the Ministry, since 70,000 surgical and medical cases had already passed through its hands. But wounds and injuries, Sir John Collie said, did not constitute the chief difficulty, which lay in the mental effects of their injuries upon the pensioners. On the credit side of the nation's account, however, must be set the improvement in physique of men who but for military training would have been stunted in growth. It was obviously the duty of the nation to provide an adequate medical service for men who had risked life and health for their country, but it was proving very difficult to keep pace with their requirements. The paper laid stress on the need for the adequate treatment of neurasthenic and shell shock cases, for spinal injuries, and orthopædic cases in general, and for the tuberculous.

COLONIAL HEALTH REPORTS.

Weihaiwei.—In his report for 1917, recently received at the Colonial Office, Mr. R. F. Johnston, Administrator, writes:—

There were very few cases of epidemic disease in the Territory, which maintains its reputation as one of the healthiest districts on the coast of China. A considerable number of cases of dysentery occurred among both Europeans and Chinese, and although it is true that some of these cases were among non-residents who had been attacked by the disease before their arrival in Weihaiwei, there is reason to believe that the outbreak is to some extent traceable to unsatisfactory sanitary conditions both on the mainland and on the island. Steps are being taken to remedy these. ..... I am at present drawing up a scheme for the introduction into the island of market gardening and fruit culture on a fairly large scale. It is proposed to lease garden-lots to approved tenants on very stringent conditions, whereby the Government sanitary authorities will be enabled to exercise strict control over the methods of cultivation, and thereby ensure that the local market will be provided with regular and ample supplies of sound fruit and vegetables. Those who know how readily disease is conveyed in China through the medium of vegetable produce grown and retailed under insanitary conditions will realise the enormous benefit that the proper working of the proposed scheme will confer upon residents in Weihaiwei.

It was feared that the opening of the War Office Labour Depôt would be detrimental to the health of the territory, especially as it was known that the very advantageous terms offered by the British Government would attract large numbers of underfed coolies from those districts of Chili which, as a result of the great floods, were stricken by both famine and disease. It is satisfactory to report, however, that the health statistics of the territory seem to have been in no way affected by the influx of labourers. Much credit for this is due to the depôt authorities who successfully isolated all cases of contagious disease within the limits of the depôt itself. In the hospital at Port Edward 7572 out-patients and 253 in-patients were treated, and the number of operations performed was 258. In the new hospital at Wen-ch'uan-t'ang 2749 new cases were treated and the total number of attendances was 4715. At the Island Hospital there were 5193 attendances, as compared with 6225 in 1916. The decrease in the number of patients is due to the dwindling of the population. The island has long ceased to be the commercial centre of the territory, and the majority of the inhabitants have migrated to the mainland. Opium-smoking in the Territory is forbidden under legal penalties. The only persons who are allowed to consume the drug in any form are those who have been given licences to do so after examination by a Government medical officer. At the end of 1917 there were 46 licensed smokers, but there is not the least doubt that the number of opium-smokers is much larger than the number of licence-holders would indicate. The highest temperature recorded in 1917 was 95° F. in June, the lowest 8° F. in January. Rain or snow fell on 73 days, the fall for the year being 33·28 inches; the average rainfall for 17 years has been 28·38 inches.

LAMED.

To the Editor of THE LANCET.

SIR,—There must be many, like myself, with good arms and one good leg. I should feel much obliged if any of your readers can say where a really good self-propelled venicle can be procured which can be worked by the three limbs mentioned. Of course, it must be able to climb moderate hills to be of much use.—I am, Sir, yours faithfully,

Nov. 22nd, 1918. "LAMED."

WOMEN AND A MINISTRY OF HEALTH.

AT a public meeting organised by the National Baby Week Council, and held at the Armitage Hall on Nov. 25th, Lady Barrett, M.D., proposed a resolution to the effect—

That the organised services of women should be secured for the Ministry of Health as civil servants in the Ministry and in an advisory capacity, and a direct channel of communication between the women in the homes and the Ministry should be established.

We should, she contended, have no great results from such a Ministry unless based upon the needs of those most concerned in its operations. Schemes for a complete midwifery or antenatal service drawn up without the aid of women would end in failure. Proper recreation must be provided in the home. The manifestations of joy are the manifestations of health; mothers especially required real joy in their lives, and its realisation required the coöperation of men and women. The spread of venereal disease among girls of 13 to 16 years Lady Barrett attributed in large measure to faulty training and bad environment; here again the need was for more joy in their lives. On the advisory councils of the Ministry women should have large representation, while some of the executive officers at headquarters should be women. The resolution was passed unanimously.

PRECAUTIONS AGAINST INFLUENZA IN FRENCH SCHOOLS.

THE Prefect of the Seine, on the advice of various hygienic authorities, has issued for the guidance of directors of schools in Paris and the contiguous departments the following scheme of measures for dealing with the influenza epidemic:—

1° Supprimer toutes les réunions dans les locaux scolaires.

2° Faire procéder à des enquêtes par les soins des directeurs et directrices sur les motifs d'absence des élèves; transmettre sans retard, au secrétariat de l'inspection médicale des écoles, les résultats de ces enquêtes; éliminer, lors de la visite quotidienne de propreté, tout enfant qui paraîtra présenter des symptômes d'indisposition et le faire reconduire à sa famille en conseillant à celle-ci de recourir sans aucun retard à un médecin.

3° Conseiller aux familles de garder chez elles leurs enfants lorsqu'ils paraissent souffrants.

4° Evincer les frères et sœurs des malades. A cet effet, les directeurs et directrices doivent prévenir leurs collègues des écoles fréquentées par ces frères et sœurs chaque fois que des élèves de leurs propres établissements leur sont signalés comme atteints de grippe.

5° Faire pratiquer des lavages fréquents des parquets et tables de classe à l'aide d'une solution à base soit d'eau de javel, soit de créoline, soit de formol ou d'anodorine.

6° Ne pas licencier les écoles en totalité, mais licencier pour une quinzaine de jours toute classe dans laquelle les trois quarts des élèves sont absents pour cause de grippe; toutefois, il appartient aux médecins inspecteurs des écoles de proposer *exceptionnellement* le licenciement dans les cas qui leur paraîtront particulièrement graves.

7° Conseiller l'antisepsie des fosses nasales à l'aide de quelques gouttes d'huile de vaseline goménolée ou d'une solution au collargol.

Gomenol, it may be added, is a proprietary French remedy, stated to be obtained from a plant of the myrtle tribe, and taking the place of such familiar preparations as menthol and eucalyptol.

BOOKS FOR REFERENCE.

Burdett's Hospitals and Charities, 1918, being the Year Book of Philanthropy and the Hospital Annual, which has just made its twenty-ninth appearance (London: The Scientific Press. Pp. 922. 12*s.* 6*d.* net), maintains its record for accuracy and convenience of reference, though the index is still vexatiously placed in the middle instead of at one or other end of the book. The title-page states quite truthfully that the book is an exhaustive record of hospital work for the year. Owing to accident on the high seas the matter relating to hospitals in the Dominions has been perforce omitted.——*The Annual Charities Register and Digest, 1918* (London: Longmans, Green, and Co. Pp. 626. 5*s.* net), contains the usual lists of charities with particulars of their object, management, income, and the like, while short practical introductions to particular branches of charitable work have been added.——*Low's Handbook to the Charities of London, 1918* (London: Sampson Low, Marston, and Co. Pp. 254. 1*s.* 6*d.*), now in its eighty-third year of publication, retains its character as a brief and excellent alphabetical list of metropolitan charities, giving information as to their objects, date of formation, income, expenditure, address, and names of secretaries. The National Society for the Prevention of Cruelty to Children comes in for eulogy in the introduction.——The thirteenth issue of *The Girls' School Year Book, 1918*, the official reference book of the Association of Head Mistresses (London: The Year Book Press. Pp. 638. 6*s.* net), contains an alphabetical list of public schools for girls in Great Britain, along with full particulars of the staffs, fees, terms of admission, and scholarships; also an account of possible careers for girls, including those opened by the war, such as engineering and the cultivation of medicinal herbs. Special articles deal, among other subjects, with medical education, dentistry, pharmacy, nursing, sanitary inspection, and social and philanthropic work.

MINOR SURGERY IN THE FORECASTLE.

THIS is the captain's story. Surgery at sea, in the forecastle of a sailing ship, has its routine of practice, just as you have yours in the profession. Assume a sailor develops a boil. For the first two or three days it is subjected to the interested examination of the other sailors, who sit in committee on it to advise whether it is an abscess or a boil, or what; and the treatment is discussed at great length, the various consultants advising the patient to take pitch pills for it, or to put on hot fomentations, with long discussions as to the value of each treatment in the experience of those present. But at last it appears that further measures must be taken; it is necessary to open the boil. The opening is a procedure of the highest interest to everybody. It is done with a sheath knife, held half an inch from the point to prevent mischief, and the boil is opened with a long incision. A bit of rope is then unlaid (untwisted), and a couple of strands are arranged one on each side of the swelling, and they are twisted together at each end, compressing the swelling, and forcing out of the boil the core, about which everyone is expectant. The treatment is, you observe, properly antiseptic, and by the gradual twisting together of the strands the core is squeezed out and then removed in the loop of the strand. As for further treatment there is probably none, and the place heals up, but sometimes a drop of coal-tar is put in the cavity, and that has the advantage of giving the patient great pain, and assuring him that everything possible has been done by his skilful shipmates to secure his recovery.

THE INTRAMUSCULAR INJECTION OF MERCURIC CHLORIDE IN INFLUENZA.

Messrs. Allen and Hanburys have drawn our attention to an important point in regard to the use of an intramuscular injection of perchloride of mercury in the alleged successful treatment of influenza reported in the *Times* of Nov. 26th. The *Times* correspondent, writing from Athens, states "that the treatment consisted of intramuscular injections of 3 in 100 of the following solution: perchloride of mercury, chlorate of sodium, and distilled water." If this means a 3 per cent. solution of the mercuric salt (which may not necessarily be the case), then 1 minim would contain the maximum dose of corrosive sublimate, namely, 1/30 gr. The intramuscular injection of 1/60 to 1/30 gr. of mercuric chloride is a well-known measure. Possibly the action of the mercuric salt may be modified by the addition of an oxidant like chlorate of sodium. The formula as given is vague and no attempt to follow it should be made until clearer details are to hand.

FUEL ECONOMY.

THE continued shortage of fuel makes timely the reprint of the series of lectures delivered in the Department of Heating and Ventilating at University College, London, during the session 1918. These lectures on Fuel Economy and Cooking Apparatus, by Mr. A. H. Barker, B.Sc., reprinted in pamphlet form from the *Builder* (4, Catherine-street, Aldwych, W.C. 2, price 1*s.* 6*d.*), lay down the general principles on which it is hoped improvements in economy of fuel may be effected. Diagrams illustrate various forms of economical and wasteful stoves, while the questions of efficiency and cost are graphically set out where desirable. The pamphlet may be read with advantage as an introduction to the Fuel Economy Exhibition now showing in Trafalgar-square, London.

ROYAL INSTITUTION THE CHRISTMAS COURSE OF JUVENILE LECTURES.

THE ninety-third illustrated Christmas Course of Juvenile Lectures, founded at the Royal Institution in 1826 by Michael Faraday, will be delivered this year by Professor D'Arcy Thompson, C.B., F.R.S., his title being "The Fish of the Sea." The subjects are as follows: Jelly-fishes, Tuesday, Dec. 31st; Star-fishes, Thursday, Jan. 2nd; Cray-fishes, Saturday, Jan. 4; Cuttle-fishes, Tuesday, Jan. 7th; The Herring Fishery, Thursday, Jan. 9th; The Whale Fishery, Saturday, Jan. 11th. The lecture hour is 3 P.M.

FALCONER'S ARTHROMETER.

Dr. Charles F. Sonntag writes from the Special Military Surgical Hospital, Shepherd's Bush, in regard to the figures printed on the arthrometer illustrated on p. 632 of THE LANCET of Nov. 9th—viz., "knee-joint, 120°; elbow-joint, 140°." These figures cannot be intended to represent the full range of normal movement of these joints. Dr. Sonntag has measured the range of movement of his own knee-joint and finds it to be 158°. We learn from Dr. Fortescue Fox that the measurements of knee movement at the Red Cross Clinic are taken with the patient lying *prone* on the couch—that is to say, with the hip extended. Simultaneous flexion at the hip allows of relaxation of the extensors of the knee, when an additional 20° knee-flexion can be obtained. Dr. Fox adds that in recording measurements the posture should always be stated.

An Experimental Study OF THE INFLUENCE OF DIET ON TEETH FORMATION.

BY MAY MELLANBY,

FROM THE HOUSEHOLD AND SOCIAL SCIENCE DEPARTMENT OF THE LONDON UNIVERSITY, KENSINGTON.

(*Preliminary Report to the Medical Research Committee.*)

THE misery caused, both directly and indirectly, by unsound teeth is too well known to the medical profession and to the general public to need emphasis. The fact that dentistry plays such an important part in civilised communities to-day proves that the problem needs the further attention of medical research.

The majority of investigations so far carried out have dealt with the etiology of caries. The type of food, considered from the point of view of its hardness and softness, its liability to undergo bacterial decomposition with the production of acids, toxins, &c., has completely dominated the picture.

VIEWS ON ETIOLOGY OF DENTAL HYPOPLASIA.

The etiology of hypoplasia has received less attention. Several suggestions have, however, been put forward to account for the imperfect development of teeth. A particular defect of certain teeth has been associated with congenital syphilis; the exact method by which it is produced has not been demonstrated. Other types of hypoplasia, characterised by one or more bands of defective enamel, have been traced to one of the specific fevers or to some other acute illness. As regards the more generalised types of gross hypoplasia, the parts of the teeth usually affected point to some cause acting during the first two years or so of life. The association with infant feeding is obvious, but here again it is not known whether the results are due to insufficient food, diet of an unsuitable kind, the assimilation of harmful products, or intestinal disturbances set up by abnormal fermentative processes reacting on the trophic control of calcification.

Apart from these gross forms of hypoplasia, there is little doubt that marked differences exist in the degree of hardness of the enamel, the physical structure, and the perfection of calcification. The so-called "mottled teeth" exhibit in their partial lack of translucency such slight forms of hypoplasia. Between this and perfect enamel there must be many grades. Another hypothesis that also needs further investigation is that defective calcification is due to a deficiency of calcium salts in the diet.

SCOPE OF PRESENT INVESTIGATION.

The investigation to be described in this paper was undertaken primarily with the object of studying—

(1) The factors involved in the development of sound teeth and of the growth of the jaws in relation to the size of the teeth.

(2) The factors bearing on the immunity of erupted teeth to caries and other diseases.

In this preliminary paper I propose to describe experimental work which deals with the first of the above problems and will adduce evidence to show that—

(1) Hypoplasia of the teeth is caused largely by a deficient diet.

(2) The factor in the diet which controls the calcification of the teeth is something of the nature of an accessory food factor (vitamine).

(3) This factor has a similar distribution to that of fat-soluble A, and has recently been shown by E. Mellanby to be largely responsible for the calcification of bone, a deficiency of this substance in the diet being followed by the development of rickets.

Experiments dealing with conditions affecting the teeth after eruption are in progress, but it will be agreed that this question is, in many ways, of secondary importance; for if the enamel on all parts of the crowns of teeth is abundant and sound, and if the teeth are adequately spaced, then such teeth are less likely to be attacked by caries and other diseases.

The part of this work to be described here has involved the examination of the teeth of those puppies used by my husband, Dr. Edward Mellanby,[1] in the course of an extensive research on rickets made for the Medical Research Committee. Details of the diets will be found in a paper to be published immediately by him. Suffice it here to say that the diets consisted chiefly of white bread and separated milk, about 200 c.cm. per diem, together with the substances to be tested.

For work of this nature domesticated dogs are eminently suitable, in the first place because their normal diet is very similar to that of man, and in the second place because the formation and development of their teeth is more comparable with his than is the case with most other available animals.

In examining the jaws and teeth attention has been paid to the study of (1) the time of shedding of the deciduous teeth; (2) the time of eruption of the permanent dentition; (3) the arrangement of the teeth in the jaws; (4) the condition of the enamel, &c.; (5) the calcium content of the teeth.

RESULTS OF EXPERIMENTS.

Fig. 1 represents the lower jaws of three puppies of the same litter. When approximately 8 weeks old they were put on to diets the only differences in which were that (*a*) contained 10 g. of cod-liver oil per diem, (*b*) 10 g. of butter, and (*c*) 10 g. of linseed oil. The puppies were killed 15 weeks after the diets were started. It will be observed that (*a*) has lost all its deciduous teeth, while all the permanent teeth are fully developed; (*b*) comes next in order—here some of the deciduous teeth are still firm in the jaws, while the permanent teeth are not all erupted; (*c*) is still further behind, both as regards the shedding of the deciduous and the eruption of the permanent teeth. The arrangement of the teeth in the jaws is also better in (*a*) and (*b*) than in (*c*). The condition of the enamel varies in each case, appearing perfect in (*a*), slightly defective in places in (*b*), while in (*c*) the enamel on that part of the crown near the neck of the incisors is dark brown and that on the carnassials, except the top of the cusps, is dull brown. (See also Fig. 3, 145(*c*).)

Formula Used in Description.

$i^{1\,2\,3} \times 2$ indicates 1st, 2nd, and 3rd incisors of both sides.
$c \times 2$,, canines on ,, ,,
$pm^{1\,2\,3} \times 2$,, 1st, 2nd, and 3rd premolars ,, ,,
$m^{1\,2} \times 2$,, 1st and 2nd molars on both sides.
A line below letters means that letters refer to upper jaw.
,, above ,, ,, ,, lower ,,
(L) and (R) before letters indicate left and right respectively. After letters (j) = just, (n) = nearly.
($\frac{1}{2}$), ($\frac{1}{4}$), &c., after letters indicate that teeth are half and a quarter erupted, &c.
Thus $\underline{i \times 2}$ ($\frac{1}{2}$) = both 1st upper incisors half erupted.

Dentition in dogs:—

(a) *Deciduous.*

$$\frac{i\,3,\ c\,1,\ pm\,3}{i\,3,\ c\,1,\ pm\,3} \times 2 = 28.$$

(b) *Permanent.*

$$\frac{i\,3,\ c\,1,\ pm\,4,\ m\,2}{i\,3,\ c\,1,\ pm\,4,\ m\,3} \times 2 = 42.$$

The 4th upper premolars and the 1st lower molars are modified in carnivores to form the carnassials.

Detailed Notes on Teeth of Puppies (a), (b), (c), (d), (e), (f).

1. *Deciduous Teeth Still Retained.*

(*a*) None.

(*b*) $\dfrac{c \times 2}{(L)\ c,\ pm^{\,1} \times 2}$

(*c*) $\dfrac{c \times 2,\ pm^{\,2\,3} \times 2}{(R)\ c,\ pm^{\,1\,2\,3} \times 2}$

(*d*) $\dfrac{(L)\ i^{\,3},\ c \times 2,\ pm^{\,1\,2\,3} \times 2}{c \times 2,\ pm^{\,1\,2\,3} \times 2}$

(*e*) $\dfrac{i^{\,2} \times 2,\ c \times 2,\ pm^{\,2\,3} \times 2}{(L)\ i^{\,3},\ c \times 2,\ pm^{\,1\,2\,3} \times 2}$

(*f*) $\dfrac{i^{\,3} \times 2,\ (L)\ pm^{\,3}\ *}{c \times 2,\ pm^{\,3} \times 2\ *}$

* Very loose, knocked off before photo taken.

2. *Permanent Teeth Erupted.*

(*a*) $\dfrac{\text{all}}{\text{all except } m^{\,3} \times 2}$

(*b*) $\dfrac{i^{\,1\,2\,3} \times 2,\ c \times 2\ (\frac{1}{2}),\ pm^{\,1\,2\,3} \times 2\ (j),\ carn. \times 2\ (\frac{3}{4}),\ m^{\,1} \times 2\ (\frac{3}{4}),\ m^{2} \times 2\ (n)}{i^{\,1\,2\,3} \times 2,\ c \times 2\ (\frac{3}{4}),\ pm^{\,1\,2\,3} \times 2\ (j),\ pm^{\,4} \times 2\ (\frac{1}{2}),\ carn. \times 2,\ m^{\,2} \times 2\ (j)}$

(*c*) $\dfrac{i^{\,1\,2\,3} \times 2,\ c \times 2\ (\frac{1}{2}),\ pm^{\,1} \times 2\ (j),\ carn. \times 2\ (\frac{1}{2}),\ m^{\,1} \times 2\ (\frac{1}{2})}{i^{\,1\,2\,3} \times 2,\ c \times 2\ (\frac{1}{2}),\ carn. \times 2,\ m^{\,2} \times 2}$

(*d*) $\dfrac{i^{\,1\,2} \times 2,\ i^{\,3} \times 2\ (\frac{1}{2}),\ pm^{\,1} \times 2\ (j),\ m^{\,1\,2} \times 2\ (\frac{1}{2})}{i^{\,1\,2} \times 2,\ i^{\,3} \times 2\ (j),\ pm^{\,1} \times 2\ (n),\ carn. \times 2,\ m^{\,2} \times 2}$

(*e*) $\dfrac{i^{\,1} \times 2,\ i^{\,2\,3} \times 2\ (n),\ pm^{\,1} \times 2,\ (R)\ m^{\,1}\ (\frac{1}{4}),\ (L)\ m^{\,1}\ (j)}{i^{\,1} \times 2,\ (L)\ i^{\,2}\ (j),\ (R)\ i^{\,2},\ pm^{\,1} \times 2\ (j),\ carn. \times 2}$

(*f*) $\dfrac{i^{\,1\,2} \times 2,\ (L)\ pm^{\,2}\ (n),\ (R)\ pm^{\,2}\ (j),\ pm^{\,3} \times 2\ (j),\ carn. \times 2\ (\frac{1}{4}),\ m^{\,1} \times 2\ (\frac{1}{2})}{(L)\ i^{\,1},\ (R)\ i^{\,1}\ (\frac{1}{2}),\ (L)\ i^{\,2}\ (\frac{1}{4}),\ (R)\ i^{\,2}\ (n),\ pm^{\,1} \times 2\ (n),\ pm^{\,23}\ (j),\ carn. \times 2,\ m^{\,2} \times 2}$

3. *Arrangement of Teeth in Jaws.*

(*a*) and (*b*) Normal.
(*c*) Lower incisors irregular and somewhat crowded together.
(*d*), (*e*), and (*f*) Upper incisors fairly regular, but lower ones—(*f*) very—irregular and crowded.

[1] Journ. of Physiol., January, 1918.

4. *Condition of Enamel of Permanent Teeth.*

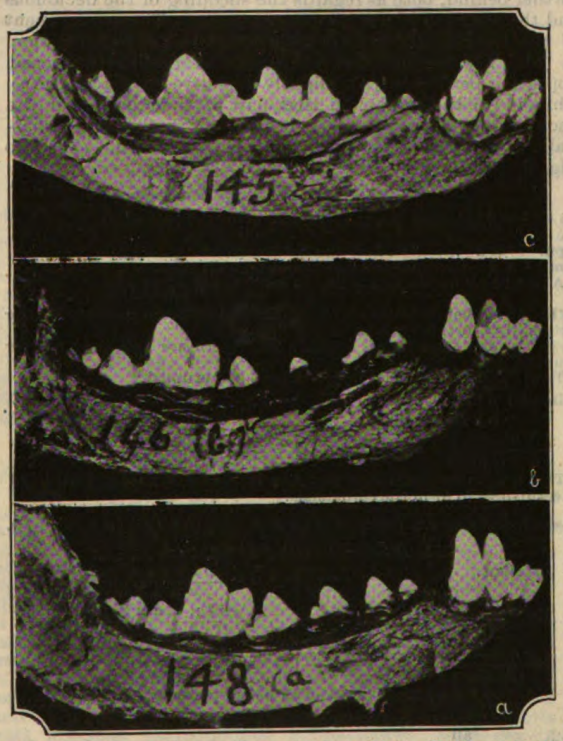
(*a*) White and shiny.
(*b*) On whole white and shiny; back teeth very slightly yellow.
(*c*) Dark brown colouring on that part of incisors near neck, especially of upper incisors; enamel on greater part of carnassials and first molars dull brown.
(*d*) The enamel does not appear very good on any of the teeth, but it is especially defective on first incisors and first molars of upper jaw and on that part of lower carn. near neck.
(*e*) The enamel fairly good on all permanent teeth.
(*f*) The enamel on all the teeth is very defective, except perhaps on tips of some of the cusps.

These experiments and others of the same type show that when linseed oil is the only fat in the diet, then there is a delay in the shedding of the deciduous teeth and in the development of the permanent dentition. The animal fats, and more particularly cod-liver oil, cause these changes to proceed in a normal way. Again, the arrangement of the teeth and their appearance is much better when animal fats have been eaten.

CONSIDERATION OF POSSIBLE INFLUENCE OF ILL-HEALTH.

A criticism to be met in this type of work is that any condition of ill-health during the period of the experiment may have been responsible for the changes described. It is true that these puppies suffered from mild attacks of distemper and that none of them grew very rapidly (on the average 2 kg. in the 15 weeks). Their periods of mild illness and their rates of growth were, however, practically speaking, identical, and could, therefore, not be the cause of the variations observed in the dentition.

FIG. 1.—*Age at Death about 5 Months 3 Weeks.*



(*a*) 1 g. cod-liver oil per diem added to diet; (*b*) 10 g. butter; (*c*) 10 g. linseed oil. All deciduous teeth of (*a*) shed, some remaining in (*b*), but most left in (*c*). Permanent teeth more fully erupted in (*a*) than in (*b*) and in (*b*) than in (*c*). Enamel in (*c*), especially near neck of incisors and the carnassials, is not nearly as good as in either (*a*) or (*b*).

In order to meet such a criticism in a more thorough way I will consider another set of experiments, illustrated in Fig. 2. Here again the lower jaws of three puppies—(*d*), (*e*), and (*f*)—of the same litter are shown. They are a larger breed of dog than those shown in Fig. 1. The puppies were in this case also about 8 weeks old when the experiment, which lasted 15 weeks, was started. The source of fat in each case was 10 g. of linseed oil per diem. Their relative rates of growth in the 15 weeks can be seen in the following table:—

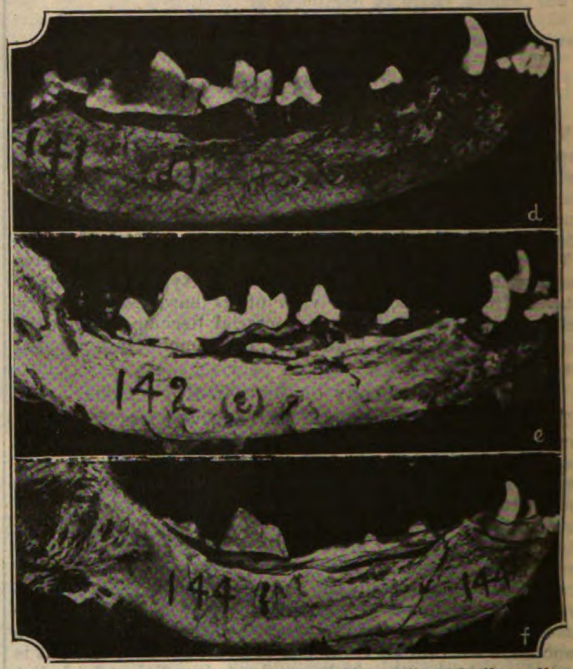
TABLE I.

	Wt. at beginning.	Wt. at end.	Increase.
(*d*)	2490 g.	5820 g.	3330 g.
(*e*)	2675	6820	4145
(*f*)	3690	8825	5135

It must be stated here that although (*e*) was on the same articles of diet as (*d*) and (*f*) for 6½ weeks, yet, from this time until the end of the experiment, 10 g. of butter were given daily in addition to the linseed oil.

It will be seen that all the teeth in Fig. 2 are delayed, not so much in the loss of the deciduous teeth as in the

FIG. 2.—*Age at Death about 5 Months 3 Weeks.*



The diets of (*d*), (*e*), and (*f*) all contained 10 g. of linseed oil per diem. (*e*) had in addition 10 g. of butter from 7th to 15th weeks. The majority of the deciduous teeth in (*f*) have been shed ($pm^3 \times 2$ knocked out before photograph taken), but the permanent ones are very delayed. The enamel on most of the teeth of these dogs is poor, especially in the case of (*f*), it is best in (*e*). The size of the jaw in the case of (*f*) is in reality greater than is the case in (*d*) and (*e*). The magnification is not so great in this photograph.

complete eruption of the secondary dentition. More striking still is the amount of defective enamel. In (*f*) there is hardly any white enamel, and that present is so soft that it can be cut with a scalpel. There is considerable irregularity in the setting of the teeth, especially in (*f*). In fact, the teeth of (*f*), the most rapidly growing puppy, are in every way worse than those of (*d*). In (*e*) the bad effects of the diet have been saved to some extent by the addition of butter after the first few weeks. Then, again, the teeth of (*d*) are distinctly worse than those of (*e*), which grew comparatively slowly.

As a general rule, it is difficult to associate rapid growth with ill-health, and yet we have seen in these experiments that the teeth of the more rapidly growing puppies are worse, whether the comparison is confined to the same or to another family. It seems impossible, therefore, to escape the conclusion that the malformed teeth are the result of some specific influence of the diet, such as has been suggested.

CALCIUM CONTENT OF TEETH.

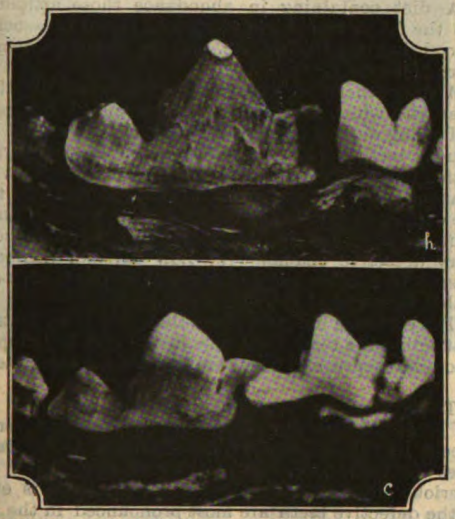
If we consider next one aspect of the chemical side of the problem, we see (Table II.) that the calcium content of the teeth may be influenced by the diet, although the actual intake of calcium salts would appear to be adequate.

TABLE II.

No. of exp.	Special factor in diet.	Tooth taken.	Wt. of dry tooth.	Total CaO.	% CaO.
90	Suet.	Lower carn.	1·451 g.	0·507 g.	36·4
90	,,	3 l. incisors.	0·438 ,,	0·156 ,,	36·1
94	Yeast.	Lower carn.	0·851 ,,	0·296 ,,	34·8
101	Butter.	,,	1·291 ,,	0·440 ,,	34·0
122	Calcium phosp.	,,	0·601 ,,	0·186 ,,	30·9
122	,,	3 l. incisors.	0·188 ,,	0·059 ,,	31·3
143	Linseed oil.	Lower carn.	0·851 ,,	0·260 ,,	30·5

It will be seen from the above table that there is a great variation both in the weight of the teeth and in the calcium content (reckoned as calcium oxide). For example, when either suet or butter is added to the diet the carnassials weigh 1·451 g. and 1·291 g. respectively, the calcium content being 0·507 g. and 0·44 g. CaO, while when the fat is linseed oil the weight of the tooth is 0·851 g. and the calcium content reckoned as CaO is 0 260 g.

FIG. 3.



Enlarged photograph of the lower carnassial of (*c*) and (*h*) showing white enamel only on the apex of the teeth.

Causation of Low Calcium Content of Teeth.

It may be suggested that the low calcium content in this and in other similar experiments is due to a deficiency of calcium in the diet. We should certainly expect that the calcification of the teeth and bones would be imperfect if the calcium content of the diet of young animals were deficient or even on the border-line of the animals' needs. This explanation, however, does not seem to cover the experiments here described. For instance, comparing Experiments 90, 101, and 143 (Table II.), the calcium content of the diet was, practically speaking, identical, and yet the calcification of the teeth is good in the first two cases and poor in the last. Then, again, referring to the puppies (*a*)-(*f*), the amount of calcium given was the same in each case, and yet the condition of the teeth was very different, and I have no doubt but that the calcium content of the teeth will prove to be greater in (*a*) and (*b*) than in any of the others, and that it will be least in (*f*).

The only explanation on the calcium deficiency hypothesis is that the calcium salts are not equally absorbed into the blood stream owing to the action of the different fats. The following experiments would seem to negative this criticism.

In Experiment 122 (Fig. 4 (*k*) and Table II.) 5 g. of calcium phosphate were added daily to the diet, the fat of which was linseed oil. The experiment lasted about 12 weeks. The deciduous teeth were late in being shed and the permanent ones were late in erupting. The enamel on many of the teeth was either defective or absent. The calcium content of one lower carnassial was found to be only 0·186 g. (CaO), the weight of the tooth being 0·601 g.

There is always the possibility that the puppy was unable to make use of the calcium in this form. To exclude this experiments are now in progress in which the quantity of separated milk in the diet has been raised to 400 c.cm. and more daily. The teeth, in the case of one of these puppies which has been dieted for nearly three months, are poorly formed, and there is, so far, no evidence that the increased calcium in the diet, although given in a natural form, has improved matters.

There does not seem much doubt, then, that the puppies received an adequate supply of calcium in a form which ensured access to the blood. There is evidence, however, that the ameloblasts and other cells, which normally regulate the deposition of calcium in the developing teeth, are unable to perform this function successfully, owing to the lack of one or more factors in the blood stream which normally regulate this function. This factor cannot be either proteins, carbohydrates, fats, or salts, but is possibly something of the nature of an accessory food factor. Whether this accessory factor acts directly on the special cells or indirectly through some other tissues, such as the ductless glands, remains to be seen.

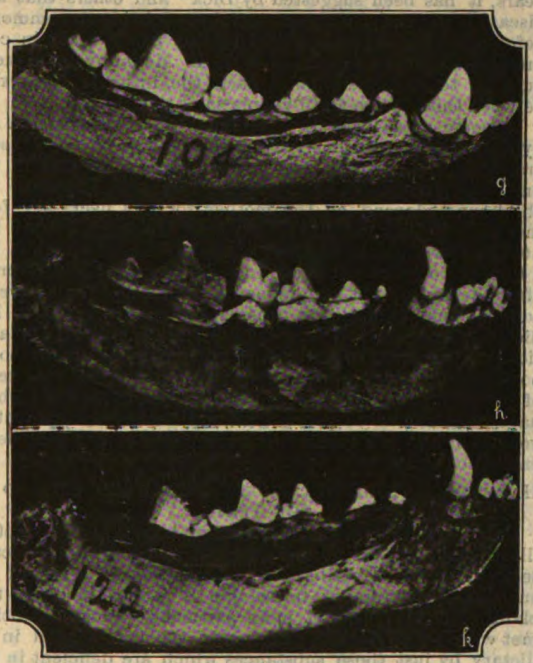
Effect of Time at which Diet is Started.

The appearance of the permanent teeth resulting from these deficient diets suggests that the extent to which the enamel, &c., is defective depends on the time at which the diet was started. In the human being the individual teeth calcify at different periods, starting before birth and ending at about 18 years of age. In puppies these changes cover a much shorter period of life; consequently one would not expect the picking out of specific teeth to be so prominent in puppies as it is in children. Nevertheless, even in puppies it is seen that in some teeth the enamel appears normal, while on others it is defective.

In the experiments so far completed the teeth most commonly affected are the lower carnassials. An examination of some of these teeth is very interesting. The enamel on the apex of the cusps may be white and shiny, while that on the rest of the tooth is either coloured (Fig. 3 (*a*)) or absent (Fig. 3 (*h*)). In Fig. 3 (*h*) the carnassial looks like a snow-capped mountain, for the only trace of white enamel is on the tip of the large cusps.

There is some evidence to show that, if the diet is only started when the puppy is over 3 months old, then the development of the teeth is little, if at all, affected. For instance, in Experiment 104 (Fig. 4 (*g*)), the puppy was

FIG. 4.



(*g*) About 7½ months old. 10 g. linseed oil per diem added to diet, which was, however, not started till the puppy was about 14 weeks old. The teeth appear quite normal. (*h*) About 5½ months old. 10 g. linseed oil per diem added to diet. Shows delayed dentition and imperfect development of enamel especially on the incisors and carnassials (see also Fig. 3 (*h*)). (*k*) About 5½ months old. 10 g. linseed oil and 5 g. $Ca_3(PO_4)_2$ per diem added to diet. Shows delayed dentition and imperfect development of enamel. (For CaO content see Table II.)

about 14 weeks old when the diet, containing linseed oil as the fat, was started. The teeth are white and shiny, and they are regularly arranged in the jaw. One lower carnassial weighed 1·412 g. and the CaO content was 0·501 g.

The Question of an Accessory Food Factor.

It is always possible that chewing hard crusts, bones, &c., may improve the circulation in the developing jaws and so cause better teeth formation, but it cannot explain the results described in this paper, for in no case was hard food of any kind given. From the point of view of bacterial

action and the production of toxic products, the diets would appear, in most cases, to be similar, except in so far as the fats are concerned.

What, then, is the factor (or factors) in the diet responsible for these changes? We have seen that the puppies fed on animal fats such as cod-liver oil, butter, and suet had the best teeth, whereas those fed on linseed oil had the worst. There is evidence that other vegetable oils—for instance, arachis oil and cotton-seed oil—also have deleterious effects.

As has been already suggested, the metabolic factors normally involved in the process of teeth development may be of the nature of accessory food factors. It is now recognised that fat-soluble A is present in abundance in cod-liver oil, butter, and animal fats generally, and is deficient in vegetable fats. The whole subject of accessory food factors and the part they play in health and disease is in its infancy, and therefore cannot be accepted as explaining in an unquestionable way facts such as are here described. But for the want of a better mode of expressing the general results of these experiments, one may say that a deficiency of fat-soluble A in the diet is accompanied by abnormal development of the teeth.

DEFECTIVE TEETH AND RICKETS IN CHILDREN.

A child's diet is most likely to be deficient in fat-soluble A from the ninth month to about the second year of its life; that is, at the transition period between a complete milk diet and one approximating to that of the adult. The permanent teeth calcifying at this period are the incisors, the canines, and the first molars, and it is just these teeth in children that are most commonly hypoplastic and carious. Since rickets is commonest in children during these early years, it has been suggested by Dick [2] and others that this disease is the cause of these special teeth being so commonly defective. The work described in this paper, taken in conjunction with the experiments of E. Mellanby on rickets, puts on to an experimental basis the intimate connexion between this disease and hypoplasia of the teeth.

In some cases even the deciduous teeth of children are hypoplastic and carious. Now the crowns of these teeth are developed, for the most part, before birth and in the first few months of extra-uterine life, and therefore the child must depend on the mother for any necessary food factors. McCollum [3] has shown that the animal body has not the power of synthesising these factors, although it has a limited power of storage. In order to supply her offspring after the first part of her pregnancy the mother must have an adequate supply of all the necessary accessory factors in her diet. If the accessory food factor theory is the real explanation of the facts described in this paper it ought to be possible to produce similar changes in the deciduous teeth of puppies by feeding a pregnant bitch on those diets which have been shown to prevent normal tooth development in young animals. Experiments on these lines are now being carried out.

HARMFUL NATURE OF MODERN DIETARY IN REGARD TO THE TEETH.

One can now see a rather obscure but still a real picture illustrating, in part at any rate, the cause of the defective teeth of modern civilisation. A perusal of a list of the substances containing fat-soluble A makes it clear that civilised conditions, and more particularly those conditions met with in urban life, exaggerate the part played in the dietary by just those substances which are deficient in this type of accessory factor. Our diet, particularly that of the poor, is now more than ever made up of specially prepared cereals, such as wheat, rice, oats, &c. Meat and the animal fats tend to play a smaller part. Vegetable fats, in the form of margarines, &c., are superseding butter, whole milk is being more and more excluded from the diet of the poor, partly at present because of the cost and partly because of a curious antipathy that many people have towards it. Then, again, with the development of civilisation, breast-feeding is not so commonly practised and, when practised, is often continued for only a short time. On the accessory food factor theory one can also understand why the Esquimaux in his own country, where flesh and blubber are the staple articles of diet, has such excellent teeth, while the inhabitants of Chili, who live chiefly on cereals, have teeth which are much less sound.

[2] Lawson Dick: Proc. R.S.M., vol. ix., p. 83.
[3] McCollum, Simmonds, and Pitts: Amer. Journ. Phys., vol. xli., p. 361.

There is no doubt that our modern dietary is harmful as far as the teeth are concerned, and, if the results of the present work and the deductions made are correct, the teeth of the people of this country will tend to become worse, unless our diet consists in the future more of whole milk and other foods containing fat-soluble A and less of bread, rice, potatoes, &c., which are deficient in this factor.

SUMMARY OF RESULTS.

1. A diet containing in abundance those articles with which the fat-soluble A accessory food factor is associated—e.g., cod-liver oil, butter, &c.—allows the development in puppies of sound teeth.

2. A diet otherwise adequate but deficient in the substances with which fat-soluble A is associated brings about the following defects in puppies' teeth: (*a*) Delayed loss of deciduous teeth. (*b*) Delayed eruption of the permanent dentition; in some cases the delay in the eruption of the permanent teeth is more marked than the delay in the loss of the deciduous teeth. (*c*) Irregularity in position and overlapping, especially of the incisors. (*d*) Partial absence of or very defective enamel. (*e*) Low calcium content; the deficiency in calcium salts may result in the teeth being so soft that they can be cut with a scalpel.

3. The evidence makes it clear that this is an instance of diet affecting the teeth from the inside and is independent of bacterial sepsis and other oral conditions associated with food.

4. These results cannot be considered as being due to acute illness or "malnutrition," for (*a*) the improvement to the teeth by the addition of fat-soluble A containing substances (animal fats, &c.) is as characteristic as the deleterious effect of a deficient diet; (*b*) there is evidence that the defective teeth are most pronounced in the rapidly growing puppies, and it is difficult to associate rapid growth with illness or "malnutrition," as generally understood.

5. This work, taken in conjunction with the experiments of E. Mellanby on rickets, puts the close relationship between hypoplastic teeth and rickets on to an experimental basis.

I wish to acknowledge with gratitude the advice kindly given me by Mr. Norman Bennett.

TREATMENT OF ANTE-NATAL AND POST-NATAL SYPHILIS.

BY JOHN ADAMS, F.R.C.S. ENG.,

MEDICAL OFFICER IN CHARGE OF THE THAVIES INN VENEREAL CENTRE FOR PREGNANT WOMEN.

IN THE LANCET of Nov. 23rd, p. 707, a report was published of a paper which I read recently before the Royal Society of Medicine. This paper was illustrated by a list of cases, reproduced now on pp. 772, 773, giving the results of treatment in regard to 24 babies born at the hospital of syphilitic mothers. Of these babies 5 were born with a negative Wassermann reaction; 7 became negative after treatment. Three mothers had no treatment before the death of the baby in utero. One baby died from syphilis; 1 died suddenly without any apparent cause; 1 was born dead. Six babies remain positive under treatment and are doing well. Six other babies were born of syphilitic mothers since the list of cases was drawn up, and of these 3 are already negative.

With the exception of 2 out of the 24 cases, the whole were cases of acute syphilis in the mother. They came in the primary or early secondary stage, and by taking cases of the babies at the beginning we were dealing with them at a time when the syphilitic virus probably has more effect on the child than it would have later on.

The first case has been under observation for six months. The mother has been treated, but not the child, and up to now nothing has developed.

There are no particular remarks as to Case 2.

Case 3 is rather interesting because it was a bad case of syphilis. I remember well Sir Jonathan Hutchinson, for whose memory I have the greatest regard, saying that the cases which were salivated very often did extremely well. In this case the salivation was severe.

In Case 4 the positive reaction in the child has remained, and the curious thing is that for nine months the child continuously gained weight, and, indeed, if I were choosing children for a baby show, this would be one of my selections.

CASE 7.

Case 5 went on the even tenor of its way, and the reaction remained negative.

In Case 6 the child went from strongly positive to positive, and put on 10 lb. weight; it would no doubt have become perfectly negative had the treatment been more regular. The treatment was interrupted in this case by an outbreak of eczema.

Of Case 7 a photograph is reproduced.

In Case 8 there is now only a suspicion of syphilis in the child. It was in the hospital about two months, and consequently there was a very short time in which to carry out complete treatment.

Case 9 became perfectly negative; this was one of the very bad cases at the beginning.

Case 10 also became perfectly negative.

Case 11 is another very interesting case. The child lost weight at one period of its career, but that was due to insufficient feeding by the mother. These mothers are often incapable of feeding the children by the breast only.

Case 12 was born negative, and on this case there is very little to say except that the mother had not recent syphilis.

Case 13 was also born negative.

Case 14 (see photograph) like Case 4, had a strongly positive reaction the whole time, except on one occasion when it was positive, but not strongly positive. In this case also the treatment was irregular, but it has been more regular recently, and now, since the list of cases was drawn up, it is only positive, not strongly positive.

CASE 14.

In Case 15 the child, I believe, died from syphilis. Only two injections were given. The child was very poor from birth and seemed extremely unlikely to live.

I pass over some of the ensuing cases, remarking that of these born dead some were probably dead before there was any treatment at all. A photograph is reproduced of Case 17.

Case 22 was an extraordinary case. This child was a 6½ months child as far as could be estimated and weighed only 3 lb. 4 oz. at birth. It had every sign of syphilis and seemed unlikely to survive more than a few days. It did not die, however, and its weight went up to 5 lb. 14 oz. Then, without any reason so far as could be seen it died quite suddenly in a screaming fit. I got particulars of the post-mortem, and so far as can be judged, there was no reason why the child should have died from syphilis.

Case 23 became negative under treatment. Case 24 was born dead, and probably had died before treatment was given at all.

CASE 17.

The progress of the babies is further shown in the following table:—

Weights at Weekly Periods after Birth.

Case 1.			*Case 4 (cont.)*			*Case 9 (cont.)*			*Case 14 (cont.)*		
lb.	oz.		lb.	oz.		lb.	oz.		lb.	oz.	
7	0	3 12.17	9	8	11.2.18	8	15	20.5.18	14	4	18.8.18
6	12	10.12 17	10	8	18.2.18	9	0	27.5.18	14	13	15.9.18
7	0	17.12.17	11	0	25.2.18	9	2	3.6.18	15	5	20.10.18
7	8	24.12.17	14	8	5.5.18	9	6	8.6.18			
8	4	31.12.17	15	6	26.5.18				*Case 15.*		
8	6	7.1.18	17	6	29.7 18	*Case 10.*			5	3	6.5.18
9	0	14.1.18	18	4	1.9.18	6	4	25.2.18	5	4	13.5.18
8	14	21.1.18	19	4	15.9.18	6	8	4.3.18	5	6	20.5.18
9	1	28.1.18	19	4	13.10.18	6	12	11.3.18	5	4	27.5.18
9	10	4.2.18				7	2	18.3.18	4	4	2.6.18
9	12	11.2.18	*Case 5.*			7	10	25.3.18			
10	1	18.2.18	7	0	18.2.18	7	12	1.4.18	*Case 17.*		
10	12	4.3.18	6	12	25.2.18	7	14	8.4.18	6	13	6.5.18
10	14	18.3.18	7	2	4.3.18	8	8	15.4.18	7	4	13.5.18
11	12	1.4.18	7	6	11.3.18	9	3	22.4.18	7	11	20 5.18
12	4	15.4.18	7	8	18.3.18	9	8	29.4.18	8	4	27.5.18
12	10	22.4.18							9	0	3.6.18
			Case 6.			*Case 11.*			9	4	10.6.18
Case 2.			5	8	18.2.18	5	14	25.3.18			
7	10	26.12.17	5	14	25.2.18	6	0	1.4.18	*Case 20.*		
7	10	2.1.18	6	6	4.3.18	6	0	8.4.18	6	13	10.6.18
8	2	9.1.18	6	12	11.3.18	6	4	15.4.18	7	6	17.6.18
8	10	16.1.18	7	0	18.3.18	6	12	22.4.18	7	10	24.6.18
9	1	23.1.18	7	2	25.3.18	6	9	29.4.18	8	0	1.7.18
9	10	30.1.18	7	12	1.4.18	6	2	6.5.18	8	12	8.7.18
9	12	6.2.18	8	0	8.4.18	6	2	13.5.18	9	2	15.7.18
10	8	13.2.18	8	10	15.4.18	6	2	20.5.18	9	6	22.7.18
10	12	17.3.18	13	0	21.7.18	6	0	27.5.18	9	14	29.7.18
12	6	6.4.18	15	12	13.10 18	5	14	3.6.18	9	14	5.8.18
13	4	21.4.18				6	1	10.6.18	10	6	12.8.18
13	12	5.5.18	*Case 7.*			6	8	17.6.18	10	12	19.8.18
14	0	9.6.18	8	8	18.2.18	7	2	24.6.18	11	4	26.8.18
14	4	23.6.18	8	8	25.2.18	7	10	1.7.18	11	4	2.9.18
14	8	1.7.18	9	2	4.3.18	8	0	8.7.18	11	12	9.9.18
15	0	21.7.18	9	12	11.3.18	8	6	15.7.18	12	6	16.9.18
15	0	18.8.18	10	0	18.3.18	8	14	22.7.18	12	14	23.9.18
15	0	1.9.18	10	0	25.3.18	9	0	29.7.18	13	4	30.9.18
14	14	12.10.18	9	12	1.4.18	9	12	18.8.18			
			10	0	8.4 18	9	4	1.9.18	*Case 22.*		
Case 3.			10	6	15.4.18				2	14	15.6.18
5	14	4.1.18	11	0	22.4.18	*Case 13.*			2	15	24.6.18
5	14	11.1.18	11	2	29.4.18	4	14	8.4.18	3	4	1.7.18
6	0	18.1.18	11	10	6.5.18	4	10	15.4.18	3	10	8.7.18
6	1	25.1.18				5	2	22.4.18	3	12	15.7.18
6	6	1.2.18	*Case 8.*			5	4	29.4.18	4	0	22.7.18
6	10	8.2.18	7	2	4.3.18	5	11	6.5.18	4	6	29.7.18
7	3	15.2.18	7	12	11.3.18	6	5	13.5.18	4	12	5.8.18
7	8	22 2.18	8	0	18.3.18	6	12	20.5.18	5	2	12.8.18
7	8	29.2.18	8	2	25.3.18	7	4	27.5.18	5	8	19.8.18
7	12	8.3.18	8	6	1.4.18	7	8	3.6.18	5	14	26.8.18
9	8	6.4.18	8	12	8.4.18	7	14	10.6.18			
10	4	21.4.18	12	0	2.6.18	8	0	17.6.18	*Case 23.*		
10	6	5.5.18				8	10	24.6.18	6	2	1.7.18
10	12	9.6.18	*Case 9.*						6	12	8.7.18
11	0	23.6.18	6	12	11.3.18	*Case 14.*			7	2	15.7.18
11	8	7.7.18	7	0	18.3.18	7	5	23.4.18	7	12	22.7.18
12	6	18.8.18	7	4	25.3.18	7	13	30.4.18	8	6	29.7.18
			7	4	1.4.18	8	3	6.5.18	8	14	5.8.18
Case 4.			7	8	8.4.18	8	8	13.5.18	9	6	12.8.18
7	12	7.1.18	7	12	15.4.18	9	1	20.5.18	10	0	19.8.18
7	15	14.1.18	7	15	22.4.18	9	6	27.5.18	10	4	26.8.18
8	2	21.1.18	8	2	29.4.18	10	2	3.6.18	10	12	2.9.18
8	12	28.1.18	8	5	6.5.18	11	8	23.6.18	11	8	15.9.18
8	14	4.2.18	8	10	13.5.18	13	2	21.7.18	12	4	13.10.18

I am aware that the period of one year is all too short in which to bring these tests of syphilitic cases to perfection. I have given the subject, however, much thought and consideration, and I feel amply rewarded by the results.

TREATMENT OF ANTE-NATAL AND POST-NATAL SYPHILIS: DETAILS OF 24 CASES.

G.c., General condition. Pap. syphl., Papular syphilides. Nov., novarsenobillon. Salv., salvarsan; figure indicates number of injections. Iv. and Im., Intravenous and intramuscular injections respectively.
Explanation of Wassermann (W.) signs; Strongly positive, ++ (diagnostic). Positive, + (diagnostic). Feebly positive, ±. Negative, −.

Case Number.	Mother.									Baby at birth.				Baby after birth.					
	Approx. date of infection.	Treatment before admission.	Date of and condition on admission.	Wassermann on admission.	Treatment in hospital.	Doses of salv. before delivery.	Condition on delivery.	Wassermann on delivery.	Term.	Placenta.	Date of birth.	Condition.	Wassermann.	Weight.	Lesions.	Feeding.	Treatment.	Remarks.	Wassermann reaction.	Gain or loss in weight from date of birth.
1	July, 1917	None.	4.10.17. — G.c. poor, weak and anæmic (gonorrhœa). Primary sore on post. vagina. Pap. syphl. on limbs and trunk.	++	Iv. nov. Hg per os.	6	Sharp attack of jaundice 3 days before delivery.	−	Full.	−	26.11.17	Good.	−	7 lb. 9 oz.	None.	Breast first week, then bottle (A. & H.).	None.	Baby never had treatment for, or symptoms of, syphilis. Continuous progress. W. remained neg.	− 27.11.17 − 23.1.18 − 17.4.18	+ 5 lb. 1 oz. to 22.4.18
2	Sept., 1917	,,	13.12.17. — G.c. fair. Two sores on labia, mucous syphl. on throat.	++	,,	1	Good.	++	,,	No report.	18.12.17	,,	++	8 lb. 4 oz.	Erythematous rash all over body; bad snuffles.	Breast.	Im. galyl in glucose. Hg inunc.	Made continuous progress. Rash soon disappeared after treatment.	++ 18.12.17 − 28.2.18 − 21.8.18	+ 6 lb. 10 oz. to 12.10.18
3	April, 1917	Iv. salv. (3), Im. Hg (3).	14.12.17. — Very weak and anæmic. Mouth and throat much ulcerated. Severe salivation (gonorrhœa).	++	Iv. nov.	3	Weak and anæmic.	++	8 mths.	++	29.12.17	Feeble, face blue and œdematous.	++	6 lb. 2 oz.	Syphilitic eruption on buttocks.	,,	,,	Baby appeared unlikely to live; remarkably good recovery.	++ 29.12.17 − 6.3.18 − 10.6.18 − 18.8.18	+ 6 lb. 4 oz. to 18.8.18
4	April, 1917	None.	6.12.17. — G.c. good. Tubercular syphl. on face. Erythematous rash on neck, chest, and arms.	++	Iv. nov. Hg per os.	2	Good.	++	Full.	+	31.12.17	Good.	++	8 lb. 14 oz.	Severe rash on buttocks. Very bad snuffles.	Breast and bottle.	Im. Hg and galyl.	Lost weight during first week, then continuous progress.	++ 31.12.17 + 20.2.18 ++ 8.5.18 + 28.7.18 ++ 4.9.18 ++ 22.9.18 ++ 15.10.18	+ 10 lb. 6 oz. to 13.10.18
5	Oct., 1917	Iv. salv. (6).	11.1.18. — G.c. good. Papular eruption on legs and trunk.	±	Iv. nov. and galyl. Hg per os.	14	,,	++	,,	−	10.2.18	,,	−	6 lb. 8 oz.	Red rash on buttocks.	Breast.	Im. galyl. Hg inunc.	Negative W. blood test from birth.	− 10.2.18 − 25.3.18	+ 1 lb. to 18.3.18
6	Sept., 1917	,,	23.1.18. — G.c. good. Papular eruption on arms, trunk, and face.	++	Iv. nov. Hg per os.	6	,,	++	,,	+	11.2.18	Feeble and blue.	++	5 lb.	Eruption on buttocks.	,,	,,	Convulsions 20.2.18, lasted on and off 3 days. Im. inj. 22.2.18; continuous improvement. Six months in hospital; after leaving attendance irregular.	++ 13.2.18 + 27.3.18 + 15.10.18	+ 10 lb. 12 oz. to 13.10.18
7	Nov., 1917	None.	18.1.18. — G.c. good. Large hard sore on labia. Inguinal glands enlarged.	++	Iv. nov. and galyl. Hg per os.	4	,,	+	,,	+	14.2.18	Good, but had snuffles.	±	9 lb. 2 oz.	No rash appeared.	,,	,,	Good progress.	± 20.2.18 − 7.5.18	+ 2 lb. 8 oz. to 6.5.18
8	May, 1917	Iv. salv. (7).	21.2.18. — G.c. good. No eruption present.	++	Iv. nov. Hg per os.	8	,,	++	,,	++	27.2.18	Good.	++	7 lb.	Eruption on buttocks.	,,	,,	Weight and condition good. Did not come for treatment after leaving.	++ 28.2.18 ± 7.4.18	+ 5 lb. to 2.6.18
9	June, 1917	None.	27.2.18.— Indurated sore on left labium. Tubercular syphl. rash all over body.	++	,,	0	Weak and anæmic.	++	,,	++	2.3.18	,,	++	6 lb. 2 oz.	,,	Breast and bottle.	,,	Continuous progress.	++ 13.3.18 − 29.5.18	+ 3 lb. 4 oz. to 8.6.18
10	Oct., 1917	,,	1.12.17. — G.c. good. Erythematous eruption.	±	,,	7	Good.	±	,,	No report.	17.2.18	Feeble.	±	6 lb. 12 oz.	No eruption.	Breast.	Im. galyl.	Both mother and child left hospital, neg. W., returned to country. Report Sept. 1st, 1918, both well; child gaining weight.	± 20.2.18 − 24.4.18	+ 2 lb. 12 oz. to 29.4.18
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
11	June, 1917	Iv. salv. (6).	18.3.18. — G.c. good. No eruption present.	++	Iv. galyl. Hg per os.	6	Good.	++	Full.	+	19.3.18	Good.	+	5 lb. 12 oz.	None.	Breast.	Im. galyl and Hg inunc.	Mother's feeding not suitable. At 3 months Allenburys' Milk Food was given. Continuous improvement since.	+ 20.3.18 − 22.6.18	+ 3 lb. 8 oz. to 1.9.18
12	Sept., 1917	Im. salv. (2).	27.3.18.—Weakly condition. Bedsore on right gluteal region.	++	Iv. nov. Hg per os	2	Weakly, bedsore.	++	6½ mths.	+	27.3.18	Very weak and blue, dead in 6 hours.	—	3 lb. 8 oz.	...	...	...	Mother had two intramuscular injections of salvarsan (?) before birth of child. She probably suffered from old syphilis.	—	...
13	Oct., 1917	Iv. galyl (4); Im. Hg (2).	6.2.18. — G.c. good. No eruption present.	++	,,	8	Good.	++	Full.	—	1.4.18	Good.	—	5 lb.	Rash on buttocks 3 days after birth. Developed eczema at 6 weeks.	Breast.	Im. galyl and Hg inunc.	Continuous improvement. Baby and mother left with negative W. blood test.	− 2.4.18 − 16.6.18	+ 3 lb. 10 oz. to 24.6.18
14	Sept., 1917	Im. (? kind) (1).	21.1 18.—Ditto.	++	Iv. nov. and galyl. Hg per os.	8	,,	++	,,	—	17.4.18	,,	++	7 lb. 4 oz.	Severe rash on buttocks. Offensive discharge from nose. Right inguinal hernia	,,	Im. galyl. Hg inunc. and grey oil.	Severe case. Child made good progress in weight, but remained positive W. blood test. Irregular in attendance.	++ 17.4.18 + 23.6.18 ++ 24.7.18 ++ 18.8.18	+ 8 lb. 10 oz. to 20.10.18
15	Uncertain.	None.	27.3.18.—Ditto.	++	Iv. nov. Hg per os.	3	,,	++	8th mth.	++	28.4.18	Feeble. Died at 36 days.	Insufficient blood to test.	5 lb. 8 oz.	Rash appeared on buttocks 10 days after birth.	Breast and bottle.	Im. galyl (2).	Severe case. Always took nourishment with difficulty. Had 2 injections only. Died 36 days after birth.	Amount of blood submitted for examination too small.	− 1 lb. 4 oz. to 2.6.18
16	Nov., 1917	,,	11.4.18. — G.c. poor. Tubercular syphl. on chin and forehead. Mucous patches on buccal surface.	++	,,	3	Feeble.	Not examined.	Full.	No report.	28.4.18	Born dead. Macerated.*	Not tested	...	...	...	...	Child probably dead before mother was treated. Child macerated when born.	...	...
17	Oct., 1917	Iv. and Im. galyl (4 each).	6.2.18.—G.c. good. Pap. syphl. eruptions over limbs and trunks.	++	Iv. nov. and galyl. Hg per os.	12	Good.	++	,,	,,	4.5.18	Good.	+	7 lb. 6 oz.	...	Breast.	Im. galyl. Hg inunc. and inj.	Child did well. Left the hospital after 5 weeks. Not seen since.	+ 5.5.18	+ 1 lb. 14 oz. to 10.6.18
18	Feb., 1918	None.	7.5.18.—G.c. fair. Syphl. present on labia and around anus.	++	Iv. galyl. Hg per os.	0	,,	Not examined.	,,	,,	13.5.18	Born dead. Macerated.*	Not tested	...	...	...	...	Stillborn; macerated. Mother had no treatment before delivery.	...	...
19	Uncertain.	Iv. nov. (2).	9.3.18. — G.c. good. No eruption present.	++	Iv. nov. Hg per os.	9	,,	,,	,,	,,	17.5.18	Born dead.†	,,	...	...	...	...	Born dead. Head very soft; macerated.	...	...
20	Jan., 1918	Im. salv. (2).	25.3.18. — G.c. good. Syphl. eruptions on chest and arms.	++	Iv. nov. and galyl. Hg per os.	8	,,	++	,,	,,	7.6.18	Unhealthy appearance; skin dry and loose.	—	7 lb. 4 oz.	Slight eruption on body within week after birth, T. 105, 2 days; rash continued 8 weeks.	Breast.	Im. galyl.	Steady progress. Negative W. blood test mother and baby. Both left hospital negative.	− 10.6.18 − 28.8.18	+ 6 lb. to 30.9.18
21	Oct., 1917	Iv. nov. (1).	2.5.18.-G.c. weak and poor. Rupial sores on head, buttock, and left leg.	++	Iv. galyl and Im. Hg.	4	,,	Not examined.	,,	Not examined.	8.6.18	Died shortly before birth.	...	...	...	...	...	Born dead.	...	...
22	Nov., 1917	None.	6.6.18.-Weak and thin; condylomata on vagina and anus.	++	Iv. galyl and Im. grey oil.	0	Weak, thin.	++	6½ mths.	,,	8.6.18	Inguinal hernia, very small; weak; skin brown; wizened.	++	3 lb. 4 oz.	Eruption on buttock at sixth week. Large inguinal hernia.	Bottle (A. & H.).	Im. galyl and grey oil.	Good progress made up to few days of death, when screaming fits took place and death occurred suddenly.‖	++ 10.6.18 + 28.8.18	+ 2 lb. 10 oz. to 26.8.18
23	Dec., 1917	Iv. salv. (6).	8.5.18.—G.c. good. No eruption present.	++	,,	9	Good.	++	Full.	,,	23.6.18	Good.	+	6 lb. 6 oz.	Eruption on buttocks when 2 weeks old.	Breast.	,,	Steady progress.	+ 23.6.18 − 18.8.18	+ 5 lb. 14 oz. to 13.10.18
24	Uncertain.	None.	10.7.18.—G.c. fair. No eruption,	++	,,	0	,,	Not examined.	6th mth.	,,	11.7.18	Born dead.‡	...	...	...	...	...	Macerated. No treatment before birth. Sent in as case of gonorrhœa.	...	...

Col. 13.—* Appeared to have died 1 month before birth. † Appeared to have died some time before birth. ‡ Baby appeared to have been dead month before delivery. *Col. 19.*—‖ Microscopical examination of liver, spleen, and lungs showed no spirochætes. Sections of heart and spleen nothing abnormal found. Liver, fatty degeneration; lungs, alveolar walls showed increase of fibrous tissue.

AN INVESTIGATION OF THE

ANTISCORBUTIC VALUE OF THE RAW JUICES OF ROOT VEGETABLES,

WITH A VIEW TO THEIR ADOPTION AS AN ADJUNCT TO THE DIETARY OF INFANTS.*

BY HARRIETTE CHICK AND MABEL RHODES.

(*From the Lister Institute, Director's Department.*)

Low Antiscorbutic Value of Fresh Milk.

IN the study of the distribution among foodstuffs of the antiscorbutic accessory factor made recently by a group of workers in this Institute, a considerable amount of attention has been devoted to the antiscurvy value of cow's milk. A preliminary report of these experiments was published several months ago in THE LANCET, and the results[1] [2] have shown that cow's milk, even when fresh, is a substance poor in antiscurvy properties, and that a large daily ration, amounting practically to a complete milk diet, is necessary if scurvy is to be prevented by its agency alone.

This conclusion is in accord with the opinion previously expressed by certain clinicians on the basis of their observation of infant nutrition. Thus Barlow[3] in 1894 wrote the following words: "Looked at as antiscorbutic, probably much larger quantities of fresh uncooked meat and fresh milk are needed than fresh vegetables and fresh fruit juices." And at a later date Still[4] wrote: "The antiscorbutic power of fresh, unboiled milk is evidently slight."

In the case of young guinea-pigs it was found (*loc. cit.*) that a daily ration of 100–130 c.cm. of raw cow's milk was necessary to prevent occurrence of scurvy, and evidence was adduced to show that if the milk had been previously heated or dried a ration equivalent to the above would prove insufficient. These results have recently been confirmed by Miss R. E. Pilgrim, also working in this department, who has kindly permitted us to refer in this place to her experiments which will shortly be published elsewhere. It has been found extremely difficult to carry out the experiments with guinea-pigs. A full-cream milk diet is tolerated with difficulty by these animals, apparently owing to the high fat-content, and separated milk has proved easier of digestion. It has been exceptional to find young guinea-pigs which can consume as much as 100 to 150 c.cm. raw milk daily without digestive disturbances, even when the constipation occurring is mitigated by a daily dose of liquid paraffin. In the rare cases where this has been achieved good health and growth have been maintained for the period of the experiment—three months—and signs of scurvy have been absent or very slight. Upon a similar ration of dried milk this result has not been attained, even when the preparation is not more than 2–3 weeks old. Milk in this form is much better digested, and it is not unusual to find the equivalent of 100–130 c.cm. fresh milk consumed daily without difficulty. But in such cases the animals have suffered from severe scurvy sooner or later, and although life was prolonged the animals lost weight and sank into a miserable condition of chronic scurvy. There is little doubt that dried milk, even when freshly prepared, is inferior to raw fresh milk in respect of antiscorbutic properties.

Question of Extra Antiscorbutic for Infants.

In case of artificially fed infants the use of raw cow's milk is exceedingly rare at the present day. Boiling or pasteurisation of the milk has become necessary to obviate danger from bacterial disease, and for the same reason, as well as on grounds of convenience, the use of dried milk has increased largely in recent times. There is no doubt, however, that infants nourished upon boiled or dried cow's milk receive a smaller allowance of antiscorbutic material than would be provided by a diet of raw milk, and that the amount they obtain may dangerously approach the minimum required. To what extent this is a serious menace must depend upon the degree to which the content of antiscurvy vitamine in raw cow's milk is in excess of the infant's requirements and upon the antiscurvy value originally possessed by the particular sample of milk employed.

In any case the results of the experimental work are strongly in support of those medical authorities who recommend the inclusion of some extra antiscorbutic in the diet of infants nourished upon milk of which the original antiscorbutic value has been diminished by heating or drying.

Expert medical opinion is, however, divided upon this point. Many authorities, impressed with the comparative rarity of pronounced scurvy among infants brought up on boiled or dried milk, consider that the addition to that diet of any extra antiscorbutic is an unnecessary measure (see Coutts, 1918),[5] (Naish, 1914).[6] Others consider that the danger of incipient scurvy among artificially fed infants is not as negligible as is supposed (e.g., Hess and Fish, 1914)[7] (Miller, 1917),[8] and recommend that raw fruit juice or other antiscorbutic material should be added to the diet. Special attention was called to this point in an editorial article in THE LANCET of Sept. 22nd, 1917, and it is for the benefit of those who find difficulty, on account of cost or scarcity, in providing infants with an extra antiscorbutic in the form of fresh fruit juice that the following experiments as to other available sources were undertaken.

Experimental Work.

The experiments were made with young guinea-pigs, and the methods employed were the same as those described in the previous paper dealing with the antiscorbutic value of fruit juice in THE LANCET of Nov. 30th. The juices were prepared by rubbing the clean-cut surface of the raw vegetable upon an ordinary kitchen grater, placing the pulp in muslin and squeezing gently between the fingers, when the juice runs out readily. Unless otherwise stated, the juice was always prepared fresh every day; expressed raw vegetable juices undergo changes rapidly at room temperature, and were found to deteriorate in respect of antiscorbutic value when stored even at a low temperature in a refrigerator. In the accompanying table are set forth the results obtained

Table showing Antiscorbutic Value of Raw Vegetable and Fruit Juices.

Experiments with guinea-pigs. The diet consisted of oats and wheaten bran *ad libitum*, with 60 c.cm. daily of milk autoclaved at 120° C. for 1 hour; the antiscorbutic element in the diet was provided solely by the measured daily ration of vegetable or fruit juice.

Experiment No.	No. of animals.	Antiscorbutic material employed.	Daily ration.	Duration of experiment (days).	Result.	Degree of protection from scurvy.
Control	4	None.	—	34–40	Death from scurvy, 34th–40th day.	0
1	4	Raw swede juice.	2·5 c.cm	90–100	Animals enjoyed fair health; no symptoms of scurvy.	++
2	4	Raw carrot juice.	5 c.cm	34–56	Animals developed severe scurvy.	+
	4	,,	10 c.cm	34–76	,, ,,	+
	3	,,	20 c.cm	75–95	Fair health; signs of scurvy in 1 animal out of 3.	++
3	2	Raw beetroot juice.	20 c.cm	67–88	Definite scurvy in both cases.	+
4	1	Cooked potato (steamed at 100° C. for 30 minutes).	17 g.	47	Slight protection.	+
	3		20 g.	73–92	Protection.	++
5	4	Raw cabbage leaves.	0·5 g.	66–90	Scurvy symptoms, but some degree of protection.	+
	5	,,	1·5 g.	90	Protection.	++
6	4	Fresh orange juice.	1·5 c.cm	50–91	Scurvy in 2 cases out of 4.	+
	2	,,	3 c.cm.	91–93	Good health, no scurvy.	++
7	2	Grapes, green Spanish.	10 g.	44–51	Severe scurvy.	0
	4	,,	20 g.	30–88	Severe scurvy in 3 cases out of 4.	+

0 No protection. + Slight protection. ++ Protection.

with the raw juices of swede, carrot, and beetroot, the immediate aim of the experiments being to determine the minimum amount which, when added to a diet of oats, bran, and autoclaved milk (heated to 120° C. for one hour to reduce its antiscorbutic value to a minimum), was adequate to prevent scurvy and to maintain the animal in health over the

* A companion paper entitled The Relative Content of Antiscorbutic Principle in Limes and Lemons, together with Some New Facts and Some Old Observations Concerning the Value of "Lime Juice" in the Prevention of Scurvy, (A) *Experimental Inquiry*, by Harriette Chick, B. Margaret Hume, and Ruth F. Skelton, (B) *Historical Inquiry*, by Alice Henderson Smith, appeared in THE LANCET of Nov. 30th, 1918, p. 735.

period of the experiment. Results obtained with cooked potato (it is not possible to feed guinea-pigs on raw potatoes), fresh orange juice, fresh grapes, and fresh raw cabbage leaves, are added for purposes of comparison.

Comparative Antiscorbutic Value of Various Raw Vegetable Juices.

The juice of the fresh raw swede easily takes the first place in respect of antiscorbutic value. Protection from scurvy was attained with a daily ration of 2·5 c.cm. In case of raw carrot juice, severe scurvy developed in animals receiving daily rations of 5 c.cm. and 10 c.cm.; with a daily ration of 20 c.cm., protection from scurvy was secured and the general condition of the animals was about the same as of those receiving a daily ration of 2·5 c.cm. swede juice. In case of beetroot, the antiscorbutic value was less than that of carrot; animals receiving a daily ration of 20 c.cm. fresh raw juice showed only a small degree of protection, acute symptoms of scurvy supervened in every case, and death from scurvy occurred in several instances before the period of experiment, three months, had expired.

It is thus seen that raw swede juice provides a valuable and inexpensive source of antiscorbutic material. Its value is not markedly inferior to that of fresh orange juice, and it may be regarded as a satisfactory substitute; its value is 10 times that of raw carrot, and more than 10 times that of raw beetroot juice. It has recently been adopted in some infant welfare centres, and there does not appear to be any drawback to its use for the purpose of infant feeding.

Raw carrot has long been popular as an adjunct to the dietary of infants and there is traditional support for its worth. So keen an observer of his own day as Anthony Trollope, in "Barchester Towers," 1857, depicts the older generation in the person of Miss Thorne strongly advising the young mother to smear raw carrot juice and allow it to dry upon the baby's coral, in order to ensure for the infant a healthy set of permanent teeth in the future. "The receipt had been much in vogue in the young days of her (Miss Thorne's) grandmother," who "had the best teeth in the county and carried them to the grave with her at eighty." (Bohn's Library Ed., Bell and Sons, 1913, p. 234.)

It is interesting to observe the root vegetables investigated are widely separated in the vegetable kingdom; the swede belongs to the natural order *Cruciferæ*, the carrot to the *Umbelliferæ*, the beetroot to the *Chenopodiaceæ*, and the potato to the *Solanaceæ*. It is significant that the natural order *Cruciferæ* should also include the cabbage, most potently antiscorbutic of the vegetables investigated in the present inquiry, and the "scurvy grass" (*Cochlearia officinalis*) and the "cresses," so justly esteemed by the sailors suffering from scurvy in the old days.

Bachstrom (Observationes circa Scorbutum, 1734) relates the following remarkable story: "A sailor in the Greenland ships was so over-run and disabled with the scurvy, that his companions put him into a boat, and sent him on shore; leaving him there to perish, without the least expectation of a recovery. The poor wretch had quite lost the use of his limbs; he could only crawl about on the ground. This he found covered with a plant, which he, continually grasing, like a beast of the field, plucked up with his teeth. In a short time he was by this means perfectly recovered; and, upon his returning home, it was found to be the herb of scurvygrass." (Rendering given by Lind, 1757. A Treatise on the Scurvy, 2nd edit.). It is interesting to find that the old legend that the cruciform arrangement of the flower was an indication of especial virtues in the service of man thus receives scientific support at this comparatively late date.

Summary.

1. Cow's milk possesses distinct antiscurvy properties, but these are present in small degree in comparison with other antiscorbutic foodstuffs. Its value in this respect is further reduced after heating or drying. It is therefore advisable to provide some extra antiscorbutic material in the diet of infants nourished upon heated or dried cow's milk.

2. The antiscorbutic value of various materials that might suitably be included in an infant's diet has been experimentally determined by means of experiments with guinea-pigs. Among fresh fruit juices that of the orange is easily the most suitable, and possesses a value about ten times as great as that of fresh grapes. Of the raw vegetable juices examined, raw swede juice proved to be far the most potent, approximating in value to raw orange juice; the raw juice of carrots was found to be much inferior, and that of beet-roots failed to prevent scurvy in the largest dose (20 c.cm. daily) that could be administered to the experimental animals.

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HÆMORRHAGIC BRONCHITIS:

CASTELLANI'S BRONCHO-PULMONARY SPIROCHÆTOSIS.

BY H. VIOLLE.

(*From the Institut Pasteur, Paris.*)

IN view of the fact that cases of broncho-spirochætosis (Castellani's bronchitis) have recently been observed in Europe—I have first found the disease in France, having recorded a large number of cases of it in Toulon—a few notes on the subject will perhaps be found to be of some practical interest.

This affection and its etiological agent were first described by Castellani in Ceylon in 1905.[1] He called the malady broncho-spirochætosis and the germ *Spirochæta bronchialis*. Castellani's observations were confirmed in various parts of the tropics, by Branch in the West Indies in 1907, by Jackson in the Philippine Islands in 1908, by Waters in 1908, who recorded a number of cases in India, by Phalen, Kilborne and Chamberlain, Taylor, Chalmers and O'Farrell, Harper, and others in various other tropical countries.

In Europe a few cases were observed in 1915 by Galli Valerio in Switzerland, one case by Lurie in Serbia, and a few by Castellani himself in the Balearic-Adriatic zone. Very little attention, however, was paid in Europe to the disease until it was found in France by myself in 1916. At Toulon, where I have been carrying out the investigation, a comparatively large number of cases has occurred among the native troops coming from the Far East, as well as in Europeans who had never been to the colonies. A special ward in the St. Mandrier Hospital had to be set aside for cases of this disease, and I was placed in charge of it.

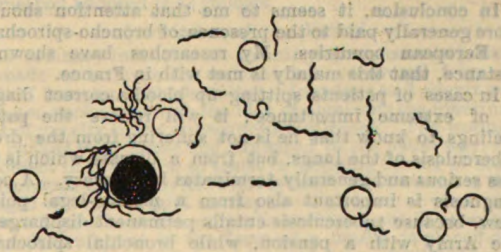
Symptomatology.—Mode of Infection.

The symptomatology I have observed in my patients is the following:—

The patient has generally been sent to hospital with the diagnosis of tuberculosis or suspected tuberculosis, and one can easily understand why this diagnosis has been suggested, as in very numerous cases the patient is spitting up blood. The bloody expectoration is often of a peculiar vividly pink colour, somewhat different from what one usually sees in hæmoptysis of tubercular origin.

The cough is frequent, sometimes more severe during the night. The physical examination of the chest in some cases reveals very little or nothing; in other cases there are signs of simple bronchitis with or no emphysema; in others there are signs of consolidation.

The general condition of the patient is often fairly good, even very good, and very often there is no fever.



The blood at times shows a slight degree of anæmia, due to the repeated attacks of hæmoptysis. The number of leucocytes is normal, and so is generally the leucocytic formula. (See figure.)

The microscopic examination of the sputum reveals presence of *S. bronchialis* in enormous numbers; the preparations are teeming with it.

[1] THE LANCET, 1908, i., 1384.

To put in evidence these spirochætes one may use the ultra-microscopic for fresh preparations, or one may stain with Romanowsky and similar methods. The best method is the silver nitrate one of Fontana-Tribondeau.

The *S. bronchialis* Castellani is an organism extremely variable in length, shape, and number of spirals; length 4 to 30 microns, mostly 7–14. According to Fantham these medium forms are derived from the long ones by transverse division.

Certain individual spirochætes have very few spirals, two or three, others have a large number with spirals very close; numerous intermediate types can be found. The spirochæte has been carefully investigated from a morphological standpoint by Fantham. It has not yet been cultivated. I have not been able to reproduce the disease in rabbits, guinea-pigs, and pigeons, but Chalmers and O'Farrell have reproduced the disease in a monkey by intratracheal injection.

The disease, according to certain authorities, is very contagious, the contagion taking place, according to Fantham, from infected persons to healthy individuals by means of the so-called "coccoid bodies" derived from the spirochætes. Without denying this mode of contagion, I am inclined to believe that *S. bronchialis* may be present in very small numbers in many individuals, similar to what is the case, for instance, with the pneumococcus, and that any cause lowering the vitality of the tissues, such as a chill, may cause *S. bronchialis* to multiply and to invade the whole of the broncho-pulmonary system.

As regards the possibility of spirochætic infections spreading from the mouth to the bronchi, I must say that, except in one single case, none of my patients had any mouth lesions of spirochætic origin, and their teeth and gums were in good condition.

Diagnosis and Treatment.

Diagnosis.—This is based on finding *S. bronchialis* in large numbers in the expectoration, while there is absence of the tubercle bacillus, of hyphomycetes, and of ova of *Paragonimus westermanii*, Kerbert, which at times may give rise to bloody expectoration. Clinically, if a patient presents bloody expectoration of a vivid pink colour and is in good health, the practitioner should be on the look-out for Castellani's broncho-spirochætosis. Cases of mixed infection of broncho-spirochætosis and tuberculosis occasionally occur; similarly, cases of bronchial spirochætosis plus broncho-moniliasis have been recorded.

Prognosis.—The prognosis, as a rule, is favourable; in many cases all the symptoms disappear within three to four weeks from onset. Relapses, however, seem to be frequent, and chronic forms occur with expectoration, which is at times muco-purulent, greenish, and at times mixed with blood.

Treatment.—In a large number of cases active therapeutic measures are not called for, rest, nourishing diet, and country air being sufficient to bring about a cure. Ergotine and tr. iod., a few drops well diluted, should be given if the attacks of hæmoptysis are severe, and if there is not much secretion and the cough is very painful opium preparations may be administered.

As regards specific treatment arsenic and tartar emetic have been used by Castellani and others, while certain authorities recommend arsenobenzol. Satisfactory results from such a line of treatment will at times be obtained in chronic cases.

In conclusion, it seems to me that attention should be more generally paid to the presence of broncho-spirochætosis in European countries. My researches have shown, for instance, that this malady is met with in France.

In cases of patients spitting up blood a correct diagnosis is of extreme importance; it will relieve the patient's feelings to know that he is not suffering from the dreaded tuberculosis of the lungs, but from a disease which is much less serious and generally terminates in recovery. A correct diagnosis is important also from a medico-legal point of view, because tuberculosis entails permanent discharge from the Army with a pension, while bronchial spirochætosis merely means in most cases giving the patient a few weeks' rest, after which he will be able to resume his military duties.

AT the instance of the National Council of Trained Nurses, Mrs. Bedford Fenwick will stand for election to Parliament on the National Health ticket when a suitable constituency can be found.

LOCAL ANÆSTHESIA AND TWILIGHT SLEEP IN THE SURGERY OF EXOPHTHALMIC GOITRE.

BY S. H. ROUQUETTE, M.CH. CAMB., F.R.C.S. ENG.,
RESIDENT ASSISTANT SURGEON, ST. THOMAS'S HOSPITAL.

DURING recent years an ever-increasing number of the subjects of Graves's disease have been submitted to operation with a measure of success which would have seemed scarcely credible in days gone by before the factors of safety were as well understood as they are now. That surgery can produce an immediate cure in some cases and marked improvement in others there can be no doubt, but time alone can show whether the cure is permanent.

Limitations of General Anæsthesia.

It is generally recognised that the only surgical measure likely to prove of permanent value consists in ablation of the greater part of the gland, the exact amount depending on the age of the patient, the severity of the disease, and on various other factors. As the determination of this amount is exceedingly difficult there are many cases in which a second operation is required still further to reduce the size of the gland, but with the growth of experience secondary operations are likely to become less frequent in the future.

The very great diminution in the mortality of the operation is due partly to a better appreciation of the time at which operation should be undertaken, but far more to a realisation of the danger of anæsthetics, culminating in the absolute prohibition of chloroform. Ether is still used, and in highly skilled hands is a safe anæsthetic for very slight or early cases, as well as for those which, though originally severe, have been markedly improved by a previous operation; but I am inclined to think it is not sufficiently safe for a primary operation in a severe case.

Of the various methods of administration the rectal is achieving popularity, and has found a warm advocate in Mr. A. J. Walton and others who speak with authority. I have not made an extensive trial of this method, but such experience as I have had has only served to strengthen my preference for local anæsthesia. On several occasions Dr. Z. Mennell has given ether for me by the intratracheal method with great success, but while I regard this as the most suitable for large, simple goitres with respiratory embarrassment, it is limited by the conditions formulated above.

Local Anæsthesia.

Foremost among pioneers in this branch of surgery, Dr. T. P. Dunhill, of Melbourne, will ever be remembered as the champion of local anæsthesia; readers of THE LANCET are familiar with his teaching and aware of the results he has obtained. No one who read his paper of Dec. 15th, 1917, can fail to have been impressed by the extraordinary recovery of the most desperate cases under his care, cases which could only have terminated fatally in a very short time but for his intervention. Dr. Dunhill himself attributes his successes to the use of local anæsthesia, and, indeed, if one may judge from the photographs in his paper, it would seem doubtful whether any anæsthetist could have been found willing to deal with patients in so grave a condition.

Surgeons in this country have tried local anæsthesia, but do not seem addicted to its use. It certainly possesses two disadvantages: in the first place, the mind suffers what the body does not feel; and, in the second, the personality of the patient is apt to intrude and embarrass the surgeon, with the result that the operation may degenerate into a trying ordeal for both. In such circumstances the surgeon is hindered in his work and may be unable to remove an adequate proportion of the gland. Local anæsthesia cannot abolish the pain arising from certain of the manipulations; but while some patients bravely resign themselves and tolerate discomfort without flinching, others are physically incapable of exercising the necessary self-control. When it is remembered that the patients are sufferers from Graves's disease, it will be realised that local anæsthesia must often leave much to be desired.

It was with a view to improving the technique and alleviating the distress of the patient during the operation that I began to use preliminary injections of morphine and later of hyoscine as well. I found that the operation could

be more quickly performed and that the patient frequently felt nothing at all or slept peacefully at intervals throughout the operation. The drugs produced no ill-effects and sometimes enabled the patient to sleep for the remainder of the day.

Technique.

1. *Induction of amnesia.*—For each individual it is necessary to estimate what dose of the drugs will be required and how long it will take to produce the desired effect. Most frequently I give hyoscine 1/100 gr. and morphine 1/6 gr. an hour and a half before the operation and morphine 1/4 gr. half an hour later. The patients' ears are plugged with wool and the room is darkened at the time of the first injection.

2. *Syringe and needles.*—I use a 20 c.cm. Record syringe, with Barker's steel spinal needles and hypodermic needles.

3. *The anæsthetic solution.*—Dr. Dunhill uses 200 c.cm. of saline containing 0·1 per cent. adrenalin 20 m and novocaine 6 gr. Hoffmann and Kochmann [1] recommend—

Novocaine	0·2 g.
Sol. pot. sulph. (2 per cent.)	40 g.
Sol. sod. chlor. (0·9 per cent.) ... ... ad	200 g.
Sol. suprarenin hydrochlor. (0·1 per cent.) ...	24 m.

The addition of potassium sulphate to a novocaine solution is said to aid its effect, and magnesium sulphate is sometimes used with a similar object. Whatever solution is employed should be freshly prepared, but need not be warmed before use. Of the two chief ingredients the adrenalin is the more important; it diminishes oozing from the subcutaneous tissues and prevents too rapid absorption of the fluid. I doubt whether the novocaine is really of any value at all at so low a concentration, as I have been equally successful with normal saline alone except for a slight increase in capillary hæmorrhage. I think the anæsthesia is produced principally by distension of the tissues, since the large volume of the fluid seems to be the most important factor.

4. *The injection.*—The injection can be made through one median puncture, and as the introduction of a large spinal needle is painful, it is well to begin by infiltrating the puncture area with a fine hypodermic needle. With very nervous patients I sometimes introduce a further refinement by laying a pad soaked in 1 : 20 carbolic on the neck beforehand to diminish sensibility to the prick of the needle. All the tissues superficial and lateral to the gland can be infiltrated, but the fluid does not penetrate the capsule of the gland and seldom reaches the trachea; posteriorly the structures never show any evidence of infiltration. The injection is begun half an hour before the operation while the patient is still in bed; he is then conveyed to the operation theatre, and by this time is usually drowsy and takes no interest in subsequent proceedings. It is not necessary to inject any more of the novocaine solution during the course of the operation.

5. *The operation.*—During the operation the theatre is kept as quiet as possible and no talking is allowed; the patient may sleep the whole time, moan subconsciously, or rouse himself at intervals to ask questions. Occasionally the limbs move slightly, but whatever impressions the brain may receive the mind retains no recollection of them. The loss of all idea of time is a noticeable feature, and when asked how long he supposed the operation took the patient will usually under-estimate the time by half an hour or more; he does not afterwards feel that he has passed through any painful ordeal, and in most cases the pulse does not rise appreciably during the operation. I have not always succeeded in producing complete immunity from discomfort, but with increased experience imperfect anæsthesia has become exceptional.

6. *Post-operative course.*—I always drain the wound and close the incision with clips; the drainage-tubes and some of the clips are removed two days after the operation and, if the wound then shows no tendency to gape, the remaining clips are removed on the following day. In the majority of cases the post-operative course is extraordinarily free from discomfort of any sort, the patient altogether escaping the physical and mental distress so apt to follow in the wake of general anæsthesia. The narcotics produce no ill-effects unless given in excessive doses when headache and thirst may be complained of; headaches are readily alleviated by aspirin and thirst by administration of fluids in any form most palatable to the patient.

[1] Deutsch. med. Woch., 1912, No. 48.

The temperature is always raised for a few days, but usually rises no higher than 101° F.; in some cases and for no apparent reason it remains irregular for two or three weeks, and then slowly falls to normal, provided that absolute rest is enforced. The pulse reaches its highest point on the second day, and thereafter falls steadily during the next ten days to a level below that recorded before the operation. I have not found that local anæsthesia increases the likelihood of suppuration, as the wound nearly always runs an aseptic course and heals by first intention, but the formation of a hæmatoma is not unlikely to occur if more than 0·1 per cent. adrenalin 20 m has been used in the anæsthetic solution. Occasionally alarming symptoms arise and call for prompt treatment. Great acceleration, and particularly irregularity, of the pulse indicate fatigue, when an effort should be made to induce repose of body and of mind; in these circumstances a dose of paraldehyde in rectal saline will often bring about a marked improvement. If, in addition, the patient is dyspnœic, cyanosed, and restless the condition is more serious; the wound should first be examined to make sure that drainage is not obstructed, and then strophanthin should be injected intravenously; for this purpose I keep in readiness a freshly prepared solution containing strophanthin gr. 1/250 and adrenalin (0·1 per cent.) 1 m, in 5 m, the effect of which is instantaneous. Inhalation of oxygen is sometimes useful in relieving cyanosis.

Soreness of the throat and difficulty in swallowing are minor complaints and are sometimes distressing; they can be relieved by the use of suitable lozenges and by giving small pieces of ice to suck. Vomiting hardly ever occurs as a result of the operation and is never serious by itself, though attacks of vomiting may have been one of the manifestations of the disease. The presence or absence of various complications depends largely on the severity of the disease and on the area of the cut surface of the gland from which secretions may be absorbed into the circulation.

Conclusions.

The combination of hyoscine-morphine amnesia and local infiltration is an absolutely safe method of producing anæsthesia, possessing neither disadvantages nor contra-indications; it is preferable to local anæsthesia alone, and more rational.

THE TREATMENT OF EXTENSIVE SEPTIC WOUNDS.

BY H. GARDINER, M.S. LOND., F.R.C.S. ENG.,

ACTING ASSISTANT SURGEON, ROYAL FREE HOSPITAL AND EVELINA HOSPITAL FOR CHILDREN; OPERATING SURGEON, FULHAM MILITARY HOSPITAL; SURGICAL REGISTRAR, CHARING CROSS HOSPITAL.

IT seems that the chief use of gauze dressing is that it protects the wound from secondary infection from outside, and that if a method of treating wounds can be devised in which the wound is protected from outside infection, and at the same time the objectionable results of the use of gauze dressings are eliminated or diminished, an advance in the right direction will have been made. With this object I have, for the last six months, been treating septic wounds with much discharge with no permanently applied dressing. The method adopted is as follows.

Description of the Method.

The ordinary incisions for opening up recesses in pockets are made as soon as the patient has recovered from the result of transfer to the hospital. Incisions and openings so made are performed with the idea of obtaining the maximum effect of gravity in the subsequent treatment. The wound is then packed with gauze and bandaged in the usual way—the sole object in this being to assist in stopping oozing of blood. All dressings are removed 48 hours later. The wound is then syringed with some mild antiseptic—e.g., boric or weak eusol lotion. A guard made from perforated zinc, cut in an appropriate size and bent in the form of a cradle, is placed over the limb or part wounded and covered by a sterilised towel. If possible, an ordinary cradle is placed over the whole. Any discharge from the wound is allowed to run out from the wound, and is taken up by a sterile pad of wool or sphagnum moss so placed as not to touch the wound. At intervals varying with the amount of discharge, on an average twice a day, or in some cases more frequently, the nurse lifts the towel and zinc guard, syringes or swabs the wound, and changes the pad. The guard and towel are then replaced. This treatment is continued until all pockets and recesses have been closed by granulation, the granulating surface is

smooth, and the discharge has practically ceased. The wound is then dressed in the ordinary way with gauze and wool.

A fair number of cases (40 or 50) have been treated in this way, and in none of them have any bad effects been observed as the result of leaving the wounds open. In some of these the wounds were so extensive, and the discharge so foul and profuse, that amputation on admission was seriously considered. Wounds infected with a great variety of organisms —all those commonly met with in such wounds—have been treated in this way with success.

Occasionally it has been necessary to open pockets that have formed after the treatment has been started, but these were all cases in which it had been impossible to obtain a proper flow of discharge by gravity. In these cases a small wick of gauze is laid wherever a recess is found and left hanging over the edge of the wound to assist in the drainage. These wicks are never so large as to occupy more than a quarter of the opening of any recess.

Its Difficulties and Advantages.

The difficulties experienced in this method of treatment have been threefold: 1. Difficulty in some cases in arranging the wound by operation for opening pockets or by altering the position of the patient so as to obtain the greatest effect of gravity. This difficulty is to some extent overcome by the judicious use of very small gauze wicks and by the more frequent cleansing of the wound by syringing. 2. The difficulty in continuing the treatment at night when the patient is asleep and restless, as any considerable movement of the wounded part may disturb the covering and bring the wound in contact with unsterilised material. This is overcome in some cases by placing the limb in a splint. In others it is necessary to place an ordinary dressing and bandage on at night, but the number of cases in which this has had to be done is small. 3. Some parts of the body are difficult to keep covered in the manner described—e.g., the neck and side of the trunk—and in some parts—e.g., the face and head—it is impossible. In the case of the neck and side of the trunk it is possible to build up a rampart of sphagnum moss round the wound and to keep these in place with a towel or bandage in the usual way. The principles of perfectly free and open drainage is thus not interfered with.

The advantages following the employment of the method have been found to be: 1. Perfectly free drainage. 2. Absence of the tendency to pocket, provided the wound is exposed and so arranged as to allow gravity its maximum effect. 3. Absolute painlessness of dressing even the most extensive wounds—an advantage of prime importance for the general condition of the patients. 4. The dressings can be performed with a complete absence of any manipulation of the wounded part, as no bandages have to be removed or applied. 5. A great economy in dressings is effected.

With regard to the disadvantages mentioned above, the following comments are apposite: 1. All the advantages of the absorbent power of gauze in assisting drainage contrary to gravity can be obtained by the use of small wicks, with none of the disadvantages of the closed dressing. 2. Wounds (so severe as to need any special care in treatment) of "difficult parts," such as the head and neck, are only occasionally met with in general hospitals in England. A circular rampart of absorbent material, covered and kept in place by a sterile bandage or towel, has been effective in the small number of these cases that have come under my care.

The first effects of this method of treatment are somewhat disturbing to the mind of a surgeon accustomed only to the appearance of wounds treated in the ordinary way. The edges of the wound and parts of the surface over which the discharge is not flowing tend to become hardened and small scabs develop. These should be removed as soon as they have formed, and can usually be prevented from forming altogether by careful cleansing and swabbing of the wound. Should there be any recesses in the wound these must receive particular attention at the dressing, as there is a tendency for the discharge to coagulate and block up small fissures. Provided the dressing is done with ordinary care this can in all cases be prevented. In cases where deep pockets are present that cannot be effectively opened a rubber drainage-tube is employed to prevent premature closure. In cases where an ordinary closed dressing has to be applied at night a wet one is always used—usually a hot fomentation. Any tendency towards drying of the wound is thus prevented, even when it has been allowed temporarily to occur. The hypothetical objection that the dried secretion may block the recesses of the wound has not been proved to be valid by experience.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

CÆSAREAN SECTION THREE TIMES ON THE SAME PATIENT.

BY WALTER G. SPENCER, M.S. LOND., F.R.C.S. ENG.,
SURGEON, WESTMINSTER HOSPITAL.

THE following case shows that Cæsarean section, sepsis being excluded, may be repeated without any impediment from scars or adhesions.

Notes of Case.

In April, 1907, the patient, then aged 29, in her first pregnancy, had reached term when labour pains began. A medical practitioner, recognising that natural delivery was impossible, sent her forthwith into hospital. On admission it was noted that she was a spare woman of medium height, who presented no external deformity. The pelvis resembled that of a boy. Measurements made subsequently, and repeated later, were as follows: True conjugate, 2¼ in.; transverse diameter, also outlet between ischial tuberosities, not much wider than conjugate; external conjugate, 7¾ in.; between anterior superior spines, 9 in.; between crests of ilia, 10¾ in. The uterus was high up; the cervix could scarcely be touched with the finger; the unruptured membranes were bulging through the os. No sepsis had been started. Cæsarean section was done within 24 hours of the first labour pain.

Mother with her three children after third Cæsarean section.

The second operation was performed in October, 1910, on what was reckoned to be the 280th day of pregnancy; labour had not commenced but the breasts had become full.

Cæsarean section for the third time was carried out in July, 1918, with the patient in the same state as at the second operation.

Account of Operations.

There was no essential difference between the three operations. The incision through the abdominal wall was a median one; at the second and third operations a fine strip of scar was excised, there was then no sign of hernial protrusion, nor of adhesion to the peritoneal aspect.

The incision into the uterus was also through the middle line, without encroaching upon the cervix or uppermost end of the fundus. At the second and third operations the abdominal wound was well retracted, but no one present could see any sign of scar in the uterine wall, or of adhesion to the uterus.

On opening the uterus the child, followed by the placenta and membranes, was removed with one sweep of the hand. At

the second and third operations the placenta was found attached, as at the first, above and behind, and it and the membranes peeled off just as readily. The cord was not tied off for two or three minutes, then the child was put to the breast as soon as it had been washed; it was afterwards suckled without any other food being given. All three babies throve without a break.

The uterus began to contract immediately it was squeezed; the contraction was just as quick on the second and third occasions, as at the first when labour had already commenced. After a long strip of gauze had been drawn down and out through the vagina, the uterine wound was sewn up by a double row of interrupted kangaroo-tendon sutures. When this had been completed the uterus had become quite hard, and no blood could be squeezed out between the sutures. Then the abdominal wall was as carefully sutured with three rows of interrupted kangaroo-tendon sutures and a continuous fine silk suture through the skin. By far the longer part of each operation was occupied by the insertion of the sutures.

As for the patient during and after the three operations, it was the same as if she had been operated upon for an uncomplicated ovarian cyst. The lochia and the involution of the uterus offered no differences from a normal labour.

The photograph shows the mother with her three daughters after recovery from the third Cæsarean section. She then had a perfectly sound abdominal scar.

Portland-place, W.

A CASE OF GUMMA OF THE ENTIRE LEFT LUNG.

BY ROBERT HALL, JUN., M.B., B.CH., B.A.O. BELF.,
CAPTAIN, R.A.F.; AND LATELY SURGEON PROBATIONER, R.N.V.R.

THE following case may be of interest on account of the rarity of the condition:—

Patient, aged 40; family history good, no malignancy, married, and has three children living. He states that they are healthy; a fourth child died of "convulsions" at the age of 10 months. He is, and was, a moderate drinker and smoker. He is a labourer in a flour-mill and attributed his present condition to an accident in July, 1914. Several bags of flour fell on him and he was away from work for a month; he felt breathless and easily tired upon slight exertion, and had a severe pain in his back, left shoulder, and left arm. He returned to light work, but frequently had to rest. His appetite became impaired and he had a cough. The dyspnœa gradually became more marked, and after several periods of alternate work and "lying up" he entered hospital in June, 1918, when his condition was as follows:—

Patient complained of constant pain in his left side, left shoulder and back, also shortness of breath and a cough with tough spit, which was very difficult to get up. (It was not blood-stained or prune-coloured.) Very little exertion exhausted him, and he had headaches. His appetite was poor, but he had not lost weight to any considerable extent during the past year.

Patient was emaciated and pale, and did not speak distinctly. His teeth were very bad, and there were "snail track" ulcers to the right of his uvula. The abdomen and bowels were normal. The heart was hypertrophied downwards to the sixth rib, and outwards to the left 2½ inches beyond the nipple line. The impulse was of a heaving type, and a diastolic murmur was heard in the aortic area with maximum intensity at Erb's point, and conducted to the apex. The electrocardiograph showed predominance of the left ventricle. The pulse was 108 and "Corrigan's"; the condition of the artery walls was fair. Epigastric and jugular pulsation was present. Blood pressure: Right arm, systolic 120, diastolic 76; left arm, systolic 106, diastolic 68 mm. Hg. Respirations were shallow and 40 per minute. The movement of the left side of chest was impaired. Vocal fremitus was absent over the entire left lung, "stony" dullness over whole left lung, and vocal resonance absent except over a small area extending from the sterno-clavicular junction to a distance of about 2½ inches in radius. In this area there was amphoric resonance. The nervous and genito-urinary systems were normal and pyrexia was not present.

The patient denies having had syphilis, but Wassermann reaction was markedly positive. He was put on anti-syphilitic treatment, and under large doses of potassium iodide his cough and breathlessness have been very much relieved. The possibility of actinomycosis was considered and ruled out.

In conclusion, I wish to express my thanks to my father, Dr. R. Hall, for permission to examine and take the history of this case.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Reconstruction in Medical Education and Practice.

AT the ordinary meeting of the society held on Dec. 2nd, under the presidency of Dr. ARTHUR F. VOELCKER,

Mr. H. J. WARING (Col. R.A.M.C.) introduced a discussion on Reconstruction in Medical Education and Practice. It was, he said, impossible to divorce medical education from medical practice. The objects to be aimed at in medical reconstruction could be put in the following brief form: (1) to improve the education of students so as to make them more efficient for medical practice; (2) to improve the conditions under which medical practice is carried on; (3) to obtain the largest output of good work from medical men with the least expenditure of energy; (4) so to arrange the conditions of medical practice that the practitioner could have more time for recreation and more opportunities for bringing his medical knowledge up to date. He was assuming that it was not the intention of the State to create a whole-time medical service; the draft Bill did not foreshadow that.

The Medical Curriculum.

Five years was too short a period of study if clinical subjects were to be adequately taught. When, in 1892, the medical curriculum was lengthened to five years it was the intention that the added year should be devoted to clinical work, but owing to some deficiencies in organisation and to some matters concerning the organisation of the schools the preliminary subjects still occupied the whole period. Two suggestions had been made to remedy that. The first was that the chemistry, physics, and biology course should be completed before the commencement of medical study; this could be done by rearranging the work at the public and secondary schools in the case of students who did not go to the older universities. In many public schools the courses of instruction were so arranged that the chemistry, physics, and biology taught sufficed for the first examination; the same was also true, to a lesser extent, of many secondary schools. If the need were made very clear the public schools would also fall into line. In Scandinavia the period of study had been extended to six years, and he was told by medical men there that it was satisfactory; but he thought the better solution of the difficulty was the completion of the chemistry, physics, and biology before entering the five-year course of medicine and surgery.

Medical Education.

He felt that anatomy should be taught by professed anatomists, but taught less from the morphological than from the surgical side. These professors should be shown the need for emphasising the latter aspect—i.e., in the use of the living model and the normal X ray appearances, especially in regard to the bones. It was also absolutely necessary to teach the lymphatic system of the body more thoroughly. There should be a schedule of anatomy, for some parts need not be taught in detail, such as learning every individual muscle of the back. Owing to the paucity of material, he thought it necessary that there should be a new Anatomy Act; and if that were the general view there should be a collective representation made, for the present was an opportune time. Applied anatomy would have a fitting place during the clinical period, and should be taught by a surgeon. Physiology had become such an enormous subject that its professors showed a tendency to teach it as a science apart, rather than human physiology as a factor in general medicine. The chemist should be attached to this department, and the time had now arrived for the general inclusion of a biochemist. Pharmacology should be taken in the intermediate period, in close association with physiology. He thought that the essentials of bacteriology should be taught before the student commenced his actual medical work; it could be done in a compulsory three months' elementary pathology and bacteriology course.

With regard to materia medica the student had an enormous amount to learn, as the Pharmacopœia was now very extensive. A number of physicians and surgeons could probably cut it down to one-half with advantage to the

medical student and without material disadvantage to medical practice. General medicine and surgery were well taught in all the medical schools. He had a suggestion to make, however, with regard to midwifery and gynæcology—namely, that separate teachers should be appointed for these two subjects. There had been a great tendency for the teaching of midwifery to be left to the younger man; when the teacher was older he inclined to the gynæcological or surgical side. There were now many special departments, and as medical education was at present constituted it was almost impossible for the ordinary student to go through all of them satisfactorily. The medical student should go through a special course in each one of these. Owing to the difficulties in providing material the majority of students never went through any satisfactory course in operative surgery; it was usually only those who went in for the higher degrees who did so. Concerning the equipment of the medical student for practice, he thought the teaching of mechano-therapeutics and massage was not satisfactory in any of the schools, yet many conditions could be only treated satisfactorily in that way. Consequently, that branch of practice went, by default, to quacks. In the States the gentleman who called himself an osteopath got a big practice. Mechano-massage should not be taught alone to the medical student; nurses should be included. He would have much more done in the teaching of preventive medicine; he did not mean public health work and sanitary science, but the prevention of the occurrence of disease. That was very much wanted in English medical schools. There should also be included in the curriculum a definite course on medical ethics. At present, to a great extent, the student had to learn it after he had entered on practice. It need not be an extensive course. Nurses should be regarded as part of the medical profession, but in the past they had not been catered for as they should have been. He did not think nurses were given sufficient opportunities for doing surgical dressing. It was also a question whether surgical sisters and those in charge of operation theatres should not have practical instruction in administering anæsthetics. In military practice during recent years they had done very useful work of this kind.

Post-graduate Study: Medical Schools: Conditions of Medical Practice.

With regard to post-graduate schools he thought that in London the profession had made a mistake. In most of the schools an attempt was made to teach graduates and undergraduates together. It would attract many to the wealth of clinical material in London if graduates could have courses distinct from those for undergraduates. At the present time most of the medical schools in London were associations of private individuals for the instruction of students, and their emoluments were derived from the fees paid by the students. He did not think university education could be satisfactorily carried out on the fees paid by the student. Recently the Board of Education had given grants to some schools, and those had during recent years enabled some of them to survive. He did not think the method of giving grants was a good solution. Every medical school should be a corporate body; should be controlled by a governing body, both professional and lay. The large hospitals should, he thought, have an arrangement by which the members of the Navy, Army, and Air Services could have definite study courses in the schools. It seemed a pity that as men became seniors in these services they were made administrators, to the loss of the scientific side.

He also made a plea for team work in ordinary practice; practices should not be a one-man concern, but should consist of men with varied qualifications, so as to ensure thorough investigation for every patient. London was worse provided than any other place with private institutions for medical and surgical treatment. Many of the "surgical homes" had been chosen because the property was cheap, and in some the sanitary and other arrangements were very unsatisfactory. Some were a definite disgrace to the profession. Under the new Ministry of Health he would have it as a condition that every one of these houses should be passed as in a fit sanitary condition before it was allowed to be so used. An interesting question was as to how far it was desirable for a nursing home to belong to a medical man. He thought such homes ought to be legitimately possible provided they were certified by some public body as suitable.

Much had recently been heard about making an A 1 community out of C 3 material. As things were at present constituted he did not think that was possible. The criminal, the congenital idiot, the feeble-minded, and such people were allowed to go free so long as they were not dangerous to the community. Two feeble-minded folk married, or did not marry, and additions to the C 3 ranks ensued. That could probably only be effectively stopped by means of sterilisation. Lastly, how far was the profession justified in prolonging the dreary lives of people suffering from incurable and crippling conditions, such as ectopic vesicæ and imperforate anus?

Discussion.

Sir JOHN BROADBENT dealt in detail with most of the points raised by the opener. He thought the teaching of biology was the difficulty in Mr. Waring's plan for the preliminary subjects. He agreed that the teaching of physiology could be overdone as a factor in medical study. If there was to be really good post-graduate teaching, such as would attract those from other countries, there must be professors or, at least, teachers who could devote a good deal of time to the work, and there should be a central place for such instruction. Cases could be lent to illustrate the teaching, and periodic visits to wards of hospitals could be arranged to see the bed cases. He agreed that the fees for teaching at medical schools were ludicrously inadequate, and it was impossible to run a school on the fees paid by the students. One of the great drawbacks of the London schools was the eternal competition, in which fees played a part, for many intending students carefully inquired as to where the fees were lowest. Much more coöperation between the various schools was needed. Perhaps under the Ministry of Health or of Education grants would be increased. He thought the present military hospitals could be converted into civilian nursing homes, but he did not think medical men should run them.

Dr. FORTESCUE FOX spoke of the want of greater recognition of mechano-therapeutics. Shortly before the outbreak of war a definite and strongly backed proposal was made to the Senate of the University of London to establish a chair in Hydrology; certainly it was a subject which should be systematically taught.

Mr. H. W. CARSON emphasised the need in London of properly organised post-graduate teaching. There were many institutions here, apart from the large teaching hospitals, which carried on a very good work, but in them it was very difficult to organise a scheme by which the material could be utilised. Many felt that after the post-war settlement England would be the great centre for post-graduate teaching in the Old World. The profession in this country ought to set to work to render it so; he was convinced it could be done. He agreed as to the need for more tuition to nurses, and that had been fostered in the institution with which he was connected. He did not think nurses should administer anæsthetics, because the responsibility in connexion with that, in the present state of the law, devolved on the operator. The medical work in the Army and Navy ought, in his opinion, to be remodelled. It was ridiculous that when a medical man in those services arrived at seniority he automatically ceased to do his special work. He agreed that team-work produced very good results if properly done.

Dr. SEYMOUR TAYLOR thought that at the end of the last century clinical medicine was very indifferently taught as a whole, though there were isolated and brilliant exceptions. North of the Tweed very much more use was made than here of every bit of clinical material. Some men in London, though they had not the faculty for imparting knowledge, held on to their posts for many years, their entry on such posts having probably been determined by distinction in mathematics or classics. Some of the schools he would not suppress but amalgamate.

Dr. C. O. HAWTHORNE thought the very atmosphere in a class on medical jurisprudence was an education in medical ethics without the need of a special class. He objected to the proposal to reduce the Pharmacopœia to half, as that book was created for the benefit of the public; its definitions had the force and authority of law. If London were to become, as it should be, the great centre for post-graduation teaching there must be a post-graduation hospital, and in connexion with that a college. On the

general question each hospital in the country should be made a centre to which medical men could feel, in a moral sense, they were at least attached, in the same way as all solicitors felt their attachment to the High Court.

Dr. E. KINGSCOTE spoke of the need for centralised work in the promotion of post-graduate teaching.

Mr. N. BISHOP HARMAN referred to the great mass of unused clinical material resident in the many Poor-law institutions. He also had a word in favour of the study of anatomy from the morphological standpoint. If the medical profession in this country had sufficient imagination they could bring about amazing developments along the lines which had been alluded to. He hoped the subject would be brought forward again.

Mr. G. Q. ROBERTS (secretary of St. Thomas's Hospital) alluded to the question of examinations, and thought some reform was needed. At present it seemed practically impossible to get medical students into the special departments; they felt they had not the time to spare owing to the need to pass their various examinations. It was extraordinary how ignorant many schoolmasters were as to how to prepare boys for their preliminary examinations. Mechano-therapeutics was a well-established department at his hospital, where 1250 treatments per week were being given. Men needed to "get their fingers on to" cases, not merely to sit in rows and listen to what was told them about the cases.

Professor J. G. ADAMI strongly supported the idea that efforts should be made to make England the great centre for clinical teaching. To do that the present time afforded a unique opportunity.

Mr. WARING replied.

SOCIÉTÉ DE BIOLOGIE, PARIS.

THE following is a summary of some of the papers read at meetings of this society held on Nov. 9th and 16th:—

C. LEVADITI. — Antistreptococcic Vaccination in Gunshot Wounds.

L. obtient un pourcentage global de succès; s'élevant à 92 per cent.; sous l'influence de ce traitement, combiné avec les autres procédés classiques pour les plaies de guerre, le streptocoque disparait, et on n'a plus affaire qu'à un traumatisme banal.

L. MOREAU.—X Ray Shadows at the Lung Hilus.

Les ombres hilaires observées sur le vivant ne se retrouvent pas sur le cadavre. Il semble donc que la théorie, d'après laquelle ces ombres seraient produites par le sang circulant dans les vaisseaux du hile, soit plus vraisemblable. Toutefois lorsque ces ombres ont une tonalité très élevée, les ganglions péribronchiques participent à leur formation.

ARTHUS and SIECHART.—The Dosage of Pepsine.

I° Préparer une liqueur gélatineuse acide. La répartir on deux séries de 10 tubes. Ajouter à chaque série respectivement, 0, 1, 2, 3, &c. gouttes de suc gastrique, et 0·1: 2, 3 &c., gouttes d'une solution type de pepsine dans l'eau. Laisser ces tubes pendant 24 heures à température du laboratoire. Les tubes sans pepsine sont gélifié. Noter la durée de l'écoulement de 5 cmc. du liquide de chaque tube, aspiré au préalable dans une pipettte. Comparer les nombres obtenus dans les 2 séries. Connaissant la quantité de pepsine de l'une des séries, on la calculera pour l'autre.

M. AYNAUD.—Malaria and Associated Infections.

Il est difficile d'apprécier le degré d'immunité des paludéens à l'égard de la grippe. Le paludisme ne crée pas un état d'hypersensibilité à la grippe. Le fait est d'autant plus interessant que pour d'autres infections les paludéens ont une réceptivité très grande.

M. AITAFF.—Etiology of Spanish Influenza.

Le pneumocoque et le bacille de Pfeiffer pénètrent par la même voie et en même temps dans l'organisme. Cette symbiose donne au bacille de Pfeiffer une plus grande vitalité et une plus grande virulence.

COURMONT, DURAND, DUFOUR.—Associated Organisms in Influenza.

1° Pneumocoque est rare; 2° le bacille de Pfeiffer constant dans les lésions pulmonaires, fréquent dans la gorge, ne se trouve pas dans le sang; 3° le streptocoque hémolytique ou viridance est associé aux bacille de Pfeiffer. Il joue un rôle capital dans la génèse des complications pulmonaires.

LOUIS MARTIN.—Diphtheria Carriers.

Le bacille diphtérique reste virulent après guérison apparente. Les convalescents de la diphtérie, comme ceux des diphtéries anormales, peuvent être porteurs de germes. Technique de la recherche de porteurs: On ensemence le sérum, soit par la spatule, procédé recommandé, soit par le tampon stérile, soit d'après le procédé Costa. Examen des colonies: Les tubes sont placés à 37°, les colonies sont bien développées après 24 heures ou 36 heures, elles sont d'un blanc grisâtre, sèche à la surface, à contour net, très arrondies. Les bacilles sont longs de 4–6 μ. Les extrémités arrondies sont plus grosses que le centre. Le bacille diphtérique prend le Gram, il présente aux deux extrémités des grains prenant fortement la couleur. Coloré par le Gram, le bacille diphtérique, âgé de 24 à 48 heures se décolore en 15 minutes dans l'alcool absolu. Sur gélose profonde, glucosée tournesolée, le bacille diphtérique fait virer au rouge le tournesol, il pousse en profondeur, ce qui le sépare du plus grands nombres de bacilles dits pseudo-diphtériques. La contagiosité des porteurs et des malades diminue avec le nombre et la virulence des colonies. Recherches des porteurs.—Porteurs précoces, commençant une diphtérie, porteurs anciens dits porteurs sains, peut être immunisés par une légère atteinte. La recherche et l'isolement des porteurs dans les collectivités de gens valides doit être recommandée. Les porteurs ne doivent être rendus à la vie commune qu'après deux ensemencements négatifs à 6 jours d'intervalles, les bacilles pouvant reparaitre. Traitement des porteurs, soit par attouchements de la muqueuse avec du sérum antidiphtérique, soit par la méthode sérothérapique, soit par inhalation de sérum en poudre, soit mélangé de sérum et d'arsénobenzol, soit par des cultures de staphylocoques dorés pulvérisés dans le larynx. Prophylaxie: isolement des porteurs et surtout des malades, desinfection, injection préventive.

DOPTER.—Meningococcus Carriers.

La morbidité de l'infection méningocoque est une de celle qui a paru négligeable dans la zone des armées. La cérébrospinale n'a sévi que suivant une mode sporadique, et les petits foyers d'infection se sont étients sur place. En temps de paix la "méningocoque" avait une grande puissance de diffusion et les porteurs dans le millieu de cérébrospinale étaient nombreux. Dans la zone des armées la rareté des porteurs est remarquable. Cela tient à ce que la densité de fronts a été peu élevée, et dans les dépots, où les troupes sont plus resserrées, le nombre restreint de porteurs semble en rapport avec la rareté de la cérébrospinale. Le porteur a joué un rôle de propagation limitée, mais qui entretient la graine spécifique. La prophylaxie consiste dans l'isolement des porteurs sains et des suspects. L'activité de laboratoire y contribue pour une large part.

LEVADITI.—Streptococcus Susceptibility of Wounds.

1° Une plaie, devenue streptococcique, réinfectée par le suc provenant d'une autre plaie streptococcique, à peu de chance d'infection. 2° il est de même lorsque la réinfection est faite par le strepto cultivé chez le blessé lui même. La réinfection a lieu si l'on se sert d'un strepto virulent d'un autre sujet.

Reviews and Notices of Books.

Dr. John Radcliffe: a Sketch of his Life, with an Account of his Fellows and Foundations. By J. B. NIAS, M.D. Oxon., M.R.C.P. Lond. Oxford: The Clarendon Press. 1918. Pp. 148. 12*s.* 6*d.*

Dr. Nias was Radcliffe travelling Fellow during the term 1882–5, and, as every pious beneficiary should, he has set himself the task of becoming acquainted with the life of his benefactor, with his foundations, and with the lives of his fellow beneficiaries. The results of his inquiries are embodied in the interesting little volume which lies before us. Radcliffe's foundations were two in number—namely, the Fellowships and the Library—but Oxford also owes to him, through the generosity of his trustees, the Radcliffe Observatory and the buildings of the Radcliffe Infirmary. The two latter foundations were not specifically provided for in Radcliffe's will, but the trustees were enabled to furnish the money owing to the falling in of annuities which had been paid to Radcliffe's two surviving sisters and sundry nephews and nieces.

It is unnecessary to say more here about the facts of Radcliffe's life than that he graduated in medicine at Oxford in 1675, being a Fellow not of his own College, University, but of Lincoln, that he proceeded D.M. in 1682, and that in 1684 he gave up his Oxford practice and went to London, where he speedily acquired a large practice. He was physician to Princess Anne, afterwards Queen, and to William III. and his Queen. He was a sound physician as far as knowledge went in his day, did not mince his words to his patients, was honest and upright, and made a large fortune, which he devoted by will entirely for the advancement of the study of natural science and medicine in connexion with the University of Oxford. The Radcliffe Fellowships were, according to the founder's regulations, two in number, tenable for the term of 10 years, not liable to forfeiture on marriage, and of the value of £300 per annum. The candidates had to be Masters of Arts, and "entered on the physic line"; but their professional training was to be obtained outside Oxford, for they were required to spend half at least of the 10 years in "travell in parts beyond sea for their better improvement." Such were the regulations of the original foundation. In 1858 alterations were made, the tenure of the Fellowships becoming a term of three years, while an election was made every year.

Dr. Nias's notes on his predecessors and successors in the Fellowship are all interesting, and there are incidents in the career of the first Radcliffe Fellow which we select to note. He was Dr. Noel Broxholme and was elected in July, 1715. In one of his Fellowship journeys he treated an opulent merchant in Paris, who gave as fee a draft for £500 Mississippi stock. On his return to London Broxholme found

the Mississippi Bubble in full swing and sold his £500 draft for £10,000. On another occasion he was called, together with Dr. Freind, to Ingestre to see a gentleman by name Pulteney. They found him in a desperate state and could only say that nothing could be done. The patient kept on murmuring, "Small beer, small beer." Freind and Broxholme wisely said, "Give him small beer or anything." So a large silver tankard was brought, holding two quarts, full of small beer, to which was added the juice of an orange. The patient drank the whole at a draught and called for another, which was given him. After drinking this he fell into a profound sleep, with profuse sweat, and continued so for 24 hours. "From that time he recovered marvelously insomuch that in very few days the physicians took their leave, saying that now he had no want of anything but of a horse for his doctor and of an ass for his apothecary." Soon after this St. George's Hospital was opened—1733—and Broxholme was elected one of the first physicians, Dr. Peters, another Radcliffe Fellow, being elected two years later. Dr. Nias adds: "We shall see that other Radcliffe Fellows were lured away from Oxford, so that Radcliffe's project began to fail of its intentions." Radcliffe had hoped that by his benefactions a race of well-educated physicians would be raised to practise and teach in Oxford, for he had arranged that during the tenure of the Fellowship his Fellows should reside in Oxford while in this country, two sets of rooms being reserved for them at University College, together with a seat at the High Table. But Oxford possessed no infirmary until 1772, so that Oxford medical men naturally went where there were opportunities for seeing clinical work. The end of the first Radcliffe Fellow was sad, his mental faculties decayed, and he committed suicide in 1748. The account of the Radcliffe Library and Infirmary, appended to Dr. Nias's biographies, are from the pens of the Librarian and Radcliffe Observer respectively, Mr. W. Hatchett Jackson and Dr. A. A. Rambaut. Altogether the book is a worthy memorial of one of Oxford's most generous sons.

Les Borgnes de la Guerre: Prothèse Chirurgicale et Plastique. Par Dr. G. VALOIS. Paris: Masson et Cie. 1918. Pp. 224. 12 fr.

THIS is an extremely interesting study of the treatment of those who have lost an eye in the Great War. The injuries of the eye have formed a proportion of wounds far in excess of any preceding war. The work of the ophthalmic centres has been correspondingly heavy. It is most important that the men who have suffered this loss should have the deformity concealed as far as possible. Therefore the treatment of the damaged lids, the preparation of the socket, the method of removal of the injured eye, when this is necessary, and the choice and adaptation of a prothesis are all of unusual moment.

Dr. Valois shows in great detail the methods which experience has taught him to adopt for the best cosmetic result, combined with the necessary caution to preserve the undamaged eye from risk. While it is most important to preserve all skin, when the lids are involved, and all conjunctiva, the author is strongly in favour of the complete removal of the injured eye. All attempts to leave a part of the sclerotic and use it as a means of improving the stump he condemns on the ground of the risk of sympathetic ophthalmia. He justly points out that the artificial eye is at best only a means to hide deformity; therefore it cannot be right to allow any patient to run the risk of total blindness from sympathetic inflammation of the fellow eye merely to improve slightly his appearance. There can be no question that this point of view is correct, and the sole cause for differences in practice is the different opinion held by ophthalmic surgeons as to the risk of sympathetic inflammation after such an operation as evisceration. Dr. Valois's view sharply contrasts with that put forward by Dr. Weekers in Vol. III. of the Practical Medicine Series reviewed below.

Dr. Valois speaks very strongly of the value of immediate attempts to reform the lids, as far as possible, even after severe shell injuries, by replacing the torn skin in position and securing it by stitches. These immediate operations often, he says, result in the happiest way, and always make future interference easier. For the purpose of increasing, as far as possible, the mobility of the glass eye, and lessening the deformity, he utilises a flap of sclerotic which had been removed from the excised eye, and to this he stitches the tendons of the recti. He thinks this is superior both to extraneous supports, such as Mules's spheres, or to autoplastic skin or cartilage masses.

The adaptation of the artificial eye to the socket forms the subject of the last half of the book. The socket after such wounds is rarely normal; Dr. Valois recommends that a cast in plaster be taken of each case and the eye adapted to this.

Diseases of the Eye. By J. HERBERT PARSONS, F.R.C.S.Eng. Third edition. London: J. and A. Churchill. 1918. Pp. viii.–668. 16*s.* net.

THE second edition of this well-known handbook was reviewed in these columns in June, 1912; that a new edition of a book which is but slightly connected with military surgery should be called for is a fact which speaks well of the general interest of the profession in the special departments. It has been in the past to some small extent a justifiable reproach to the profession that they appeared to neglect ophthalmic surgery and to regard it as a mystery revealed only to the few. The very real interest shown by the demand for such books as the one in review is in itself a proof that the reproach is no longer deserved.

It is inevitable that successful text-books should increase in size, and the enlargements of the present edition are considerable. They include a new section on symptomatic disease and additions to the operative and therapeutic sections; the preface also states that short accounts of less common diseases of the eye are added, distinguished from the main text by smaller print; this practice, which would assist in keeping the book of reasonable size, might, we think, have been extended with advantage. We doubt whether for a student's handbook any mention of ophthalmia nodosa—a disease of which some half-dozen cases are recorded—is desirable, yet this remains in large print; in fact, the small print has to be hunted for. Spring catarrh, again, will be seen by few general practitioners, yet it remains in large type and occupies more space than ophthalmia neonatorum.

It is easy to be critical, and extremely difficult for an author to avoid diffuseness; still, in a student's handbook we think the pruning knife should be used freely to excise those matters which are not likely to be met with in general practice. On the other hand, and, in fact, as a complement to this, the commoner diseases might have with advantage a little more detailed description. Thus a short account of Priestley Smith's experiments on glaucoma would have been very valuable to the student. There are a few points in the text which are obscure; for example, in the section on malingering, on p. 390, it is said that when the malingerer looks at Snellen's letters, which are printed in red, and with a red glass before the good eye, the good eye will see only the red letters; this is so if the letters are seen as a transparency, or if they are printed in colour on a black ground. If, as the text seems to imply, they are printed in colour on white, the eye with the red glass sees the green letters but not the red. The tone of the preface is a mistake.

The Practical Medicine Series. Vol. III.: *Eye, Ear, Nose and Throat.* Chicago: The Year Book Publishers. 1918. Pp. 384. $1.60.

THE section on the eye in this year book is edited by Dr. Casey Wood, who has increased its value by his comments on various papers included in abstract form. The war has been responsible for a diminution of writing on all subjects but itself, and the military surgery of the eye forms a considerable section of the present volume. Weekers is quoted as a strong advocate for evisceration of the eye in place of enucleation; he claims that this gives as complete security against sympathetic disease, and infinitely better cosmetic results. He has found sympathetic disease rare in all cases and attributes this to the common use of aseptic and antiseptic precautions from the moment of the receipt of the injury. Terrien, also, is quoted in favour of the retention of a "natural stump" for the support of the prosthesis. He considers that none of the methods for the attainment of such stumps are entirely devoid of risk of sympathetic disease; both he and de Lapersonne protest against the hurried removal of every damaged eye at the base hospital. There is little, if anything, to gain from immediate operation, and often an eye which appears totally lost may recover some little sight. This point is of special importance when both eyes are injured. Lastly, Dianoux protests against enucleation. He believes in the value of evisceration, and would never remove an eye except where it has been blown to pieces.

THE LANCET.

LONDON: SATURDAY, DECEMBER 7, 1918.

Demobilisation and Venereal Diseases.

PESTILENCE has invariably accompanied and dogged the footsteps of war, although not always the same disease has been the comrade and follower. We have had, and are still having, our experience of a devastating pandemic in the last year of the present war, and though many great epidemics of influenza have smitten populations in times of peace, the range and severity of the present one were, no doubt, the outcome of the war conditions throughout the world. We have been warned of the risk from lice-borne diseases that returning troops may bring to the civil population, and although that risk is one that can be guarded against with some certainty the medical profession know well of its existence. And now the fear of a wide spread of venereal disease is before the minds of those best able to judge of its likelihood. Are we ready to meet a massed attack of this sort should it be made? In an interesting book, published by the Carnegie Endowment for International Peace, Dr. F. PRINZING [1] recalls the far-ranging outbreak of syphilis at the end of the fifteenth century when the Landsknechte of Central Europe returned to their distant homes. We know more now—infinitely more; but let it be remembered that the facilities for intercommunication have certainly increased as much as our knowledge, while, alas, the public takes all the facilities greedily, but makes little use of the knowledge. Another historic outbreak of syphilis associated with CHARLES VIII.'s expedition to Naples in 1495 again resulted in wide dissemination over the whole of Europe. These are warnings not to be disregarded when Lord SYDENHAM, writing as President of the National Council for Combating Venereal Diseases, states that as many as 300,000 men of the Navy and Army may be under treatment for infective venereal disease at the moment. That such a figure should be in question removes the need of further urgent plea that defences should be set up. We must see that these are prepared promptly, but also carefully. It is not a time for panic legislation, of which we have already had something in the Regulation 40 D, which has now been suspended with almost universal approval.

That the demobilisation of armies should be attended by the spread of venereal disease among the civilian populations is an obvious likelihood. There must be present at such a time great inducements to sexual intercourse, regular or irregular. There is a large resumption of marital relations, there is a large number of young marriages, there is a large number of unions of a temporary nature, there are pent-up longings for natural expression, and relaxations of standard. The demobilised troops have been placed with regard to venereal infections at one and the same time very favourably and very unfavourably. So far as accident and as temperament dictate the incidence of venereal diseases among them, many have been precluded from the outlet of natural passion and may possibly find that they are able to restrain themselves at the instance of an acquired discipline. Many will not be able. This latter class, a certain proportion of whom are known to be dangerous males, will now, on demobilisation, be exposed in bulk to other sources of infection, and accident alone will determine whether the chances of infection which they exchange become rampantly present or fortunately absent, unless some scheme of prevention is prepared. The Government has been stirred by a debate which took place in the House of Lords at the end of November to consider strong measures of precaution. Lord SYDENHAM on that occasion solemnly warned the Government that if such measures were not taken quickly there would be serious results to the whole population extending over many years, adding that the necessary legislation had not been taken in time, and that an Act dealing with quack remedies was proving of no practical use. Lord MUIR MACKENZIE, who had presided over a Committee which took evidence on all these points, complained that the Committee was belated in appointment, so that no chance had been given for introducing a Bill embodying recommendations which it might make, but he urged the next Parliament to take up the matter in the light of the information now available. The fear is that nothing effective will be done for some weeks, as Parliament is now prorogued to make way for a General Election; but the feeling among medical men is that, while political machinery has disappeared from Westminster, the permanent Departments of Government are not rendered inactive thereby, but, on the contrary, may obtain a freer hand. The Local Government Board will be expected to be aware of the dangers which must arise from the release of a large number of infected men, and to be ready with arrangements for meeting the evil. The National Council for Combating Venereal Diseases have published recommendations which should be carefully considered by the Board, as by all other Departments which can make them their concern. One of these recommendations goes to the root of the matter, for it suggests that no sailors or soldiers should be discharged while in an infective state. They incurred the disease in the service of the country, and it is the business of the country to return them in as fit a condition as possible. The sense of this recommendation is obvious. The Navy and the Army have got the men in disciplinary clutch. They can effectively control them, they can watch their improvement stage by stage until they are safe members of society, and they can compel the measures necessary to this end. For the rest many treatment centres have been established in England and Wales at

[1] Epidemics Resulting from Wars. By Dr. F. Prinzing. Clarendon Press. 1916.

which infected citizens can obtain treatment in sympathetic circumstances at the hands of specialists, while at these centres the presence of the general practitioners of the neighbourhood is invited—we might almost say urged—so that as many medical men as possible should familiarise themselves with techniques which have evolved from comparatively modern medical science. Here is at once a direction in which the cure of the infected and the prevention of spread of disease can both be strengthened. These centres require immediate multiplication. Many Army doctors have now specialised in the treatment of venereal disease, and their services should be used in connexion with the establishment at large provincial hospitals of clinics for the treatment of venereal diseases. No town of over 10,000 inhabitants should be without one.

Although the difficulty of staffing the centres should now be relieved by the discharge from the Army of doctors who have become experienced in the treatment of venereal diseases, treatment is almost futile unless it is prolonged to complete cure, and the standard of cure remains to be set up. A powerful plea for more rigorous standards of cure in the treatment of gonorrhœa by Mr. E. R. TOWNLEY CLARKSON, which we published in our issue of Nov. 30th, will awaken the medical profession to an appreciation of the difficulties. We fear that among some medical men there is still the half-expressed dislike to treat venereal disease at all. There is the tendency for the practitioner who first sees the case to hand it on to another for treatment. The patient naturally is loath to advertise his condition, and the inevitable result is the postponement of treatment until cure is difficult or the premature cessation of treatment before it is complete. On the side of the public there is still a widespread ignorance with regard to the results of the disease and the tendency to regard it frivolously. The infected woman especially is often unaware that anything at all is wrong with her; a vaginal discharge to her is just the "whites," and is often regarded as a normal condition. Remedies of a palliative nature soon cause an abatement of her disturbing symptoms and lead to discontinuance of treatment and spread of disease. This is a position of far-reaching possibility for evil. To return to the spread of disease by men during demobilisation, every man on demobilisation should be investigated from this point of view, and not by cursory questions, but by routine methods. The record sheets will be a help to this end. Such men as have evidence of the disease should be segregated until they are cured. But the great difficulty remains. A man may be cured and be free, but it is the women, and not only those of easy virtue but the married women who remain as a menace. Quite a number of married women, it is known, have already acquired the disease in the absence of their husbands or from husbands who may have been since cured. The men can be easily dealt with, but how to cure the women is frankly a terrible problem. And if they are not being treated how to stop the spread? We have said that this is not the time for panic legislation, but it is exactly the time for speaking out, so that the people may understand. A popular campaign which should teach people the nature and danger of venereal diseases is a revolting idea to many—even to some doctors. The times should have altered such views. The incidence of both syphilis and gonorrhœa since the beginning of the war must be great; it is not limited to any particular class or to the usual ages. While it behoves the doctor to instruct himself in the treatment of venereal diseases, and the Government to find facilities for such treatment, the education of the general public comes only next in importance. The National Council for Combating Venereal Diseases have done much, but as yet there is little general response to the movement.

An Enemy Medical Boycott.

RECENTLY one of the two principal German medical papers[1] contained in its current notices the paragraph:—

"Das englische Fachblatt *Lancet* bringt seit kurzem eine französiche Beilage, die unter Redaktion von Prof. Ch. Achard und Dr. Ch. Flandin in Paris Beiträge französischer Verfasser in englischer Uebersetzung enthält."

And in so doing broke the silence of years in regard to quotation from our columns. German medical editors were free to receive THE LANCET during the war, and they certainly kept a close watch upon articles of a critical or antipathetic nature appearing in the medical press of this country. We need only recall the exchange of compliments following on Dr. J. P. ZUM BUSCH'S account of his internment experience at Stratford.[2] The *Muenchener*, like the *Deutsche*, has during the four years of hostilities, contained a small weekly paragraph (signed, in the case of the latter, with the editor's initials) summarising current events of the war. Comment has at times been bitter, especially in regard to such matters as the detention by the French authorities of captured German Red Cross personnel, and the alleged effect of the food blockade in bringing pressure to bear on mothers and children. The asperity has included the business management of the papers, an instance of which we may repeat. An inquiry made from Switzerland for the translation rights of a surgical war primer elicited from the publisher of the *Muenchener* a telegram to the effect that translation was futile, as the wounded and captured British soldier would be treated in *German* hospitals on the lines of the *German* edition. Note that the capture of the British soldier was assumed, and LEHMANN was known before the war as a prominent advocate of pan-Germanism. On the other hand, close study from week to week has failed to detect any kind of bitterness, or even tendenciousness, among the scientific articles appearing in the two principal German papers already named, or in the *Wiener klinische Wochenschrift*, the leading Austrian medical journal. The work of British, American, and French surgeons of note has been freely

[1] Münchener medizinische Wochenschrift, Oct. 29th.
[2] THE LANCET, 1916, ii., 331.

utilised and dealt with in an objective manner in these periodicals by professional writers. Where credit has been withheld, the omission has apparently been due rather to misinformation than to any desire to suppress. Probably not all Austrian clinicians and not all German professors read English as fluently as their own language.

Our professional relations and those of our Allies and of the United States to German medicine are not as yet easy to define. Some few straws indicate the direction of the current. A special commission has recently reported to the Paris Academy of Sciences on the international scientific relations which should rule after the war. The conclusions of this commission have just been adopted with *une forte majorité* by the Academy of Medicine. Both academies consider that personal relations between the *savants* of the two belligerent groups are impossible until reparations and expiations have been made. They suggest that the Central Empires should be obliged by the peace terms to retire from international scientific associations except in so far as indispensable services are concerned. And then navigation, railways, telegraphs, are catalogued as services in which we cannot dispense with German and Austrian coöperation, but neither public health, medicine in general, nor quarantine is mentioned. The immediate establishment among the Allies and the U.S.A. of new associations is contemplated with the addition of representatives of Neutral countries. The Allied Governments under this scheme would in future abstain from sending delegates to any meeting at which representatives of the Central Powers were present, while dispositions would be studied for an intimate collaboration between the several Allies and the U.S.A. in the whole domain of science. In similar mood, and at the suggestion of the Royal College of Surgeons of England, the Royal College of Physicians of London is considering the exclusion of German and Austrian universities from the list of schools accepted by the Conjoint Examination Board for certificates of study. An inter-Allied conference which met at Burlington House, London, on Oct. 9th called upon the scientific academies of the Allied nations to declare their inability to resume personal relations in scientific matters with the Central Powers until the latter have publicly renounced the political methods which have shocked the civilised world. Our own British scholars who published on Oct. 21st, 1914, a reply to the notorious manifesto of the 92 German professors admitted how hard it is for human beings to weigh justly their countries' quarrels, generously adding that they did not question for a moment the personal sincerity of their German colleagues in expressing horror at war and zeal for the achievements of culture. Our British scholars did more than this, and went on to record their real and deep admiration for German scholarship and science, and to acknowledge the many ties of "comradeship, respect, and affection" which bound them to Germany. We can imagine that some of these ties have lost their influence, and that for the time being German men of science will share in the general obloquy until some expression of real apology is forthcoming.

The term "boycott" has been applied by the daily press to the action contemplated above, but we foresee certain difficulties in regard to an enemy medical boycott. For clearness sake an exact definition is desirable. The methods employed against Captain CHARLES CUNNINGHAM BOYCOTT in the year 1880 were of a drastic character; his life was threatened, his fences torn down, his letters intercepted, and his food-supply interfered with. By British medicine this course has not been followed, and it will not be, as far as we can see. To take a simple example. The *Daily Review of the Foreign Press*, issued by the General Staff of the War Office, has not hesitated to make full use of German medical science. A recent instalment reviews at length the treatment of gunshot injuries of nerves in enemy countries, and gives medical, surgical, and pathological notes from German workers, with the object of providing useful comparison for our home workers. In fact, an influential section of the press recently made a bitter complaint against our own Local Government Board that it had not utilised to the full information available from this source. To those who have adopted such a course a boycott in medical matters would be a difficult thing to carry through logically. It could, in truth, only be practised by those who possess no knowledge of the German language nor any appreciation of what has been done by German workers. The attitude adopted by the War Office in its *Daily Review* does not imply the endorsement of the methods of famous Germans. We may all wish that LUTHER had been more reasonable, that KOCH had been more discreet, and that VON BEHRING had turned his researches less to immediate personal advantage. But this desire does not induce sensible people to boycott the Bible, tuberculin, or antidiphtheritic serum. No courageous person refrains from adhering to a cause because it is advocated by unpleasant people or in an intemperate manner. A study of contemporary German medical literature suggests no reason for not studying it; this done, the medical boycott will be found impracticable.

ALVARENGA PRIZE.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $250, will be made on July 14th, 1919, provided that an essay deemed by the committee of award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten, and if written in a language other than English should be accompanied by an English translation, and must be received by the secretary of the College, Mr. Francis R. Packard, 19, South 22nd-street, Philadelphia, on or before May 1st, 1919. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; other essays will be returned upon application within three months after the award. No Alvarenga prize for 1918 was awarded.

Annotations.

"Ne quid nimis."

MEDICAL REPRESENTATION IN PARLIAMENT.

THE last day for the nomination of Parliamentary candidates was Dec. 4th, and the following is a complete list of medical men who are standing:—

Universities.—Belfast (Queen's): Sir William Whitla. Dublin: Sir Robert Woods. London: Sir Wilmot Herringham. Scotland: Sir Watson Cheyne, Dr. Peter Macdonald, Principal W. R. Smith.

London District.—Bermondsey (West): Dr. Alfred Salter. Shoreditch: Dr. Christopher Addison. Southwark (Central): Dr. L. Haden Guest. Stepney (Whitechapel and St. George's): Dr. Robert Ambrose. Willesden (West): Dr. J. S. Crone.

County Boroughs.—Birmingham, Moseley: Dr. R. Dunstan. Leeds, North: Dr. A. C. Farquharson. Liverpool, Wavertree: Dr. Nathan Raw. Morpeth: Dr. T. M. Allison, Mr. G. D. Newton. Wallasey: Dr. B. V. P. McDonald. Wolverhampton, Bilston: Mr. J. W. Kynaston.

English and Scottish Counties.—Derby, High Peak: Dr. Clifford Brookes. Durham, Bishop Auckland: Dr. V. H. Rutherford. Hants, Basingstoke: Sir Auckland Geddes. Inverness (Western Isles): Dr. Donald Murray. Lancs (Farnworth): Sir Thomas Flitcroft. Stirling (Clackmannan and East Stirling): Dr. W. A. Chapple.

THE MEDICAL PARLIAMENTARY COMMITTEE.

THE Medical Parliamentary Committee has been working steadily during weeks which have been particularly exciting in political circles. The Committee sprang to life in response to a general feeling in the medical profession that the medical view is largely unrepresented in Parliament, and if its birth was too late to allow much to be done in respect of the General Election now upon us, it has accomplished work that may be of real value in the immediate future. The Committee has made inquiries through the country with regard to medical men willing to stand for Parliament, either now if their help is sought, or in the future as opportunity offers itself. The result of these inquiries has been the collection of information which will be of the greatest use in future elections, and in particular in by-elections, where it is more likely that a constituency may find itself suddenly willing to adopt a new candidate. The information which the Committee has received, and is receiving, will greatly help in the selection of Parliamentary candidates by being able to answer questions arising out of the candidate's views, circumstances and wishes alike. Everyone knows that there are candidates for Parliamentary honours who are pressed into the position by the public, and other candidates who are drawn into it by their personal desires and their hopes to do good, and yet others who feel that their particular profession is without adequate voice in the councils of the nation. In these divisions some men will be found to whom the expense to be incurred is of no consequence whatever, some to whom the expense is an absolute bar without full pecuniary guarantee, and the remainder who may or may not want assistance in varying proportions. It is of the very essentials of the work of the Medical Parliamentary Committee that all these particulars should be gathered without any regard to the party which the candidate will desire to support. The medical man in Parliament, as he is conceived by the Committee, is one who will follow the dictates of his reason with regard to party politics, if he wishes to, or if he must, assume a badge of that sort; but his grand duty in the House of Commons towards, not his profession nor his constituency, but the public, will be to uphold all legislation having for its object the improvement of the health of the people. As a selected medical man he will be able to do this with competency; he will have the medical profession outside the House of Commons as his colleagues, and he may expect from the Medical Parliamentary Committee indications as to when and how his voice should be raised. This is adumbrating for the Medical Parliamentary Committee a future of great usefulness, but such a future will only be obtained if now, while the Committee is in the making, the coöperative help of the whole medical profession is received for the movement. The Committee is offering to supply speakers wherever possible to any medical candidates for Parliament who may desire such assistance in the election. The time is short, and in order to facilitate arrangements the names of all medical men willing to render assistance should be sent immediately to the honorary secretaries of the Committee, Dr. Arthur Latham and Dr. Charles Buttar, care of the Committee, 20, Hanover-square, London, W. 1.

THE CONTRA-INDICATIONS OF RADIOTHERAPY IN CERTAIN FORMS OF CANCER OF THE SKIN.

RADIOTHERAPY constitutes a great advance in the treatment of many forms of cancer, but its limitations are not so well recognised as they should be. At a meeting of the Académie de Médecine of Paris M. J. Darier has done well in calling attention to the contra-indications of radiotherapy in certain forms of cancer of the skin. In many cases it brings about rapid cure without pain or mutilation, but in others it fails, and may even aggravate the disease, to say nothing of the dermatitis which may be produced by excessive doses. To explain these results errors of technique or in the estimation of the size and depth of the tumour have been invoked, but M. Darier does not agree with these explanations. He attributes unfortunate results of treatment generally to the kind of cancer treated. He divides cancer of the skin and mucous orifices into four classes. 1. The form which is curable by radiotherapy, tubular or baso-cellular epithelioma (rodent ulcer), the ordinary cancer of aged persons which never affects lymphatic glands nor causes metastases. It yields marvellously to a few séances of irradiation. If the tumour is budding and voluminous the greater part can be removed as a preliminary with a curette or otherwise. It is only in advanced cases when the ulcer has invaded bone or the cavities of the face that radiotherapy fails. 2. M. Darier holds that "lobulated or spino-cellular epithelioma," which is the usual form of cancer of the tongue and lips (smoker's cancer), of the external genitals and anus, and of the scar of lupus, should never be treated by radiotherapy. It rapidly infects the glands, and usually proves fatal in less than two years. The X rays or radium produces only apparent improvement for two or three weeks. Then proliferation is more active and seems to have been stimulated. Often a case operable at first becomes inoperable after radiotherapy. Excision as early as possible is the only treatment. 3. Radiotherapy is useless in melanotic sarcoma (nævocarcinoma), and means only loss of precious time. Surgical treatment, of which M. Darier

prefers electrolysis, is indicated. 4. There is only apparent advantage in treating by radiotherapy the small cutaneous growths secondary, for example, to cancer of the breast, whether operated on or not. In spite of their frequent disappearance under the influence of the rays the prognosis of the disease is in no way improved. Thus it is absolutely necessary when there is tumour or ulcer of the skin which appears cancerous to make an exact diagnosis of the kind of cancer. If the clinical signs do not establish this a biopsy and histological examination are indispensable. An exact diagnosis can thus be made and the question of radiotherapy decided, in his opinion, and it is one which must have great weight.

THE ROYAL MEDICAL FOUNDATION OF EPSOM COLLEGE.

THE circumstances of war have seriously handicapped beneficent work of all kinds throughout the country, and the benevolent side of Epsom College has suffered in common with other institutions whose object is to relieve distress. Not only have expenses increased in consequence of higher taxation and the rise in prices, but many annual subscriptions have been withdrawn or reduced in amount. Coincident with this reduction in financial power, more applications for assistance have been made as a direct consequence of the war. Already two boys whose fathers had been killed in action as medical officers have been elected to foundation scholarships, while Salomons Entrance Scholarships have been awarded to two other sons of medical men who had lost their lives in torpedoed vessels. In addition to providing education of the highest class for 50 necessitous sons of medical men, with maintenance, clothing, and pocket money, Epsom College gives pensions of £30 a year to 50 aged and impecunious medical men and their widows, work which deserves the fullest support of the medical profession. We commend to our readers the appeal of Sir Henry Morris, the treasurer of Epsom College and its Royal Medical Foundation, as well as the advertisement, which will be found in other parts of the present issue of THE LANCET. In that appeal it is stated that if the number of beneficiaries are to be maintained £4500 must be procured in annnal subscriptions. We beg that this urgent need will be generously met.

LEGITIMATE WARFARE.

WE have become used to maiming and mutilation as a necessary—one may almost say a legitimate—result of warfare. The use of noxious gases producing death by asphyxia from pulmonary irritation has been a novel feature of the recent war, although the poisonous effect of lyddite fumes has been known for a longer period. The battlefield has been heretofore in essence a septic surgical ward; the most distressing conditions with which the physician has to deal have now been superadded. A letter appeared in the press last week signed by the Presidents of the medical Royal Colleges of the United Kingdom and by the Regius professors of medicine of the older Universities, asking that gas warfare should be abolished by the coming Peace Conference as a weapon of offence. The use of gas, the signatories justly contend, is condemned for three reasons: (1) That it is an uncontrollable weapon whose effects cannot be limited to combatants; (2) that it is an "unclean" weapon condemning its victims to death by long-drawn-out torture; (3) that it opens the door to infinite possibilities of causing suffering and death, for its further development may well lead to the devising of an agent which will blot out towns and even nations. The letter deplores the devotion of the best efforts of science to devising more and more potent methods of causing death by chemical agencies. No two opinions can exist in regard to the abolition of gas warfare. The difficulty which confronts any Peace Conference is similar to that of limiting the activities of the mad dog; if allowed to bite at all the possibilities of harm are infinite.

THE NATIONAL IMPORTANCE OF GLASS-WARE.

THE importance of giving every possible encouragement to the glass industry, and particularly the scientific glass industry, in this country must be recognised when we reflect that the development of practically all industries depends primarily on the progress made in the laboratory. Here new processes can be developed, and here only can the means of utilising waste products be discovered. In addition to the laboratories for industrial purposes, there are the medical and research laboratories attached to the hospitals, the county and municipal laboratories in the public health services, and the laboratories in the universities, colleges, schools, and technical institutes, all of which use special glass apparatus. On the outbreak of war the country was faced with a serious shortage of chemical glass-ware, the only sources of supply in most classes of articles being the stocks of enemy-made apparatus held by the merchants in this country; and but for these stocks the situation, we understand, would have been disastrous, as there were no existing facilities for manufacture. We learn now that the British Chemical Ware Manufacturers' Association is appealing to the Inter-Departmental Glass Trades Committee of the Ministry of Munitions for practical help, and it is to be hoped that, in the interests of scientific research and industrial progress, their petition will receive very serious consideration, and ultimately be granted on terms which will give the industry a good start and keep it flourishing in this country.

TRIAL AND RE-TRIAL OF THE WASSERMANN TEST.

THE Wassermann test is one of the most complicated technical methods ever applied to diagnosis in medicine. It is difficult to believe that the technique will ever be mastered by more than a select few of the medical profession. At the present time even the principles on which the test is based are a sealed book to most men in clinical practice. The value of the Wassermann test has consequently to be taken largely on trust and the Medical Research Committee has performed a grateful task in submitting records[1] from which any careful reader will be able to form his own opinion of the clinical value of the test. We need hardly remind him that the reputation of the test depends upon three quite independent factors: the laboratory technique, the personality of the pathologist (if so we may call him in brief), and the accuracy of the clinician upon whose diagnosis the results of the pathologist are judged. No trial of the test is fair in which these factors are jumbled together. Many ways suggest themselves

[1] The Diagnostic Value of the Wassermann Test. Special Report No. 21 of the Medical Research Committee. 1918. Price 1s.

to the mathematical mind of testing them independently. The Research Committee's report notes the rather surprising neglect in the past of the precaution of controlling the value of the Wassermann test by demonstration of the *Spironema pallidum* or by pathologico-anatomical study of the material obtained on biopsy or autopsy. Clinical diagnosis is at best a comparative estimate of probabilities liable to be reversed by an accurate scientific method. The trial set up by the Committee and recorded in Special Report No. 21 took the form of obtaining samples of certain serums taken by an experienced clinician, A, from cases judged by him to be (*a*) certainly syphilitic, (*b*) doubtfully syphilitic, and (*c*) clinically non-syphilitic, and submitting these samples to three well-known laboratory directors, B, C, and D, and comparing the results obtained. One hundred and four specimens were thus submitted without clinical details, and the report records in parallel columns A's clinical data and the results of the Wassermann test as given by B, C, and D respectively. Each pathologist has his own method of recording results, but in all "positive" and "negative" are the two extremes, and it is the intermediate grades of certainty which are differently expressed. The report contains A's judgment on B, C, and D's results; it may be remarked, in passing, that the chemical sign $\rightleftharpoons$ is applicable here, and that B, C, and D might have been asked to judge A's findings. Comparing the technique of B and D, A finds remarkably close results, the only important divergence being in a case of carbuncles "clinically non-syphilitic" (A's auto-judgment) returned by B as positive (middle grade), and by D as negative. C returned the same case as positive. In three "syphilitic" cases (all treated) D's technique appeared more sensitive than B's, while in three other "syphilitic" cases (all treated) B's reaction suggested a greater sensibility than D's. C's results are not so close and differed from the clinician's diagnosis in several instances, some of which were important clinically. Apparently (the note is not A's, but added by the Committee) in five of these divergent results some defect existed in the laboratory technique on one particular day, for the serums subsequently re-tested in C's laboratory gave results substantially coinciding with those of B and D. Another divergent result of C rested (Committee's statement) upon a simple clerical error. The results as set out in the report should be closely studied by all who are interested in making empirical medicine scientific. The Research Committee asks readers to draw their own conclusions, adding:—

> The Committee consider that in the hands of those whose previous record entitles them to be considered as experts the percentage of positive Wassermann reactions in active syphilis is so high that the test may, for all practical purposes, be looked upon as specific.

The warning then follows:—

> It cannot be expected that this, or indeed any similar biological test, should invariably reveal the presence of some particular disease. The diagnostic value of any such test may be impaired, either by the imperfection of the test itself, or by some failure in its performance, or by idiosyncrasy of the patient, whereby he may fail to react characteristically.

We have no doubt that the reader's opinion will follow the Research Committee's lead. The practitioner has obtained a guide to clinical practice, but not an infallible one. In sending a specimen to be examined at a laboratory the clinician is not immune from possible failure at any stage. His clinical acumen may be at fault; the patient may have an idiosyncrasy; the specimen of serum may be improperly taken; it may be damaged during transport to the laboratory; the laboratory technique may be at fault; clerical errors may slip in; the result may be communicated in ambiguous form. In all these directions a high standard is essential and improvement is possible and, indeed, desirable. But the investigation conducted by the Research Committee will impress upon the minds of the profession as a whole the high value already placed upon the Wassermann test by the comparative investigations of C. F. Craig, of P. Fildes and R. J. C. Parnell, of H. M. Turnbull, of Uhle and Mackinney, and numerous others mentioned in the historical survey which precedes the report.

BREAD: HEALTH VERSUS CUSTOM.

WHOLEMEAL bread, with 80 to 90 per cent. of the wheat grain utilised, was introduced by the Ministry of Food during the war as a result of the pressure of submarine piracy. Stern necessity dictated the measure, but the scientific advisers of the Ministry were, nevertheless, expressing an unbiassed opinion in pointing out to the public the advantages which they gained from wholemeal extraction. Necessity past, these advantages still remain. Some part of the public, however—a large part, for ought we know—prefers white bread. Many reasons are alleged for this preference, but custom pure and simple probably plays the chief share in it. Young people of the educated classes are practically innocent of any such preference. So soon as it ceases to be necessary to extract from the wheat grain all the contained nourishment available for human food we may assume that the reactionary part of the public will return with a sigh of content to white bread as we knew it before the war. Unfortunately, they will be joined by others whose experience with war bread has accidentally been unhappy. It is true that palatable bread could be, and was, made from war flour. The mixing and baking, however, differed materially from that required for white flour, and many a baker failed to attain proficiency. Nor was this entirely the baker's fault, for the wheat was diluted with varying quantities of "other cereals," so that it needed variable treatment. But the baker was not told the composition of the flour and had to go by rule-of-thumb with each new batch as it was supplied to him. Better bread could have been made with better knowledge, but we deprecate the use of the phrase "better bread" to describe the return to whiter flour. Those with a taste for such bread may consider it "nicer," but it is elevating personal predilection on a pedestal to make it the standard of goodness. We still read in old books of one man wearing a "better" coat than another, the word having no relationship to the warmth of the coat, and in this sense perhaps "better bread" may stand. Of course, the *economic* necessity of the transitional period between war and peace may dictate the surrender of 18,000 tons of "offal" weekly to farmers, pig-keepers, and others in order to feed their animal stock; hence an economic argument for white flour. The public is somewhat in the position of the prodigal who was fain to share the husks with the swine. But certainly no advantage to the *health* of the community can be claimed in purposely producing husks, or so-called "offal," from wheat to feed animals. It would be better to

continue to extract 80 per cent. or more from wheat for the use of man, and to use other cereals, not needed for man, to feed stock. Medical men should continue to point out the virtues of wholemeal bread in order that the public may ask for it, in which case they will get it. The experimental work done during the war has demonstrated for all time the superiority of wholemeal over white flour for healthy people, although the war bread as actually purveyed to the public was not always nice. Thus instructed, it will be the fault of the public if it returns to the old over-refined white flour.

AMERICAN HELP IN FRENCH PUERICULTURE.

A LARGE part of the October issue of the *American Journal of Diseases of Children* is devoted to the work of puericulture in France, which has recently been a chief concern of the Children's Bureau of the American Red Cross. To its agency is due in goodly measure the relief of the serious situations created among French mothers and children through the displacement of the northern population of France, the general lack of medical attention, and the shortage of appropriate food and fuel. To take a single example, the city of St. Etienne, with a pre-war population of 180,000, had 120 practising physicians; now the 250,000 inhabitants depend on the services of 14 practitioners. Most villages have been entirely without medical aid since the mobilisation. The American Red Cross has taken a large share in the management of the child *rapatrie;* it has devoted its best efforts to the reduction of infant mortality, it has promoted clinics for pre-natal care, it has given aid to expectant and nursing mothers and their nurslings, and worked out plans for protecting young girls and for promoting social hygiene. Educational work has been a feature of the campaign. An exhibit of child-welfare work staged at Lyons drew an attendance of more than 170,000 persons in three weeks. All available forces—Governmental, philanthropic, and medical—have united in a preventive educational campaign, the results of which are likely to be of permanent value.

"I.K." TREATMENT IN TUBERCULOSIS.

Dr. Carl Spengler, whose progress in tuberculin therapy has been punctuated by a series of preparations, such as P.T.O., A.T.O., P.E., T.B. vaccine, P. vaccine, K.V., W.V., has now published in conjunction with Dr. H. Wassitsch, in the *Correspondenz-Blatt für Schweizer Aerzte* for Nov. 9th, an analysis of 484 cases treated by "I.K." A critical survey of the already bulky literature about this preparation of Dr. Spengler's was recently published by Dr. N. Robertson,[1] whose own advocacy of the remedy was not enthusiastic, his attitude being rather one of benevolent neutrality. The 484 cases now under review were taken from Dr. Spengler's private ambulatory clientèle at Davos up to 1914. The patients were given a rapid course of "I.K." treatment, the duration of which was 90 to 150 days, with an average of 130 days. A comparison with the results obtained by two other institutions, the Deutsche Heilstätte, in Davos, and the Deutsches Haus, in Agra, shows that though the duration of treatment was considerably longer in these institutions (226 and 179 days respectively) the results were in several respects inferior. In the matter of disappearance of fever Dr. Spengler's series was, indeed, inferior to that of the Deutsche Heilstätte, but while only 23 per cent. of the patients ceased to expectorate tubercle bacilli in this institution, and only 14 per cent. in the Deutsches Haus, this success was achieved by 42½ per cent. of Dr. Spengler's patients. The comparison of these three series with each other seems open to criticism in many respects. Dr. Spengler's patients enjoyed a most varied treatment, that by "I.K." being extensively supplemented by graduated physical treatment, by iodine and organic blood preparations, and by symptomatic treatment—e.g., narcotics for coughs. On the other hand, the patients of the Deutsche Heilstätte series, though cited as a standard for comparison, appear to have undergone percutaneous "I.K." treatment. A more instructive feature of this paper than the many elaborate tables it contains is Dr. Spengler's retrospect of his long and varied tuberculin career. Starting as an enthusiastic advocate of Koch's tuberculin treatment, he came more and more to realise its limitations and dangers, and to foresee that, in spite of certain merits, tuberculin was unsuited for general use. Hence his efforts during the past 10 years to produce a "fool-proof" preparation suitable for almost indiscriminate wholesale use in tuberculosis. And, he maintains, these and other requirements are fulfilled by "I.K." The evidence, however, is not so conclusive as we are invited to believe.

[1] We reviewed this book in THE LANCET, 1918, i., 144.

THE RELEASE OF ALCOHOL AND GLYCERINE.

DURING the week the Ministry of Munitions notified that there are now supplies of alcohol available for industrial purposes, and that manufacturers should be able to obtain their requirements from the recognised sources without restriction, subject to the regulations of the Board of Customs and Excise. Methylated spirit is also again available for public use, and glycerine, it is announced, should be procurable in a few days in substantial quantities through the ordinary retail channels. This notification will remove many of the disabilities which manufacturers have experienced through the withdrawal of alcohol, and pharmacists through the withdrawal of glycerine. It is to be hoped that, for example, our research organisers will be given special facilities in regard to the use of alcohol, or they will remain at much disadvantage owing to the liberal allowance of this commodity given in continental countries. The "fine chemicals" industry is a case in point.

Sir George Newman's annual report as chief medical officer of the Board of Education will be studied with keen interest by educationists and hygienists alike. The School Medical Service is integrally part of the public system of education, and must remain so, however correlated it may come to be with other health services. The report appears at the moment when this correlation is being intensively discussed, and we reserve comment for a future number, after the many important points raised have been duly weighed.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—An ordinary meeting of this society will be held to-day, Friday, Dec. 6th, in the society's rooms, West London Hospital, at 8.30 P.M., when a paper will be read by Dr. F. J. McCann, entitled "Treatment of Some Common Ailments of Women."

PUBLIC HEALTH IN ENGLAND AND WALES:

REPORT FOR 1917 OF THE MEDICAL OFFICER OF THE LOCAL GOVERNMENT BOARD.

IN issuing his recent report on public health in England and Wales Sir Arthur Newsholme takes occasion to review the history of sanitation since the inauguration of the Local Government Board in 1871. He acknowledges the improvement in the nation's health which has occurred in the last 48 years, and rightly attributes it to the labours of our urban and rural authorities. He is, however, careful to regard it as an incentive to efforts for further progress.

Lessened Mortality and Morbidity since 1871.

The extent of life-saving achieved in recent years appears from the official statement that "more than a quarter of a million fewer persons die annually than would die if the experience of the decennium 1871–80 continued. This implies an enormous annual saving of sickness and disability, of loss of wages, of the production of dependent widows and orphans, &c." It is notorious that sickness is one of the chief causes of poverty. About 30 per cent. of the paupers in receipt of relief are on the sick-list; and the Royal Commission on Poor-law affirms that at least half of the total cost of pauperism is swallowed up in direct dealings with sickness.

The saving of human life effected during recent years may be shown by contrasting the mortality at different ages in 1911–15 and 1871–80 respectively. At all ages up to the forty-fifth year there has been a reduction in the death-rate of from 40 to 50 per cent.; whilst at all other periods of life a substantial decline in the death-rate has been secured. By the use of life tables the improvement in life prospect may be demonstrated. For instance, we learn that between 1871–80 and 1910–12 there has been an increase in the average expectation of life equal to 10 years among males, and to nearly 11 years among females.

The average annual deaths in England and Wales during the period 1910–12 were fewer by 234,955 than they would have been had the population been subject to the death-rate of the period 1871–80. And the persons whose lives were saved each year had, in accordance with the life-table experience of 1910–12, the prospect of living in the aggregate 9,612,600 additional years of life. About 64 per cent. of this salvage is attributable to reduced mortality from acute and chronic infectious diseases, including the common infectious diseases, tuberculosis, and respiratory affections.

A Ministry of Health.

The war has aroused national interest in the public health and stimulated criticism of existing machinery for its promotion. Consequently the fact that a vast residue of avoidable loss of life and health still remains unredressed is very properly brought to the notice of the responsible authorities. In this connexion the medical officer discusses the merits of the public demand for the consolidation, in a central bureau, of all matters concerning public health and local government. The desirability of establishing a supreme authority on these lines is generally recognised, and has already been contended for in THE LANCET, as the only means of ensuring efficient sanitary reconstruction after the conclusion of peace.

The recent appointment of Sir Auckland Geddes to the presidency of the Local Government Board, and thereupon the prompt presentation to Parliament of a Bill for the creation of a Ministry of Health, are, therefore, matters of considerable significance.

Imperfect Statistics as to Incidence of Disease: The Birth- and Death-rates.

In comparing the vital statistics of the present with the past we are, unfortunately, limited to the evidence afforded by the Bills of Mortality. Of the misery and suffering (short of fatality) inflicted by the common infectious diseases there was no reliable measure prior to 1899, in which year notification became generally compulsory. And even now there is no record of the mass of non-infectious diseases "not unto death," which, nevertheless, entail terrible suffering among the poor. Nor are any statistics of the sickness treated in public institutions as yet available for the purposes of preventive action.

In the medical officer's judgment the best index of combined social and sanitary progress is the death-rate among young children, and he gives interesting tables showing the national gain in child-life.

In the year 1914 the *national birth-rate* was 23·8 per 1000 of the population, but in 1917 it had fallen to 17·8, the number of births in the later year being fewer than in the earlier by 210,756. The birth-rate of 1917 was only half that of 1874, and even in 1913 it was only one-third lower than in 1874. The problem, however, is not only one of birth-rate but also of survivors—in other words, of excess of births over deaths. A tabular estimate of this is now published, from which it appears that the survivors from the risks of early childhood bear a steadily decreasing proportion to total population, being at the rate of 27·1 per 1000 in 1874 and 19·6 in 1916. Unless compensating influences come into play the population, apart from immigration, will eventually become stationary, the birth-rate not more than counterbalancing the death-rate.

The *national death-rate* is subject to severe limitations in respect of further reductions, although these limitations are still remote. A large portion of the mortality in childhood, in adolescence, and in adult life is certainly preventable. Failing the recruiting of our population by births, the possibilities of compensation by a lowered death-rate are limited by natural laws, and the future must be regarded with apprehension. A stagnant population—if it be approached within the next 20 years—will have momentous effects in this country, and will imply also the possible failure to people Great Britain with a race having the ideals of our civilisation.

Maternity and Child Welfare.

Calculated in the usual way, infant mortality in England and Wales during 1917 was 97 per 1000 births, against 91 in 1916—the lowest rate on record. But it has been pointed out that the births in a given year do not fairly represent the numbers among whom infant deaths occur, because of the rapid decline of the birth-rate. And it is found that when allowance is made for this fact, and the deaths are calculated *on the living at ages under 1 year*, instead of on the births in each year, the infant death-rate becomes 94 per 1000 births in 1917, against 98 in 1916 and 104 in 1912. The fall in infant mortality is the more surprising in view of the increasing number of women with young children who have taken up industrial work.

The experience of 1917 and of recently preceding years encourages the belief that we may anticipate a reduction of infant mortality to 50 in 1000 births—a rate which has already been attained in some parts of this country, and in New Zealand as a whole. If a more rapid decline of infant mortality in the first month after birth can be secured in the next few years this encouraging figure may be surpassed. But this can only be attained by improving the welfare of mothers generally. The conditions of improvement are abstinence from excessive fatigue in pregnancy and during the period of breast-feeding, and the provision of skilled medical care and nursing for both mother and offspring. For the attainment of these ends the Board's grants in aid of such objects are available.

Continued Decrease in Enteric Fever.

With reference to the medical officer's opinion that the best index of sanitary progress is furnished by the extent of enteric fever prevalence, we note that the decline in this disease experienced in recent years was continued in 1917, the number of notified cases of enteric fever being fewer by 963 than in the year preceding. Whilst recognising this success, it must be remembered that the demands of military service have entailed the withdrawal from civil life of a large number of men at ages of special susceptibility to enteric infection. Nevertheless, there are reasons for believing that the recorded fall is a real one.

The nature and variety of the circumstances attending enteric fever outbreaks are constantly being investigated by the Board's medical staff, and in this report attention is specially directed to a recent outbreak involving 133 cases in the Bedlingtonshire Urban District of Northumberland. This attack, which affected 11 villages, was traced by Dr. J. R. Hutchinson to the water-supply from the river Blyth, which had become specifically contaminated by the manuring of riparian land with midden privy refuse. The river water had been treated by sand filtration. The working of the filter was essentially faulty, and there was no

appreciable storage of the water either before or after filtration. This incident is valuable as showing that filtration alone cannot be relied on to render harmless specifically infected drinking water. In concluding his instructive report on this serious outbreak Dr. Hutchinson remarks that the use of midden contents for the manuring of agricultural land on the river bank is a process which has gone on week by week for more than 30 years, and is the only operation of etiological significance which is continually being repeated. It is reflected, he holds, in the recurring small explosive outbreaks of enteric fever which are to be found every year in the Bedlingtonshire District, and in the present year in the larger outbreak.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

The Statistical Report on the Ordinary Expenditure of 108 London Hospitals for the Year 1917 (issued at 1s. by Messrs. Spottiswoode, Ballantyne, and Co., London) indicates a great increase of the work of the London hospitals during the year under notice, with a corresponding increase in expenditure. This, as the honorary secretaries of the Fund point out, constitutes an enlarged and very urgent demand upon the voluntary subscriptions of the charitable public, and renders it more than ever important that this Fund and the Hospital Saturday and Hospital Sunday Funds should be enabled to increase their grants. London provides a total of 11,729 beds in average daily occupation, the total number of in-patients admitted during the year 1917 being 147,598, while 1,152,022 attendances were recorded in the out-patient departments. Out of the total of 147,598 in-patients, 28,031 were naval and military patients treated by understanding with the authorities and representing an average for the whole year of 3656 occupied beds, or 31 per cent. of the total average of occupied beds. One result of this has been the reduction of the number of beds available for civilian patients by 1659. The total ordinary expenditure during the year, including maintenance, administration, rent, rates, and taxes, but excluding capital expenditure, interest on borrowed money, and contributions to the maintenance of convalescent homes and country branches, amounted to £1,719,030. The receipts from the authorities for naval and military patients were £268,960. After deducting this from the total outlay there remains £1,450,070 to be met out of the normal sources of hospital revenue. From a comparison of the figures with those of last year the conclusion is drawn that the addition to the net annual expenditure has been caused almost entirely by the rise in cost of all items of maintenance. The report sets out in tabular form general particulars of work and accommodation of the various hospitals, together with an analysis of the cost of working.

URBAN VITAL STATISTICS.

(Week ended Nov. 30th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 36·5, against 38·7 and 36·3 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 32·8 or 4·0 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 8·3 in Bootle, 12·3 in Cardiff, and 12·8 in Oxford, to 77·7 in Stockton-on-Tees, 78·6 in Grimsby, 83·0 in Walsall, 86·7 in South Shields, 91·2 in Sunderland, and 100·2 in Nottingham. The principal epidemic diseases caused 220 deaths, which corresponded to an annual rate of 0·7 per 1000, and included 60 from infantile diarrhœa, 51 from measles and from diphtheria, 35 from whooping-cough, 17 from scarlet fever, and 6 from enteric fever. Measles caused a death-rate of 2·8 in Wolverhampton, and diphtheria of 1·7 in St. Helens. The deaths from influenza numbered 5119, against 5106 in the previous week, and included 942 in London, 388 in Birmingham, 374 in Manchester, 272 in Nottingham, 166 in Sheffield, 151 in Sunderland, 120 in Bradford, and 118 in South Shields. The 1136 cases of scarlet fever and 1014 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 13 and 48 below the respective numbers remaining at the end of the previous week. The causes of 117 deaths in the 96 towns were uncertified, of which 23 were registered in Birmingham, 19 in Nottingham, 10 in South Shields, and 6 each in Liverpool and Sunderland.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 23·7, against 23·9 and 24·3 per 1000 in the two preceding weeks. Of the 1094 deaths from all causes, 47 were classified to influenza, which was also stated as a contributory cause in 212 deaths classified to other diseases; in the previous week these numbers were 29 and 252 respectively. The 465 deaths in Glasgow corresponded to an annual rate of 21·8 per 1000, and included 5 each from diphtheria and infantile diarrhœa, 4 from whooping-cough, and 1 each from measles and scarlet fever. The 206 deaths in Edinburgh were equal to a rate of 32·2 per 1000, and included 4 from whooping-cough, 3 from diphtheria, and 1 from infantile diarrhœa.

Irish Towns.—The 199 deaths in Dublin corresponded to an annual rate of 26·0, or 5·9 per 1000 below that recorded in the previous week, and included 49 from influenza and 1 each from whooping-cough, diphtheria, and infantile diarrhœa. The 463 deaths in Belfast were equal to a rate of 61·4 per 1000, but included no deaths from the epidemic diseases other than influenza.

The War and After.

THE CASUALTY LIST.

THE names of the following medical officers appear among the casualties announced since our last issue :—

Previously reported Missing, now reported Presumed Killed.

Capt. H. W. White, R.A.M.C., qualified in Ireland in 1910, and at the time of joining up was assistant medical superintendent at the Paddington Infirmary, London. Previously he had held appointments at the Long Grove Asylum, Epsom, and at the Metropolitan Hospital.

Died.

Major H. W. Sykes, R.A.M.C., was educated at Durham and qualified in 1909. Prior to joining the R.A.M.C. he was on the medical staff of the Randfontein Estates Gold Mining Co. in the Transvaal, and was previously medical superintendent at Grey's Hospital, Pietermaritzburg.

Capt. B. W. Cherrett, East African Medical Force, was a student at St. Bartholomew's Hospital, London, and qualified in 1906. He held an appointment at Plaistow Hospital, and prior to going on service was medical officer of health at Nairobi, East Africa, where he died of pneumonia following influenza.

Capt. G. L. Maule, R.A.M.C., was educated at Shrewsbury and at Cambridge, and qualified in 1916. Prior to joining the R.A.M.C. he was for some time house surgeon at the Manchester Infirmary.

Capt. P. S. Green, R.A.M.C., qualified at Manchester in 1911, and prior to joining the R.A.M.C. was in practice at Lowton, Newton-le-Willows, Lancs.

Capt. S. W. Matthews, R.A.M.C., qualified in Ireland in 1913, and prior to joining the R.A.M.C. was in practice at Wicklow.

Surg. Lieut. W. H. Pickup, R.N., was educated at Birmingham University, and qualified in 1915. He joined the Navy shortly afterwards, and died of pneumonia following influenza.

Capt. W. E. Paterson, New Zealand M.C.
Major R. C. Irvine, R.A.M.C.
Capt. C. R. Lister, Australian A.M.C.
Surg. Sub-Lieut. E. A. Pearson, R.N.V.R.
Surg. Sub-Lieut. T. Carlyle, R.N.V.R.

Wounded.

Major H. D. Lane, M.C., R.A.M.C.
Capt. H. R. Lawrence, South African M.C.
Major F. Henderson, M.C., R.A.M.C.
Capt. G. W. Mitchell, R.A.M.C.
Lieut. R. R. MacGregor, R.A.M.C.

OBITUARY OF THE WAR.

JOHN MORRIS, M.B., F.R.C.S. EDIN.,

MILITARY CROSS,
MAJOR, ROYAL ARMY MEDICAL CORPS.

Major J. Morris, who was killed in action in France on Oct. 7th, at the age of 39 years, was fourth son of T. Morris, J.P., of Oswestry. He graduated M.B., Ch.B. at Edinburgh University in 1904, after which he held posts as house surgeon at Denbigh Infirmary and assistant surgeon at Dinorwic Quarries Hospital, Llanberis. After obtaining the F.R.C.S. Edin. in 1909 he settled in practice at Hyde (Cheshire), where he became police surgeon and recruiting medical officer. In 1912 he joined the Territorial Force and was mobilised on August 4th, 1914, going to France with the Cheshire Regiment in the following November. In 1916 he was awarded the Military Cross, and his superior officer writes of him as a valuable surgeon. Major Morris leaves a widow and two children.

LOUIS P. DEMETRIADI, M.D. DURH., F.R.C.S. EDIN.,

LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS (T.).

Lieutenant-Colonel L. P. Demetriadi, who died at Southport on Oct. 26th, was 56 years of age. He was educated at Manchester Grammar School and King's College, London, and later attended Leeds University, taking the degrees of M.D. Durh., F.R.C.S. Edin., and D.P.H. He was house surgeon to the Huddersfield Royal Infirmary, and later carried on general practice in the town, retiring in 1912. For more than 20 years he lectured and trained classes for the St. John Ambulance Association, and acted as judge at various railway and colliery competitions. In 1916 he was made an honorary associate of the Grand Priory of the Order of the Hospital of St. John of Jerusalem in England. In 1897 he joined the 2nd Volunteer Battalion, Duke of Wellington's Regiment, and rose to the senior rank in its medical service. When the West Riding Territorial Division mobilised in August, 1914, he proceeded with it to France in April, 1915, taking charge of the West Riding (49th) Casualty Clearing Station, where he remained for two years, until his health gave way. Returning to home service, he received the Territorial Decoration, and then had to relinquish his commission owing to continued ill-health. He was twice mentioned in despatches. One of his superior officers writes of Colonel Demetriadi: "He was one of the most helpful officers I had working with me, and I knew that nothing was too difficult for him to carry out." He was active in the discharge of his civic duties, both as a member of the local municipal council and as a churchwarden. He married a daughter of the late Dr. J. R. Parke, of Tideswell, who survives him.

DIGBY BURNS, L., L.M. R.C.P. & S.I.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain D. Burns, who lost his life on the ill-fated *Leinster* while returning to duty on Oct. 10th, was youngest son of John William and Elizabeth Burns, of Dublin. He was educated at Mountjoy College, Dublin, and at the Royal Colleges of Physicians and Surgeons, obtaining the conjoint Irish diplomas in 1912. Shortly afterwards he was appointed house surgeon to Bootle Borough Hospital, where his personal qualities made him a popular colleague. After this preparation for general practice in 1913 he settled down at Orrell Park, Liverpool, and had acquired a considerable practice when in 1916 he received a commission in the Royal Army Medical Corps. His captaincy was conferred in the following year. His commanding officer writes of Captain Burns as the life of the little community in which he was placed. "His never failing good humour and kindly disposition endeared him to us all."

Captain C. D. HAMILTON, Lieutenant R. H. LALANDE, and Lieutenant W. McL. MCLEOD, all C.A.M.C., died on the voyage from Canada to England between Oct. 6th and 10th.

CHARLES WILLIAM DUGGAN, M.B., C.M. EDIN.,

MAJOR, ROYAL ARMY MEDICAL CORPS.

Major C. W. Duggan, who lost his life on Oct. 10th, at the age of 52 years, by the sinking of the *Leinster*, was only son of the late William Nelson Duggan, M.D., of Edinburgh, Major, A.M.S. He was educated at Daniel Stewart's and George Watson's Colleges and graduated at Edinburgh University in 1887, was assistant to the professor of medicine, and did some research work on the coagulation of albumen. On leaving Edinburgh he studied at Vienna, Prague, and Paris, and in 1891 joined the Army Medical Staff, as it then was. He saw service on the West Coast of Africa, taking part in the expedition against the Sofas, for which he obtained the medal and clasp. He was able to keep up his research work, and in 1897 contributed a paper to the Medico-Chirurgical Society of London on the parasite of malaria. Later he served in Gibraltar, India, and Burma. He was gazetted Major in 1903 and retired from the Service in 1909, when he was appointed in charge of the Military Hospital, Lincoln. On the outbreak of the war his hospital was enlarged to accommodate B.E.F. patients, giving him the opportunity of thoroughly testing the ichthyol and glycerine treatment of gunshot wounds, which he advocated in a number of articles in various medical papers. He was mentioned in despatches in 1917. His death occurred on his return from a court-martial at Cork.

Major Duggan is described as one who was always devoted to the welfare of others, and in him the Lincoln depôt has lost a good friend. He married in 1895 Crystal, youngest daughter of the late W. H. Maunde, of Worcester, and leaves three children.

BENJAMIN HILTON LEIGH, L.R.C.P. EDIN.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain B. H. Leigh, who died on Oct. 9th, at the age of 51 years, from an illness contracted on foreign service, was eldest son of the late H. H. Leigh, of Piura, Peru. He came to this country at the age of 12 and was educated at Prior Park College, Bath. Later he entered the School of Medicine at Owens College, Manchester, taking the triple qualification at Edinburgh in 1896. For some years he was in practice at Southend-on-Sea, until in April, 1915, he obtained a commission in the Royal Army Medical Corps. He went overseas in the following August, first to Malta and afterwards to Salonika, being invalided back to this country last April. His death occurred in the Manor War Hospital at Epsom.

Captain HARRY DUNLOP, C.A.M.C., who died of wounds on Nov. 2nd at the age of 35 years, was born at Kingston, Ontario. He graduated in medicine at Queen's University, Kingston, came to England in September, 1916, and served as M.O. in units in England until November, 1917, when he went to France with the 102nd Battalion. He was attached to this unit when he received the wounds of which he died.

Captain NEVILLE HALL LITTLE, C.A.M.C., who died of wounds on Oct. 29th at the age of 25 years, was a native of Trenton, Ontario, and graduated in medicine at the University of Toronto in 1916. He came to England in April, 1917, was sent to France in July, 1918, and served for three months with a general hospital and later with a field ambulance.

Captain CHARLES HENRY VERNON SMITH, C.A.M.C., who died on Nov. 1st at the age of 22 years, was a native of Oxford, Ontario, and graduated in medicine at McGill University in 1914. He came to England in March, 1916, and went to France in July to serve with a general hospital and afterwards as regimental M.O. until he was invalided to England.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Capt. G. L. Maule, R.A.M.C., died at Bagdad of pneumonia, only son of the late Dr. W. Maule, of Birkdale, Lancs.

Second Lieut. A. Irving, Sikhs, killed in action in Mesopotamia, youngest son of Dr. M. H. C. Irving, of the British Guiana Medical Service.

Second Lieut. R. R. O'Conor, Coldstream Guards, died in England of pneumonia, younger son of Dr. J. O'Conor, of the British Hospital, Buenos Aires.

Surg. Lieut. W. H. Pickup, R.N., died in England of pneumonia following influenza, second son of Dr. W. J. Pickup, of Coventry.

Capt. L. F. H. Beach, D.S.O., Queen's Regiment, died of broncho-pneumonia, son of Dr. F. Beach, of Coulsdon, Surrey.

Lieut. A. J. T. Eccles, M.C., R.E., died of influenza, third son of Dr. G. T. Eccles, of Hove, Brighton.

MENTIONED IN DESPATCHES.

In a despatch, dated August 20th, 1918, received from the Commander-in-Chief in India, the following reference is made to the medical services:—

The sick and wounded despatched to India from oversea theatres of war, as well as those invalided from Waziristan and other theatres of frontier operations, have been adequately and sympathetically cared for. A number of war hospitals have been formed, other hospitals have been expanded and improved, and ruling chiefs and others have generously provided hospitals and convalescent homes in Bombay and elsewhere, in which everything possible has been done for the comfort of the sick and wounded. The satisfactory health of the troops, both in the field and in India, affords striking testimony as to the value and efficacy of these measures and the skill, forethought, and administrative capacity of the medical services.

Amongst the list of mentions in connexion with the despatch are the names of the following medical officers:—

Lt.-Col. J. M. Crawford, O.B.E., I.M.S.; Maj. G. I. Davys, I.M.S.; Maj. H. Hallilay, I.M.S.; Lt.-Col. T. Jackson, I.M.S.; Col. W. E. Jennings, I.M.S.; Maj. J. C. Kennedy, R.A.M.C.; Lt.-Col. W. G. Liston, C.I.E., I.M.S.; Col. W. Molesworth, C.I.E., I.M.S.; Maj. G. F. Rugg, R.A.M.C.; Col. A. W. Sheen, R.A.M.C (T.F.); Maj. A. E. Walter, I.M.S.; Lt.-Col. C. F. Wanhill, R.A.M.C.; Lt.-Col. J. W. Watson, I.M.S.

FOREIGN DECORATIONS.

French.

Croix de Guerre.—Capt. (acting Maj.) R. P. Ballard, M.C., R.A.M.C., Spec. Res.; Temp. Capt. (acting Maj.) P. Carney, M.C., R.A.M.C.; Capt. (acting Maj.) D. Dougal, M.C., R.A.M.C., Spec. Res.; Temp. Capt. (acting Maj.) J. A. Doull, R.A.M.C.; Lt.-Col. (temp. Col) F. G. Fitzgerald, D.S.O., R.A.M.C.; Lt. W. A. Fraser, R.A.M.C., Spec. Res.; Temp. Capt. L. Gameson, R.A.M.C.; Temp. Capt. J. F. McLay, R.A.M.C.; Temp. Capt. S. A. W. Munro, R.A.M.C.; Capt. (acting Lt.-Col.) E. Percival, D.S.O., M.C., R.A.M.C.; Temp. Capt. D. J. Stokes, R.A.M.C.; Temp. Capt. (acting Lt.-Col.) R. Svensson, M.C., R.A.M.C.; Capt. (acting Lt.-Col.) F. Worthington, D.S.O., R.A.M.C.; Maj. (temp. Lt.-Col.) H. A. Davidson, D.S.O., R.A.M.C.; Maj.-Gen. J. B. Wilson, C.B., C.M.G., A.M.S.

Belgian.

Ordre de Léopold.—Chevalier: Capt. A. R. Cook, Uganda M.S.
Ordre de la Couronne.—Officier: Capt. E. L. Fyffe, R.A.M.C.

Italian.

Order of the Crown of Italy.—Officer: Lt.-Col. (acting Col.) H. Hewetson, D.S.O., R.A.M.C. Cavalier: Temp. Capt. J. H. Peek, R.A.M.C.
Croce di Guerra.—Temp. Capt. A. F. Readdie, R.A.M.C.
Bronze Medal for Military Valour.—Capt. (acting Maj.) A. E. P. McConnell, M.C., R.A.M.C. (T.F.).

Egyptian.

Order of the Nile.—2nd Class: Surg.-Gen. Sir J. Maher, K.C.M.G., C.B. 3rd Class: Lt.-Col. H. W. Thomson, R.A.M.C.

Portuguese.

Red Cross Medal.—2nd Class: Maj. (temp. Lt.-Col.) H. G. Pinches, R.A.M.C.

Japanese.

Order of the Sacred Treasure.—2nd Class: Surg. Rear-Adml. P. B. Handyside, C.B.

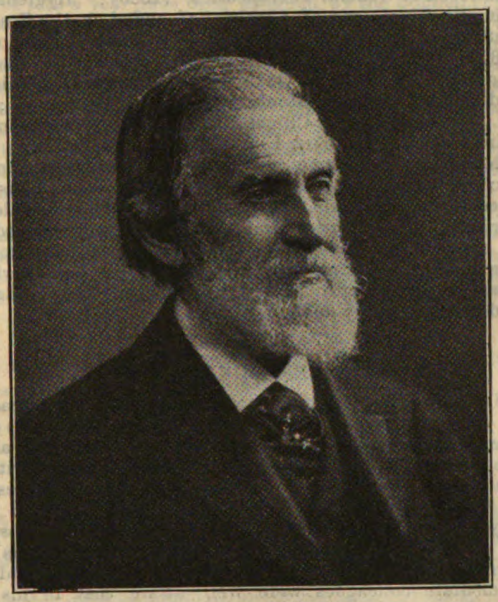
Obituary.

SIR HERMANN WEBER, M.D. BONN, F.R.C.P. LOND.,

CONSULTING PHYSICIAN TO THE GERMAN HOSPITAL, LONDON, AND TO THE ROYAL NATIONAL CONSUMPTION HOSPITAL, VENTNOR.

As we have already announced, Sir Hermann Weber, who may be regarded as the founder of the science of climatotherapy, died at his residence, 10, Grosvenor-street, at the advanced age of 95, on Nov. 11th. Born of a German father and an Italian mother, his sympathies were entirely on the side of England, his adopted country, where he worked for 75 years; his younger son, Lieutenant-Colonel Weber, D.S.O., R.F.A., and all his grandsons of military age, five in number, have fought in the war, and one of these laid down his life at Ypres at the beginning of hostilities.

Hermann Weber commenced his medical studies at Marburg, whence he proceeded to Bonn, where he graduated M.D. in 1848. In his student days at Marburg he met Carlyle; while his knowledge of the works of Shakespere and his determination to read them in the original brought him into social relations with English visitors at Bonn, among them being Sir James Simpson. A strong feeling in favour of British sociology was thus created, and Weber applied for and obtained the post of house physician to the German Hospital at Dalston. The many friends that he made there, the acquisition of a private practice, membership of the now



SIR HERMANN WEBER.

defunct Society for Clinical Observation, to which much medical progress was owing at the time, and finally the marrying of an English wife in 1854 were all factors in the decision to make England his home. He accordingly entered as a student at Guy's Hospital in order to obtain an English qualification, and in 1855 became a Member of the Royal College of Physicians of London and shortly afterwards a Fellow of that body.

All idea of returning to Germany now disappeared from his mind, and from a small clientèle of mostly foreign patients Weber's practice soon extended into English circles. His advocacy of the high valleys of the Engadine as health resorts in many conditions of debility added to his reputation, and the return from those climates of distinguished patients in renewed vigour proved the correctness of his judgment. Himself an ardent mountain climber—in his eightieth year he traversed the Diavolezza—and knowing the Alps thoroughly, his selection of spots where graded exercise could be combined with quiet and beautiful environment was unerring. Among famous men whose improvement in health under Weber's care gave public advertisement to the claims of climatotherapy may be mentioned

five Prime Ministers—namely, the Lord Derby, Earl Russell (Lord John Russell), Lord Salisbury, Lord Rosebery, and Sir H. Campbell-Bannerman—and he was frequently consulted on the choice of a health resort for members of the Royal Family. His professional status was recognised by the Royal College of Physicians, where he served on the Council for five years, being Censor in 1879 and 1880. In 1899 he received the honour of knighthood. Weber's long and distinguished association with life assurance work formed another claim to public recognition. He was medical officer to the central office of the North British and Mercantile Insurance Company for many years, was President of the Life Assurance Medical Officers' Association from 1897 to 1899 inclusive, and his presidential address on Heredity in Relation to Life Assurance showed considerable prevision in respect of matters that have since become subjects for more elaborate discussion and arrangement.

Sir Hermann Weber actually retired from practice at the age of 80, but for the 15 years which remained to him he continued to take the keenest interest in his profession. He contributed to medical periodicals and wrote a work on "Means for the Prolongation of Life," the fourth edition of which was reviewed in these columns recently. The value of his teaching here was certainly well illustrated in his own case, for at the age of 95 he was able to walk on an average 50 miles a week regardless of weather. Of his other literary work the following may be mentioned in illustration of the duration of his activities: "Notes on the Climate of the Swiss Alps" (1864); Klimato-Therapie in "Ziemmsen's Handbook of General Therapeutics" (1880); "Hygienic and Climatic Treatment of Phthisis" (founded on the Croonian lectures of the Royal College of Physicians of London for 1885); "Treatment of Phthisis by Residence in Elevated Regions"; articles in Quain's "Dictionary of Medicine" and Allbutt and Rolleston's "System of Medicine"; with Dr. Parkes Weber "Climatotherapy and Balneotherapy," third edition, 1907 (THE LANCET, Feb. 16th, 1907).

Numismatics became his hobby in later years, and he became an accepted authority on Greek coins. Visits to Greece, Sicily, Tunis, Egypt, Asia Minor, and Palestine enriched his collection and at the same time helped him to confirm his view and gather further information on climatology. During the last weeks he had obviously been losing strength rapidly, as he himself knew. But the end came suddenly and peacefully.

JOHN BIERNACKI, M.D. GLASG.

Dr. John Biernacki, who died on Oct. 11th, was a graduate of the University of Glasgow (M.B. 1889, M.D. 1898) and a licentiate of the three Scottish Colleges. Throughout almost the whole of his professional life he was concerned with the study and treatment of the ordinary infectious diseases, and at the date of his death he had been for some 23 years physician-superintendent of the Plaistow Fever Hospital. In the district served by the hospital his name has long commanded public confidence and gratitude, and his immediate colleagues were well aware that in his own department of practice he spoke as a clinical authority of the first order. Had he lived, a wider teaching would probably have been open to him, for he had accumulated many case-records and studies, and he always intended to found on these a systematic exposition of his experiences and conclusions. Something in this direction he did, indeed, accomplish, as may be seen in a lucid chapter on "The Infective Diseases of Temperate Climes" in Dr. Bain's "Text-book of Medical Practice." But he had much more to say and he waited for a quieter day in which to say it. Leisure, however, came to him in scanty supply, and he was ever restrained by a disinclination to publish any writing until by repeated review and self-criticism he had at least approached his own somewhat austere standard of worthiness. The artist in some measure hindered the teacher, and medicine is the poorer for the restriction. In his clinical and organising work Biernacki was severely practical, thorough, and business-like—a careful and exact observer and a thoughtful and painstaking student. That in addition he was possessed by wide intellectual and artistic interests was hardly known save to a few intimate friends, for his natural habit of silence and reserve hid not only the range of his thought but also the original quality of his mind and his capacity for tenderness and emotion. It was only in the intimacy of close and affectionate comradeship that these qualities came to the surface and the full measure of the man was known and appreciated. In such a circle his name has an abiding place as a companion whose thought touched all problems and as a friend ever ready for loyal and generous service. Here certainly he has left memories which enrich and strengthen life. C. O. H.

ALFRED ELLINGTON STANSFELD, M.D. CAMB., F.R.C.P. LOND.,

PHYSICIAN, METROPOLITAN HOSPITAL; SENIOR DEMONSTRATOR OF PATHOLOGY, ST. BARTHOLOMEW'S HOSPITAL.

MEDICINE has suffered a great loss by the early death, on Nov. 25th, from influenzal pneumonia, of Dr. A. E. Stansfeld.

Alfred Ellington Stansfeld was born in Stoke Newington on Dec. 11th, 1882, educated at the Central Foundation School, Cambridge, and held a scholarship at St. John's College from 1902–7. He took a first class in Part II. (Physiology) of the tripos, and going on to St. Bartholomew's Hospital, London, obtained an entrance scholarship and most of the other distinctions there available in medicine. He took the M.B. Camb., and became M.R.C.P. in 1911, the M.D. Camb. following in 1915. After holding resident posts at St. Bartholomew's he became casualty physician and then assistant demonstrator of pathology, as well as physician to the Metropolitan Hospital. His election to the F.R.C.P. occurred this year.

Stansfeld possessed not merely a high degree of intellectual ability, but close powers of observation and an unlimited capacity for hard work—a combination which was already

DR. A. E. STANSFELD.

beginning to bring him considerable success in clinical medicine. Added to this, he was an excellent and popular teacher, always ready to put aside his own work in order to help a student over some difficult point. He was, moreover, a good organiser, and more than one hospital had to thank his ingenuity and tact for arrangements enabling work to be carried on during the war. Although his own bent was clinical medicine, he had devoted much of his attention during the past six or seven years to pathology, occupying the post of demonstrator in this subject at St. Bartholomew's Hospital. Only the trying duties of routine work prevented him from following out researches on anaphylaxis and kindred subjects which he had commenced with every prospect of success. The apparatus which he had devised for the transfusion of blood[1] proved remarkably useful, and his services in this direction were much in request. At the outbreak of the war he was by no means averse from military service, but yielded to the representations that some few must remain to carry on the work and teaching of the hospital. This duty he faithfully carried out, and the services he thus rendered

[1] THE LANCET, 1918, i., 334.

were truly as valuable as any he could have offered by taking a commission. Two hospitals claimed his time, St. Bartholomew's and the Metropolitan, and to both he devoted unstinted time and labour, undertaking a part of the military work at the Metropolitan in addition to his ordinary routine.

Stansfeld was a robust man, but such toil as he underwent during the war cannot have been without effect upon the strongest constitution, and probably played a part in the issue of his fatal illness. His loss will be deplored not only by the institutions with which he was connected but by a wide circle of friends and colleagues. His loyalty as a colleague and his devotion as a friend were conspicuous features in his character. The thronged memorial service at St. Bartholomew's on Nov. 28th was a testimony to the genuine regard and affection in which he was held.—F. W. A.

THE Rev. DANIEL MCNEILL, M.D., of Orkney, whose death occurred on Oct. 15th at the age of 78, was born at Drumlemble, Argyllshire. Educated at the University of Glasgow, he combined the studies of medicine and theology, with a view to entering the foreign mission field; but on a chance visit to the Orkneys he decided, at the earnest request of the people, to settle on these remote islands, where for half a century he devoted himself to the care of the bodies and souls of his community. Since the war he had been living in nominal retirement in Edinburgh, but had been doing as much medical and clerical work as his years allowed. He died literally "in harness." Dr. McNeill was a man of many gifts—too versatile, indeed, to make a notable success in any one line; but his life was as useful as it was full and varied. His abounding sympathy, his kindliness, and his humour endeared him to the people to whom his life was dedicated. Of his family of six sons and six daughters, four sons and three daughters are graduates or alumni of Glasgow University. Two sons gave their lives in the war; one is in Palestine; another, Captain D. Dewar McNeill, R.A.M.C. (T.), is serving in France; and a daughter, Dr. Mary McNeill, is with the Scottish Women's Hospital at Salonika.

Medical News.

BRITISH MUSEUM (NATURAL HISTORY): SWINEY LECTURES.—A course of 12 illustrated lectures on Man and His Ancestry is being delivered by Dr. Thomas J. Jehu in the lecture theatre of the Royal Society of Arts during December and January, at 5.30 P.M., beginning Dec. 10th. Details are given in the Diary. Admission is free.

THE BELL FUND.—Dr. S. A. Kinnier Wilson asks us to acknowledge a donation of £3 3s. to the Dr. J. H. Bell Fund from Temporary Surgeon Paul C. Gibson, R.N. Subscriptions should be sent to Dr. Wilson, at 14, Harley-street, London, W. 1.

INFLUENZA IN BELFAST.—The influenza epidemic still prevails in Belfast and surrounding districts, perhaps to a less degree among the better classes; but, on the other hand, it has extended widely among the poor, though even among them older people seem to be less prone to attack. The mortality for the week ending Nov. 23rd was, in Belfast, 65 per 1000, and of the deaths which occurred over 250 were due to influenza. The epidemic has demonstrated three things—the absence of any known reliable treatment, specific or preventive; the hopeless failure of public health measures to have the least effect in combating the spread of the disease; and the want of any central organising authority (such as the Local Government Board in Dublin or local bodies) to deal with a confessedly difficult problem. The latest measure to be adopted by the Public Health Committee of the city of Belfast on Nov. 28th was to issue an Order by which the primary schools are (owing to the continuance of the influenza epidemic) to be kept closed until a date to be fixed by the committee after the Christmas holidays, a measure which will only tend to drive the young people affected into the kinemas, which are not closed. At one of the Parliamentary election meetings—for the Ormeau division—a speaker roundly blamed the city council for their action in closing Sunday schools and in leaving the kinemas open. It is only fair to say that the public health authorities of Belfast have no power to close places of amusement, and that the medical officer of health has been instructed by the Health Committee to communicate immediately with the Local Government Board with reference to obtaining compulsory powers to close such places of public entertainment. Reports from the various districts of Ulster show that so far there is very little abatement in the influenza epidemic.

Correspondence.

"Audi alteram partem."

EPSOM COLLEGE.

To the Editor of THE LANCET.

SIR,—It is again my duty, as treasurer of Epsom College, to make an earnest appeal for new subscriptions, in order that the Council may be able to maintain undiminished the work of the Royal Medical Foundation attached to the College.

As your readers will recollect, this work consists of two branches—viz., pensions of £30 a year are given to 50 aged and impecunious medical men or their widows, and an education of the highest class at Epsom College is provided for 50 necessitous sons of medical men, who also receive gratuitously maintenance, clothing, and pocket money.

In consequence of the numerous calls in connexion with the war, in addition to the increase of taxation and the general rise in prices, many annual subscriptions have been withdrawn, whilst others have been reduced in amount.

Applications for assistance are being received as a direct consequence of the war, and already the Governors have elected as Foundation Scholars (1) the son of a medical officer who was killed in action on the *Good Hope* in 1914; and (2) the son of another medical officer who was killed in action in 1917. Furthermore, Salomons Entrance Scholarships of £50 a year have been awarded by the Council (1) to the son of a medical officer who was killed when the *Royal Edward* was torpedoed in 1915; and (2) to the son of another medical officer who lost his life when the *Arcadian* was torpedoed in 1917.

I earnestly appeal to those of your readers who already support the Foundation to increase their contributions, at least for a few years, if possible, and I urge upon those who do not at present subscribe annually to do so. To the latter I wish especially to make this request at a time when so many members of our profession, their widows, or their orphans, are in need, and I beg of them to be so good as to respond sympathetically to this appeal at once. A sum of not less than £4500 must be procured in annual contributions if the numbers of beneficiaries are to be maintained.

I am, Sir, yours faithfully,

HENRY MORRIS,
Honorary Treasurer of Epsom College and its Royal Medical Foundation.

Office: 37, Soho-square, London, W., Nov. 29th, 1918.

A NATIONAL TRIBUTE TO VOLUNTARY AMBULANCE WORKERS.

To the Editor of THE LANCET.

SIR,—In your annotation on "first-aid in ordinary life" (Nov. 30th) you rightly emphasise the importance of the kind of work which is being done by the College of Ambulance. It is impossible to say how far the advent of peace may cripple this work by reducing the attendance at the classes, but the firm intention of the council is to continue the teaching carried on there; it is hoped in coöperation with the important bodies whose function is the practical application of first-aid in peace and war.

There has been a great demand for the instruction which the college supplies during the war, and it has therefore been almost self-supporting, but this cannot be expected to continue. The council are, therefore, appealing to the public for funds in order that the college may have an assured income at least sufficient to ensure adequate remuneration for its teaching and official staff. It may be hoped that in gratitude for what has been done and in its own interest the public will respond generously.

I am, Sir, yours faithfully,

RICKMAN J. GODLEE,
President of the College of Ambulance.

Wimpole-street, W., Dec. 3rd, 1918.

To the Editor of THE LANCET.

SIR,—The magnificent work accomplished during the war by the voluntary ambulance workers in the field, along the lines of communications, and at the base, at sea, on railways, and in hospitals at home stands out as one of the most prominent features of national accomplishment during

the past four years. Men and women have alike contributed; they have each in their own spheres filled the great gap in the war machine. They began to organise and to train for their special work before the war, for as long ago as 1908 the first V.A.D. was formed in London, so that when war was declared there was no difficulty in extending the work upon this well-founded basis.

After undergoing training for their duties they came forward in their tens of thousands to offer their services. No task was too hard, no duty too menial, no risk too great for these men and women to undertake. By day and night, in the stations and hospital wards, in the scullery, on all fronts, from France to Mesopotamia, these voluntary workers have brought credit and lasting fame to their country and themselves. Soldiers and civilians would combine in showing their appreciation were the means of doing so brought before them. How better can that be done than by establishing centres throughout the country where the work to which they have devoted themselves can be continued and perfected? Ambulance is for peace-time as well as for war.

War duty is but an ephemeral portion of ambulance work; civil ambulance is for all time. Modern military ambulance was organised in Germany, but civil ambulance was first instituted in Britain, and its performance entrusted to the public to accomplish. It is not taught in our medical schools; it cannot be satisfactorily taught except in schools technically equipped for this purpose. The College of Ambulance, founded in 1914, is the only school of the kind in the Kingdom; it is a model for other centres to go by.

Since 1914 25,000 people have been trained there, and the college has established its usefulness and proved that the public appreciate its teaching. For the sake of the public good, and as a tribute to the men and women who have given their time, and in many cases their lives, for the cause of ambulance, let us consecrate a building and perpetuate the work they have at heart and where ambulance can be taught worthy of the great cause. The college gives technical training, open to all teachers and students of the ambulance societies of the nation.

I am, Sir, yours faithfully,

JAMES CANTLIE.

College of Ambulance, 3, Vere-street, London, W.1,
Dec. 2nd, 1918.

TREATMENT OF INFLUENZA.

To the Editor of THE LANCET.

SIR,—In the face of so kindly a reference to my article upon this subject in your issue of Nov. 23rd, it seems ungracious to point out that Dr. C. W. Vining (THE LANCET, Nov. 30th) has read the letter of my contribution rather than its spirit. And in one particular he has misread the letter, I fear with malice aforethought, since I mentioned the "turtle soup" to condemn, and not to advise, it! The spirit of my article surely was that certain simple principles should be followed, by the doctor and nurse if available, and if not, then by the friends under the doctor's instructions. Even "the harassed doctor" can open windows, draw back curtains, point out the reason for disallowing the pile of stuffy bedclothes under which the patient is being stewed, encourage sponging, and direct generally those who, though eager to be taught how to help, too often, like Milton's hungry sheep, "look up and are not fed." These were the things I chiefly dwelt upon, urging that they were more important than the details which Dr. Vining has extracted for the purpose of his letter. Dr. Vining says my paper "would have been more helpful if he could have formulated a workable scheme for the handling of the many serious cases amongst the poorer classes." This was obviously not my thesis. I entirely endorse Dr. Vining's opinion that the civilian population has suffered severely because of the "apparent helplessness of the public health, Poor-law, and hospital authorities." The want of organisation, and of some central control, are, as Dr. Vining points out, pathetically evident. And the patience of the British public is once more a thing to wonder at, though not to admire.

I am, Sir, yours faithfully,

London, Dec. 2nd, 1918. THOMAS HORDER.

Dr. C. MUTHU writes of four cases of influenzal pneumonia successfully treated with liquid paraffin as recommended by Dr. A. White Robertson. In all four cases the temperature went up suddenly, there were headache, flushing of the cheeks, double pneumonia with pleurisy, acute congestion of the bases, with temperature ranging from 103° to 105° F. In addition to general measures the bowels were kept freely open by aperients and by liquid paraffin. Over the chest, front and back, was applied a lint jacket soaked in paraffin oil (yellow), covered over with a double layer of jaconet, the dressing being renewed every 24 hours. When the temperature had fallen to 99° the oil dressing was removed, the bases were painted with liniment of iodine and thermogene wool was applied over the part. All the patients recovered and convalescence was uninterrupted.

Dr. H. O. BUTLER (Chiswick) writes of 500 consecutive cases of influenza, with 1 death, all treated—after an initial purge of castor oil or calomel—with 20–30 gr. of bicarbonate of soda by the mouth four-hourly, and tepid sponging if the body temperature rose above 103° F. The soda relieves abdominal pain and distension, and acts, Dr. Butler thinks, by inhibiting the growth of the causal organism and neutralising its toxin. Cases were not considered to be influenza unless they showed catarrhal signs in the lungs. The fatal case of the series had persistent vomiting of blood and mucus, so that the soda was not retained.—Dr. R. C. LEANING (acting M.O.H. for Chiswick U.D.) adds a note confirming the superiority of this method of treatment over others in use, also attributing its success to the neutralisation of intestinal toxins.

Dr. A. J. EAGLETON and Mr. H. H. BUTCHER write to make a suggestion for treatment of the pulmonary and septicæmic complications of influenza based on their experience at the Military Hospital, Sutton Veny, Wilts. Their routine is a rapid examination of the sputum to determine (if possible) if the *Streptococcus longus* or the pneumococcus is the chief factor of the secondary infection. Streptococcal or pneumococcal serum is then given combined with complement. The pneumococcal serum was prepared after the method of P. Kyes by inoculating fowls intravenously and subcutaneously with proved virulent cocci obtained from autopsies. The complement used was not more than 48 hours old, and was obtained by needling guinea-pigs' heart, separating the serum from the blood so obtained, and diluting it with 3 parts of carbolised saline. 4–5 c cm. of serum and the same amount of complement are mixed in the syringe and injected into the subcutaneous tissue of the abdomen. Beneficial effects were produced in many cases.

Dr. W. C. MINCHIN (Herstmonceux, Sussex) writes to say that he has treated many patients with tri-methenal allylic carbide and that he can endorse the results recorded by Mr. W. Allingham in THE LANCET of Nov. 9th. Five patients constantly using preparations of allyl for other ailments, and residing in different houses in which the inmates were all stricken down with influenza, have themselves remained immune.

THE SPACING OF INJECTIONS IN THE MAINTENANCE OF A PNEUMOTHORAX.

To the Editor of THE LANCET.

SIR,—The very needful warning which Dr. Claude Lillingston has sounded in your issue of Nov. 30th, under the above heading, as to the risk of re-expansion and adhesion of a collapsed lung when too long an interval between "fillings" is allowed to elapse, tempts me to support his case with a parallel illustration, and also, if I may, to extend his danger area so as to cover a closely allied pitfall which awaits the feet of the unwary. And first of all for the illustration.

Towards the end of 1916 a lady was brought to me by a sanatorium physician for advice as to the continuation or otherwise of pneumothorax treatment. The collapse had been initiated some 12 months previously at another sanatorium; six months later a pleural effusion appeared, and the fillings had been abandoned for some months owing to the occurrence of troublesome "reactions." At the time I saw her all trace of gas had disappeared; there was fluid up to the second rib covering expanded lung, which supplied loud blowing breath sounds and abundant crepitations, and appeared to be adherent at the apex. I strongly advised re-establishment of the pneumothorax, and myself replaced the fluid with gas, and fortunately succeeded in separating off the adhering apex. She returned to the sanatorium and began to improve on monthly fillings, and continued to do so at another sanatorium to which she subsequently moved. But here, unfortunately, an interval of two months was allowed to elapse between two fillings, and she returned to me in May, 1917, with the lung again partly expanded and

adherent over the lower half of the chest wall behind. Fortunately the expanded lung tissue appeared to be of passably good quality, so no attempt to separate it off was made, nor if it had been would it in all probability have proved successful.

Here, then, we have a two-fold example of the danger to which Dr. Lillingston draws attention, and also, incidentally, of the disadvantage to pneumothorax cases of wandering from place to place, so that they lose touch with those who were acquainted with their lung before its collapse, and therewith the benefit of a consistent line of treatment.

The further pitfall to which I desire to direct attention is the danger of such re-expansion and adhesion of the lung resulting from failure to readjust the intrapleural pressure in pneumothoraxes of long standing. It was my misfortune to experience several such happenings before I fully realised the tendency of pneumothorax cavities to contract with time, even in cases where no pleural inflammation had ever been observed. This contraction has generally been referred to in the literature as if it were of occasional occurrence only, but in my experience it is the common event in cases of over a year's duration. As its result the mediastinum begins to move back towards the pneumothorax side, and a pressure which had sufficed to keep the lung collapsed through the accustomed interval now fails to accomplish this purpose. Under these conditions, unless the pressure is promptly raised, with or without a shortening of the interval, an expanded and adherent lung area will soon make its appearance, and its subsequent separation and re-collapse be difficult or impossible to accomplish. The following case will suffice to illustrate this accident.

R. W. with a left pneumothorax kept at a low pressure (0 + 4) because of a tendency to "ballooning" of the pleura. After a year of fillings at monthly intervals the lung began to show a tendency to expansion, and in spite of a slight raising of the pressure (to + 2 + 7) lung and heart became adherent to the axillary chest wall. The pressure was raised to + 6 + 11, and afterwards to + 14 + 17, with result that the heart was replaced, but a pulmonary adhesion remained without, however, any apparent detriment to subsequent treatment. There were never any evidences of pleurisy during the course of this case.

During the later stages of treatment, then, constant watch must be kept for evidences of contraction of the pneumothorax cavity, and if this occurs the pressure must be immediately raised or the interval decidedly shortened. Such cavities with fibrosed walls will bear gas pressures of + 20 cm. of water, or even of + 25 to + 30 cm. in selected cases, without any danger or discomfort to the patient. The actual pressure quickly falls, but the increased volume of gas removes the need for a shortening of the interval between the fillings. It would be interesting to learn Dr. Lillingston's experience of expansion of the lung in these later stages of prolonged pneumothorax treatment.

I am, Sir, yours faithfully,

Queen Anne-street, W., Nov. 30th, 1918. CLIVE RIVIERE.

THE ELSIE INGLIS CHAIR OF MEDICINE.

To the Editor of THE LANCET.

SIR,—Before many days have passed the Serbian Government will return from its exile in Corfu.

The committee of the Elsie Inglis London Memorial Fund hopes to hand over the money raised for the endowment of a Chair of Medicine in the University of Belgrade on the day of the entry of the Government into the capital. The required sum of £12,000 is not yet complete, and the honorary treasurers appeal to donors to send their contributions quickly.

The buildings of the University of Belgrade were shattered by the first Austrian shells of the war. The Elsie Inglis Chair of Medicine will be the first gift from this country towards the reconstitution of the national university. In Serbia, as here, "Education" is the watchword of the hour.

Yours faithfully,

MAUD SELBORNE,
TERESA GOSSE,
Honorary Treasurers of the Fund.

London Units of Scottish Women's Hospitals (London Society N.U.W.S.), 66, Victoria-street, S.W. 1, Dec. 2nd, 1918.

CENTENARIANS.—The deaths of Mary Dardis and James Foley, each aged 102, and Mary Duffy, aged 100, are reported in county Westmeath from influenza.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

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TUESDAY, NOV. 26TH.

THE address delivered by the President was reported in last week's issue of THE LANCET.

Registration of Canadian Medical Qualifications.—Other Business.

The Council adopted a report of the Executive Committee in regard to the granting of medical qualifications in certain Canadian provinces. Two years ago, on information being received as to the institution of a five years' course in Saskatchewan, the acting registrar was directed to register any person who produced the licence of the College of Physicians and Surgeons of Saskatchewan and who satisfied the prescribed conditions. The Committee now reported that the question had arisen as to the position of practitioners who obtained the qualification of Member of the College of Physicians and Surgeons of the North-West Territories before they were divided into two provinces, of which one was Saskatchewan. The nature of the examination being satisfactory, the Committee had resolved to direct the acting registrar to register in the Colonial List any person holding the licence or the Membership of the College of Physicians and Surgeons of the North-West Territories obtained after examination in medicine, surgery, and midwifery, together with the licence of the College of Physicians and Surgeons of the Province of Saskatchewan, providing he satisfied the Registrar regarding the other particulars set forth in Part II. of the Medical Act, 1886.

The Council then considered *in camera* certain applications for restoration to the Register and also the question of appointment of treasurers. On the resumption of the public sitting the President announced that the acting registrar had been instructed to restore to the Register the names of James Alexander Baird Thompson, Alexander Orford Schorn, and Edmund Lyall Haynes. He also stated that Dr. Norman Moore had accepted the office of treasurer of the Council in succession to Sir Frederick Taylor, and that Dr. Moore's place as chairman of the Business Committee would be taken by Dr. Norman Walker.

The Case of Jules Michael Ralph Flament, M.D., B.Ch. Edin.

The Council considered an application from Dr. Jules Michael Ralph Flament, of Carlisle, through his counsel, Mr. A. Neilson, K.C., for the postponement of the hearing of the charges against him which had been fixed for that session. Notice of the charges had only been received on Oct. 25th, and they were not formulated in detail until Nov. 5th; also one of the charges had afterwards been altered in a fundamental particular. Dr. Flament strongly denied the charges, and Mr. Neilson submitted that three weeks was not a sufficient time in which to prepare his defence.

Sir FREDERICK SMITH, the Attorney-General, on behalf of the Ministry of Munitions, at whose instance the charges were brought, opposed the application for postponement, but said that if, as the hearing proceeded, it became evident that the practitioner's position was prejudiced through the shortness of the time he would then consent to the postponement. The Ministry of Munitions, he said, was a disappearing body, the legal adviser in charge of the case would not be in the country at the Council's next session, and already some witnesses had arrived from considerable distances.

After deliberating *in camera*, the Council decided that the case must go forward at the date originally stated.

WEDNESDAY, NOV. 27TH.

The Case of Thos. Stoney Sharpley, M.R.C.S. Eng., L.R.C.P. Lond.

The charge in this case was as follows:—

"That, being a registered medical practitioner, you abused your position by committing adultery with Mrs. Adeline Gladys Senior, whose daughter you had attended professionally, of which adultery you were found guilty by the decree of the Probate, Divorce, and Admiralty Division (Divorce) of the High Court of Justice, dated July 12th, 1915, and made absolute on Jan. 24th, 1916, in the case of Senior *v.* Senior and Sharpley, in which you were the co-respondent. And that in relation thereto you have been guilty of infamous conduct in a professional respect."

The complainant was Mr. Norman Senior. Mr. Sharpley was accompanied by his counsel, Mr. Le Bas, instructed by Messrs. Snell and Co. Mr. Senior was unable to attend owing to illness.

Mr. HARPER, solicitor to the Council, read the decrees of the Divorce Court and the shorthand notes taken at that hearing.

The Council having deliberated on the case *in camera*, the parties and the public were recalled, and the PRESIDENT said: Mr. Sharpley, I have to inform you that the Council has given careful consideration to your case; it has judged you to have been guilty of infamous conduct in a professional respect, and has directed the Registrar to erase your name from the Medical Register.

The Case of Isaac Bernard Barclay, M.R.C.S. Eng., L.R.C.P. Lond., D.P.H.

He was charged as follows:—

"That, being a registered medical practitioner, with the object of obtaining the appointment of tuberculosis officer to the Derbyshire County Council, you knowingly and falsely stated in your form of application that you had held the resident appointments of house physician, Leeds General Infirmary, and clinical assistant, Liverpool Chest Hospital. And further, with the same object, that you submitted to the Tuberculosis Committee of the said Council a printed copy of a testimonial dated August 28th, 1915, which you had knowingly falsified in a material particular—viz., by making it falsely to state that you had held the appointment of assistant resident medical officer of the Winsley Sanatorium since July 11th, 1913, whereas you had in fact held such appointment for less than one month prior to August 28th, 1915. And that in relation thereto you have been guilty of infamous conduct in a professional respect."

The complainants were the Tuberculosis Committee of the Derbyshire County Council, and their case was presented by their assistant solicitor, Mr. H. W. Skinner. Mr. Barclay was accompanied by Mr. F. Greer, K.C., instructed by Messrs. Rhys, Roberts and Co.

Mr. SKINNER, opening the case, said that in March, 1917, the County Council advertised the vacancy of assistant medical officer of the sanatorium, and Mr. Barclay applied by letter on April 10th, but without mentioning testimonials. On April 19th the committee interviewed him and he was appointed to the position. Shortly afterwards Dr. Fowler, the medical superintendent of the sanatorium, offered himself for military service, and it was suggested to Mr. Barclay that he should apply for that post as temporary superintendent. He did apply on May 21st, and an application form was sent to him to be filled up. It was on the information thus given that the chief charge arose, for defendant stated he had been house physician at Leeds General Infirmary, clinical assistant at the Liverpool Chest Hospital, also assistant resident medical officer at Winsley Sanatorium. Testimonials were enclosed from Mr. Gibbs, of Charing Cross Hospital; Dr. Howells, City of London Hospital; Dr. Hellier, Dr. Owen, Dr. Clegg, and Mr. Russell. At the meeting of the Tuberculosis Committee Dr. Barwise took Mr. Barclay through his application and the testimonials by which it was accompanied. On June 13th Mr. Barclay was appointed temporary medical superintendent. Owing to the fact that, when asking for the approval of the Local Government Board of the appointment, Mr. Barclay's name could not be found in the Medical Register inquiries were made, and it transpired that defendant's real name was Bernstein, and he had changed it by deed-poll, but did not have the alteration made in the Register. This explanation was frankly accepted by the committee, but later still his further statements were regarded as so suspicious that, at the request of the committee, he attended before them. His replies were so unsatisfactory that he was dismissed the post and required to leave immediately. This he did without making any protest.

Dr. BARWISE was examined and cross-examined, and his narrative supported in the main Mr. Skinner's opening.

Mr. BARCLAY gave evidence. He said he filled the form up in a great hurry in his bedroom late at night, without due care, in order to catch the last postal clearance, he having received a telegram stating that the next day was the last on which his application was receivable. The insertion of the year 1913 instead of 1915 was an error. He had no wish to deceive, especially as he knew that any misstatement he might make would be sure to be discovered. Asked as to the original of the testimonial furnished by Dr. Howells, of which he sent what purported to be a copy, he said it could not be found, but that he had received three testimonials from that gentleman. He considered he was entitled to mention on the form the various hospitals at which he obtained permission to attend in order to improve his medical knowledge.

The Council deferred the consideration of the case until the following day.

THURSDAY, NOV. 28TH.

The Council having deliberated *in camera* on the case of Isaac Bernard Barclay, the defendant and the parties were called in, and the PRESIDENT pronounced the following finding: I have to inform you that the Council, after very careful consideration, have found that the facts alleged against you in the notice of inquiry have been proved to their satisfaction. You have therefore been guilty of what is therein stated, that, with the object of obtaining a certain appointment, you knowingly and falsely altered and misstated in your applications and in your letters facts so that they should be to your greater advantage. I need not impress upon you, further, the gravity of that finding, which amounts to a finding of repeated untruthfulness. Having regard, however, to your comparative youth, and to your obvious failure to appreciate the importance of strict truthfulness in matters relating to your profession, the Council have decided to suspend their judgment against you for one year—the judgment, namely, which would proclaim you guilty of infamous conduct and erase your name from the Register. They will require you, however, to attend here next May, and to produce at the session which will then be held evidence satisfactory to the Council as to your conduct in the interval, particularly in respect of truthfulness. And they will then require you, unless judgment is pronounced in the May session, to appear before them in November next to hear what their judgment is. They will also require you, before May next, to send in to the Registrar the names of two or three persons who know you and who are of standing and respectability, to whom the Council may refer for an opinion as to your character and conduct from this time forth.

The Council have to express their acknowledgments to the Derbyshire County Council for the clear manner in which they had performed a public duty in calling attention to this case.

The Case of Stanley Henry, M.B., Ch.B. Aberd.

The charge against this practitioner was as follows:—

"That being a registered medical practitioner while acting as locum tenens for Kenelym Cobham Edwards, of Tudor House, Sawston, Cambridge, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., and attending his patients, you were drunk, and thus incapacitated from properly carrying out your professional duties towards them. And further, on or about Oct. 20th, 1917, while drunk, and in the course of a professional visit to her, you made improper advances to one Mrs. Florence Elizabeth Gee. And in relation thereto you have been guilty of infamous conduct in a professional respect."

Dr. HENRY gave evidence in denial of all the charges, and detailed evidence having been heard from witnesses on both sides the President, after consultation with the Council *in camera*, announced that the allegations against Dr. Henry had not been proved and that the charge was dismissed.

FRIDAY, NOV. 29TH.

The Case of John Stanley Francis.

The Council considered the case of John Stanley Francis, a registered dentist, who appeared before the Council at the May session. There had been at that time three police-court convictions against him for disorderly or drunken behaviour. Further consideration of the case had been postponed until this group of sessions, and the Dental Committee now reported that no fresh notice of conviction had reached the Council, and that Mr. Francis had submitted testimonials as to his character and conduct in the interval, which were regarded as satisfactory. After deliberating *in camera* the President announced that the Council did not see fit to direct the Registrar to erase the name from the Register.

"Army Education Certificate" in General Education.

The PRESIDENT announced that the Council had passed the following resolution:—

"That the 'Army Education Certificate' in the subjects of general education, if attested by a University or other Licensing Body as sufficing for admission to its course of professional study, should be accepted for registration in the Students' Register."

The Case of Dr. J. M. R. Flament.

The charges against this practitioner were two. The first alleged that he had given an improper certificate enabling an Italian subject to avoid military service. The second alleged that he had supplied a patient, desirous of procuring her own miscarriage, with certain pills at a charge of £2.

Mr. Tindal Atkinson, K.C., appeared for the Ministry of Munitions, Mr. A. Neilson, K.C., for the defendant.

Mr. ATKINSON, in his opening statement, said Dr. Flament had been practising in Carlisle for eight or nine years. The man Coia, who figured in the case, was a dining-car chef who had a confectioner's business in Carlisle. He did not wish to serve in the Italian Army, and went to Dr. Flament to see whether he was fit. Dr. Flament gave the man a certificate to the effect that he had treated him four years ago for acute septic tonsillitis, leading to abscess formation, and that four months later he had treated him for diphtheria, which had left him subject to cardiac weakness and angina pectoris. But actually, said counsel, the man had been treated by Dr. Flament once only, and that was for the removal of tonsils; he had not had either diphtheria or angina. In consequence of his occupation Coia was not called up, and nothing further was heard of the circumstances until April, 1918, when Dr. Flament sent him a bill for three guineas, followed by a county court summons. Subsequently the man was examined by a medical board and passed Grade I., and was now serving in the Manchester Regiment. The second offence alleged was that a girl named Maggie Stalker, who was three months pregnant, was anxious that her parents should not know of her condition, and, with her sister, she called on Dr. Flament in October, 1917, to ascertain whether he could give her anything "to get rid of it." The doctor examined her and offered to supply her with some pills which, he said, would cost her £2. The girls said they could not afford that sum, whereupon he wrote out a prescription. This medicine, however, had no effect. She returned, and ultimately bought the pills, but these also were ineffectual, and the baby was born in April, 1918. Counsel did not affirm that what Dr. Flament had given her was noxious; the offence was that he allowed the girl to think that the drug would effect the purpose she desired.

Considerable legal argument ensued between counsel, Mr. Neilson contending that the case ought not to be taken because the Ministry of Munitions had not obeyed the Standing Orders of the Council, which required that the witnesses should make sworn depositions, whereas in this case there had been no statutory declarations. A further reason was that the second charge was a criminal charge, and that it should first be investigated by a criminal court before this Council had any jurisdiction.

After consideration of the points raised *in camera* the President announced that the decision was to over-rule both objections and to proceed with the case. They decided to take the second charge first.

Dr. FLAMENT, MAGGIE STALKER, and other witnesses having given evidence, the Council deliberated *in camera*. The President later announced that the Council found that the facts alleged in that part of the notice of inquiry had been proved to the satisfaction of the Council.

Mr. ATKINSON said his feeling was not to proceed with the other charge.

The Council then again retired, and later it was announced that Dr. Flament had been guilty of infamous conduct in a professional respect, and the Registrar had been instructed to erase his name from the Register.

The Council adjourned on Saturday, Nov. 30th.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut.-Comdr. C. D. Bell to be placed on Retired List.

Surgeon Lieutenant-Commanders to be Surgeon Commanders: M. J. Laffan, A. D. Spalding, A. McCloy, F. E. Anley, A. C. W. Newport, A. Davidson, G. D. Bateman, D. P. Chapman, R. F. MacMahon, W. N. Blatchford, G. C. Cross.

ROYAL NAVAL VOLUNTEER RESERVE.

J. Sharpe to be temporary Surgeon Lieutenant.

ARMY MEDICAL SERVICE.

Col. H. M. Adamson is placed on retired pay.

ROYAL ARMY MEDICAL CORPS.

Temp. Capt. A. G. Stewart to be acting Lieutenant-Colonel whilst specially employed.

To be acting Majors whilst specially employed: Temp. Capt. G. J. Arnold; Temp. Lieut. G. E. Froggatt.

Capt. W. W. Treves to be acting Major.

Temp. Major T. H. T. Frampton to draw the pay and allowances of his temporary rank whilst specially employed.

Temp. Capt. W. W. Wells relinquishes the acting rank of Major on re-posting.

Temp. Capt. S. E. Beech, Canadian A.M.C., to be temporary Major.

To be Captains: Capts. (from Special Reserve) F. D. Annesley, W. Tyrrell, J. H. Ward, R. C. Aitchison, W. Bird, W. S. Tyndall, J. Vallance, R. G. Martyn; Capts. (from Territorial Force) J. W. Burton, M. Morris, B. H. C. Lea-Wilson: Temp. Capts. F. Harris, G. S. Douglas.

Temporary Lieutenants to be temporary Captains: G. W. Middlemiss, C. H. Bryan, J. M. Hall, W. H. Gray, J. A. Berlyn.

To be Lieutenants, and to be granted the temporary rank of Captain: Capt. J. W. G. H. Riddel, from T.F.; Temp. Capt. P. H. Wells; Capt. C. O. J. Young, from Spec. Res.

Temporary Honorary Lieutenants to be temporary Honorary Captains: F. Coates, G. S. Peppers.

J. O'B. Hodnett to be temporary Honorary Lieutenant whilst employed with No. 8 Red Cross (Baltic and Corn Exchange) Hospital.

E. Whalley and J. N. Beadles, late temporary Lieutenants, are granted the honorary rank of Lieutenant.

Officers relinquishing their commissions: Temp. Major H. E. Durham (on ceasing to be employed); Temp. Capts. A. MacKintosh, A. Burton, B. H. S. Aylward, T. P. Gray, J. M. Twentyman, J. H. Jones, W. F. Wilson, W. C. P. Bremner, P. McDougall, J. S. Stewart, J. C. R. Braine-Hartnell, A. B. Blomfield, S. J. C. Fraser, E. M. Ashcroft, J. J. McMillan, H. Emerson, W. G. F. Johnson, F. Carson, A. Jones, J. H. Blakeney, H. J. Nightingale, N. C. Talbot, F. E. Keane, M. Aikman, C. E. Pepper (on account of ill-health contracted on active service, and is granted the honorary rank of Captain), H. C. Martin, A. L. Husband, R. McAllister, H. T. H. Butt, F. E. Easton, F. R. Smyth, J. A. Hayward, R. C. de C. Wheeler, T. Johnston (on account of ill-health, and is granted the honorary rank of Captain), L. B. Perry (on account of ill-health contracted on active service, and is granted the honorary rank of Captain); Temp. Lieuts. R. Buchanan, F. E. Clay, R. F. Twort, P. J. Flood, G. M. Crawford, J. Jamieson; Temp. Hon. Lieut. R. F. H. Jones (on ceasing to be employed at the Welsh Hospital, Netley).

SPECIAL RESERVE OF OFFICERS.

Capt. C. H. G. Penny to be acting Major.

Capt. W. V. Tothill is appointed for service under the Colonial Office.

Lieutenants to be Captains: H. M. Holt J. W. H. Grice, J. J. Conybeare, S. M. Riddick, L. C. Moore, C. G. Magee, J. W. Brash, A. B. Platt, W. T. G. Boul, K. J. A. Gillanders, W. B. Buer.

Lieut. H. M. Savery relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Lieutenant.

W. M. Casper, W. H. Simmons, G. F. Peters, W. A. Hawes, and R. A. Olphert (from University of London Contingent, O.T.C.) to be Lieutenants.

TERRITORIAL FORCE.

General List.—Capt. C. F. Searle to be acting Major whilst specially employed.

Capt. (acting Major) R. M. Wilson relinquishes his acting rank on ceasing to be specially employed.

Capt. J. Morham to be acting Major whilst specially employed.

Capt. C. R. Wallace is seconded for service under the Colonial Office.

Major G. R. Murray, 2nd Western General Hospital, is seconded whilst holding a temporary commission in the Army Medical Service.

Capt. A. G. T. Fisher, 2nd Southern General Hospital, to be acting Major whilst specially employed.

Capt. (acting Major) J. Patrick, 3rd Scottish General Hospital, relinquishes his acting rank, and remains seconded.

ROYAL AIR FORCE.

Medical Branch.

The following have received temporary commissions:—

As Lieutenants-Colonels.

Lieut.-Col. T. D. C. Barry, R.A.M.C.; Lieut.-Col. T. Philip, R.A.M.C. (T.F.); Major G. N. Biggs, acting Lieutenant-Colonel, R.A.M.C.; Fleet Surgeons (R.N.) H. E. South, H. J. Hadden, E. C. Cridland, E. O. B. Carberry, N. H. Harris.

As Majors.

Staff Surgeons (R.N.): R. R. Fasson, G. D. Bateman, A. W. Iredell, B. R. Bickford, D.S.O., C. F. Bainbridge, J. D. Keir, R. H. McGiffen, E. M. W. Hearn, L. L. Greig, A. Fairley; Majors (R.A.M.C.) E. G. R. Lithgow, W. G. Mitchell; Major (R.A.M.C., T.F.) A. H. Hogarth.

As Captains.

H. B. Porteous (late Captain, R.A.M.C., T.F.) as Captain and to be acting Major whilst specially employed.

Captains (R.A.M.C.) J. C. Hall, G. W. Clarke, F. Roberts, C. C. Fitzgerald, M.C., H. N. Holt, H. J. Orr-Ewing, H. M. S. Turner, J. J. Sinclair, W. H. Payne, J. E. Cox, A. W. Weston, H. Y. Riddell, R. J. Hearn, J. R. Russell, E. P. Chennells, A. J. O. Wigmore, J. Keenan, D. Wilson, H. B Smith, P. W. McKeag, A. F. Rook, F. Irvine, R. L. Roe, P. H. Hadfield, L. G. Davies, H. Harvey, A. J. Davoren, T. S. Rippon, C. Salkeld, F. H. Bowen, H. W. Pigeon, W. P. Nasmyth, E. Brown, W. H. Anderson, J. L. Whatley, A. Thompson, A. E. F. F. Huntsman, R. A. G. Elliott, W. F. Walker, E. W. Longden, W. B. Loveless, M.C., A. E. McCulloch, H. E. Whittingham, D. Cameron, J. E. Cable, H. N. Wright, J. S. Stevenson, L. C. Rivett, T. R. Hunter, E. P. Carmody, F. C. Jobson, D. Ranken, L. A. Walker, W. P. Whippell, R. H. Robbins, J. D. Bridger, R. H. Dixon, A. B. Rooke, F. C. Morgan, A. E. B. Sim, C. Visger, W. M. Jeffreys, L. C. Smith, E. R. Bastard, L. C. Blackstone, G. Lewin, W. A. Simpson, A. W. P. Pirie, A. H. Wade, W. Bannerman, A. B. Lindsay, J. J. O'Mullane, J. Gardner, T. E. Regan, C. J. Miner, C. E. Lowe, M. R. Dobson, O. May, M. Hocken, C. Peacock, C. P. Strong, A. H. L. Thomas, A. P. Woolright, W. F. Wilson.

Capts. (R.A.M.C., S.R.) W. Darling, M.C., N. C. Bazett, M.C., H. S. Baker, A. A. Atkinson, R. E. Bell, K. Biggs, R. D. Goldie, I. L. Waddell, J. Lawson, E. N. H. Gray, F. J. Murphy, S. H. de G. Pritchard.

Capts. (R.A.M.C., T.F.) A. MacLennan, J. M. Kirkness, F. C. Kempson, J. A. Parsons, J. P. N. Casey, W. H. H. Bennett, A. Scott-Turner, A. Leitch, J. P. I. Harty, C. Webb, F. J. P. Saunders, J. J. C. Hamilton, O. Gleeson, W. R. Kemp, N. R. Williamson, C. P. C. Sargent, H. J. Shanley, E. W. Gregory.

Capt. (temp., R.A.M.C.) P. J. Flood.

P. A. Hall, D. J. Cannon, C. L. McDonogh.

A. E. Panter (Permanent Surgeon, R.N.).

Surgeons (R.N.) H. R. B. Hull, A. R. Sharrod, E. J. Boyd, S. Robertson, P. M. Keane, H. G. Sutherland, R. S. Overton, H. W. Scott, R. G. Lyster, N. F. Lloyd, V. A. Playne, D.S.O., J. Rothwell, H. G. Anderson, R. H. Knowles, J. O. Watson, W. G. Robertson, J. C. H. Allen, J. P. Walker, C. H. Browne, G. H. Latham, J. Allen, V. Magee, J. R. Adam, E. Heffernan, J. A. Gordon, J. Grimoldby, J. M. Bangay, A. G. Holman,

H. H. Gellert, E. D. Granger, H. J. Bates, T. C. St. C. Morton, R. M. Dannatt, D. G. Boddie, M. R. O. Wilson, J. T. Thomas, J. Duffin, O. H. Gotch, C. E. Kindersley, T. R. F. Kerby, R. D. Neagle, R. W. Pritchard, T. R. S. Thompson, L. C. M. Wedderburn, K. B. Aikman, E. T. D. Fletcher, W. A. Pocock.

Surgeons (R.N.V.R.) C. J. G. Taylor, E. P. Punch.
J. D. Cherry.

As Lieutenants.

C. McC. Jones (Honorary Captain, Retired List) and to be Honorary Captain.

Lieuts. (R.A.M.C.) J. A. Johnson, P. M. Roberts, C. T. Costello. J. W. Brash (Lieut. R.A.M.C., S.R.).

J. Prendergast, T. J. X. Canton, S. G. Seymour, W. F. Sheil, V. I. Levy, C. C. Rowland, P. McDiarmid, A. Watson, H. J. Swan, J. W. Healy, A. Briscoe, M. M. Price, M. J. Smyth, S. G. O'Gorman.

Dental Branch.

Lieut. F. B. Stradling to be Lieutenant, from (T.).
A. G. Marks is granted a temporary commission as Lieutenant.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, London.
Practice of Surgery. By R. Howard, M.S. 2nd ed. 25*s*.

BAILLIÈRE, TINDALL, AND COX, London.
Papers on Psycho-Analysis. By E. Jones, M.D. 2nd ed. 21*s*.
Advanced Suggestion (Neuro-induction). By H. Brown, L.R.C.P. 6*s*.

BLACK, A. AND C., London.
Surgery at a Casualty Clearing Station. By Cuthbert Wallace, F.R.C.S., and John Fraser, F.R.C.S.E. 10*s*. 6*d*.
A Text-book of Midwifery for Students and Practitioners. By R. W. Johnstone, M.D. 2nd ed. 12*s*. 6*d*.

CASSELL AND CO., London.
Manual of Chemistry. By A. P. Luff, M.D., and H. C. Candy, B.Sc. 6th ed. 12*s*.

MACMILLAN AND CO., London and Canada.
The Soldier's First-Aid. By R. C. Wood. 2*s*. 6*d*.
The Canadian Medical Week, Hamilton, May 27th to June 1st, 1918. $3.00.

MASSON ET CIE., Paris.
Gun-Shot Fractures of the Extremities. By Joseph A. Blake, Lieutenant-Colonel, Medical Corps, U.S.A. 4 fr.
Syphilis, Paludisme, Amibiase, Traitement Initial et Cure de Blanchiment. Par P. Ravaut, Médecin des Hôpitaux de Paris. Préface du Professeur F. Widal. 4 fr.
Les Borgnes de la Guerre. Par le Dr. G. Valois, Membre de la Société d'Ophtalmologie de Paris. 12 fr.

OXFORD PRESS WAREHOUSE, London.
Field Sanitation. By R. St. J. Macdonald, C.A.M.C. 6*s*.

WRIGHT, JOHN, Bristol.
Our Baby. By Mrs. L. Hewer. 16th ed. 2*s*. 6*d*.

Communications, Letters, &c., to the Editor have been received from—

A.—Prof. F. W. Andrewes, Lond.; Dr. J. Adams, Lond.

B.—Messrs. Butterworth and Co., India; Dr. H. O. Butler, Lond.; Dr. W. J. Butcher, Worthing; British Chemical Ware Manufacturers' Association, Lond.; Dr. B. Baskett, Rayleigh; Mr. J. Burns, Edinburgh; Lieut.-Col. J. W. Bird, R.A.M.C.; Mr. J. Best, Lond.

C.—Dr. S. D. Clippingdale, Lond.; College of Physicians of Philadelphia, Sec. of; Mr. J. F. Colyer, Lond.; Mr. A. L. Clarke, Lond.; Sir James Cantlie, K.B.E., Lond.; Committee on War Damage, Lond.

D.—Mr. I. David, Colombo; Mr. P. Dow, Elgin; Prof. S. Delépine, Manchester; Major J. W. Downie, R.A.M.C.(T.); Decimal Association, Lond.; Mrs. A. Demetriadi, Tideswell.

E.—Epsom College, Lond.; Dr. A. C. Evarts, Jaffna, Ceylon; Capt. A. J. Eagleton, R.A.M.C.

F.—Capt. W. Fletcher, R.A.M.C.; Lieut.-Col. H. French, R.A.M.C.; Capt. H. J. B. Fry, R.A.M.C.(T.); Capt. H. L. Flint, R.A.M.C.; Factories, Chief Inspector of, Lond.

G.—Dr. H. M. Gay, Middlesbrough; General Medical Council, Lond., Acting Registrar of; Mr. P. C. Gibson.

H.—Dr. C. O. Hawthorne, Lond.; Dr. H. Head, Lond.; Sir Thomas Horder, Lond.; Mr. W. S. Handley, Lond.

J.—Mr. F. Jenner, Boscombe; Mr. M. H. Judge, Lond.

K.—Lieut.-Col. J. Keay, R.A.M.C.

L.—J. B. Lippincott Co., Philadelphia; Dr. A. E. T. Longhurst, Chandler's Ford; London Units of the Scottish Women's Hospitals; Mr. N. P. Laing, Lond.; Dr. S. C. Lawrence, Lond.

M.—Sir Henry Morris, Lond.; Mr. J. B. Macalpine, Manchester; Dr. H. C. Miller, Lond.; Dr. N. Moore, Lond.; Dr. A. A. Miller, Saint-Rome; Dr. I. Moore, Lond.; Dr. M. McNeill, Edinburgh; Mr. G. Mayall, Bolton; Dr. C. Muthu, Wells; Bde.-Surg. Lieut.-Col. A. B. R. Myers, A.M.S. (retd.); Capt. A. MacDonald.

N.—National Food Reform Association, Lond.; Mr. C. L. Nordon, Lond.

O.—Mr. J. Offord, Lond.; Capt. J. H. Owen, R.A.M.C.(S.R.); Sir Thomas Oliver, Newcastle-on-Tyne.

P.—Mr. R. D. Pedley, Lond.

R.—Dr. C. Rivière, Lond.; Dr. J. W. Rob, Weybridge; Mr. B. S. Rowntree, York; Mr. B. T. Rose, Birmingham; Capt. G. Riddock, R.A.M.C.; Royal Society, Lond.; Royal Society of Arts, Lond.

S.—Lieut.-Col. A. Street, I.M.S.; Société de Biologie, Paris; Mrs. H. M. Stansfeld, Lond.; Dr. E. I. Spriggs, Banff; Prof. W. J. Simpson, Lond.; Dr. G. A. Sutherland, Lond.; Dr. W. W. Seton, Lond.; Dr. P. L. Sutherland, Wakefield; Dr. R. H. Steen, Dartford.

T.—Mr. A. F. Theobalds, Buxton; Mr. A. H. Thompson, Lond.

W.—Major C. J. Wiley, A.A.M.C.; Dr. F. P. Weber, Lond.; Mr. J. M. Wadsworth, Leeds; Dr. A. Wylie, Lond.; Bt.-Major W. J. Wilson, R.A.M.C.(T.); Dr. W. H. Wynn, Bolton; Major H. W. Wiltshire, D.S.O., R.A.M.C.; West London Medico-Chirurgical Society; Dr. S. A. K. Wilson, Lond.; Dr. C. H. Whiteford, Plymouth.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, Dec. 12th.—Papers:—Dr. M. C. Stopes: The Four Visible Ingredients in Banded Bituminous Coal (communicated by Sir George Beilby) —Mr. H. C. Bazett: Observations on Changes in the Blood Pressure and Blood Volume following Operations in Man (communicated by Prof. W. M. Bayliss).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.
MEETINGS OF SECTIONS.

Monday, Dec. 9th.

ODONTOLOGY (Hon. Secretaries—F. N. Doubleday, G. Paton Pollitt, J. Howard Mummery): at 7.30 P.M.
Casual Communication:
Major Pickerill: Skin Grafting of the Buccal Sulcus.
Paper:
Major F. M. Wells, C.A.D.C.: Food Deficiency Products and their Relation to Calcification and Fixation of the Teeth.

Tuesday, Dec. 10th.

PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 5 P.M.
Paper:
Dr. Bernard Hart: The Methods of Psycho-therapy.

Friday, Dec. 13th.

EPIDEMIOLOGY AND STATE MEDICINE (Hon. Secretaries—William Butler, M. Greenwood): at 5.30 P.M.
Presidential Address:
Dr. E. W. Goodall: Enteric Fever in Flanders, 1914–1915.
Dinner will be provided for those Members who desire it at Pagani's Restaurant (7.30 P.M.). Members wishing to dine are requested to communicate with the Hon. Secretary (Capt. Greenwood, Ministry of Munitions, 7, Northumberland-street, W.C.2), not later than Dec. 11th.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W.1.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.
MONDAY, Dec. 9th.—8.30 P.M., Paper:—Lieut.-Col. E. F. Buzzard, R.A.M.C.: Epidemic Encephalitis.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
MONDAY, Dec. 9th.—5 P.M., Cantor Lecture:—Dr. J. C. Philip, O.B.E.: Physical Chemistry and its bearing on Chemical and Allied Industries. (Lecture II.)
WEDNESDAY—4.30 P.M., Paper:—Major-Gen. Sir Frederick Smith, K.C.M.G., C.B.: The Work of the British Army Veterinary Corps at the Fronts.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of Post-Graduate Course were given in issue of Nov. 30th.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.

THE THROAT HOSPITAL, Golden-square, W.
MONDAY, Dec. 9th.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.
Course of Lectures on Public Health Problems under War and After-war Conditions (each Lecture will be followed by a Discussion):—
WEDNESDAY, Dec. 11th.—4 P.M., Lecture X.:—Dr. E. Pritchard: The Organisation and Administration of Child Welfare Centres.

LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.
A Course of Eight Lectures on Psychoneuroses in Peace and War:—
MONDAY, Dec. 9th.—5 P.M., Lecture I.:—Capt. M. Culpin, R.A.M.C.: Diagnosis of Hysteria and Psychasthenia. History of Opinion.
TUESDAY.—5 P.M., Lecture II.:—Capt. M. Culpin, R.A.M.C.: The Unconscious. Conflict and Repression. The Censor.
THURSDAY.—5 P.M., Lecture III.:—Capt. M. Culpin, R.A.M.C.: Dissociation of Consciousness. Hypnosis.
FRIDAY.—5 P.M., Lecture IV.:—Capt. M. Culpin, R.A.M.C.: Working Theory: a combination of Janet and Freud. The Relation of Hysteria to Malingering.

ROYAL SURGICAL AID SOCIETY.—The annual meeting will be held at the Mansion House, London, on Monday, Dec. 9th, at 4 P.M., with the Lord Mayor in the chair.

PARIS FACULTY OF MEDICINE.—M. Lejars has been appointed Professor of Clinical Surgery in succession to M. Reclus (deceased); M. Jeanselme to the chair of Cutaneous and Syphilitic Diseases, following M. Gaucher (deceased); and M. Vaquez succeeds M. Widal (called to other duties) as Professor of Internal Pathology.

Appointments.

TOWNSEND, ARTHUR, M.D., has been appointed Medical Superintendent of Barnwood House, Gloucester, in place of Dr. James Greig Soutar, resigned.

Vacancies.

For further information refer to the advertisement columns.

Birkenhead Borough Hospital.—Jun. H.S. £170.
Birkenhead Union.—Res. Asst. M.O. £300.
Birmingham City, Pensioners' Hospital.—M.O. £500.
Birmingham General Hospital.—Res. M.O. £155.
Camberwell Infirmary.—Temp. Asst. Med. Supt. £500. Also Locum Tenens Asst. M.O. £7 7*s.* weekly.
Cardiff, King Edward VII.'s Hospital.—H.S. £200. Also Student Dresser. 52 gs.
Chesterfield and North Derbyshire Royal Hospital.—Jun. H.S. £150.
Croydon General Hospital.—Hon. M.O.
Dudley, Guest Hospital.—Hon. Surg. Staff.
Dumfries and Galloway Royal Infirmary.—Res. H.S. £150.
Folkestone, Royal Victoria Hospital.—H.S. £200.
Halifax County Borough Education Committee.—School M.O. £500.
Hampstead General and North-West London Hospital.—H.S. and H.P. £200.
Hellingly, Sussex, East Sussex County Asylum.—Temp. Asst. M.O. 7 gs. wk.
Leeds Public Dispensary—Two Hon. Dent. Surgs.
Manchester Northern Hospital for Women and Children.—H.S. £150.
Manchester, St. Mary's Hospitals for Women and Children.—H.S. £200.
Middleton-in-Wharfedale Sanatorium, nr. Ilkley.—Asst. Res. M.O. £325.
Nottingham General Hospital.—Female H.P. and H.S. £250.
Oxford, Radcliffe Infirmary and County Hospital.—H.P. £200.
Rochdale Infirmary and Dispensary.—Sen. H.S. £300.
Royal London Ophthalmic Hospital, City-road, E.C.—Refrac. Asst. £100.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Female Jun. Res. M.O. £150.
St. Bartholomew's Hospital.—Res. Anæs. £80.
St. Peter's Hospital for Stone, &c., Henrietta-st., W.C.—Jun. H.S. £75.
Sheffield Royal Infirmary.—Two H.S.'s. £150.
Southampton, Shirley Warren Infirmary.—Res. Asst. M.O. £250.
Stockport Infirmary.—Dispenser. £200.
Taunton and Somerset Hospital—Sen. Res. H.S.
Victoria Hospital for Children, Chelsea, S.W.—Sen. Res. M.O. £250.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £150 to £180.
Wigan Infirmary.—Sen. H.S. £250.
Wolverhampton and Staffordshire General Hospital.—Res. M.O. £200.
Woolwich and Plumstead Cottage Hospital Association.—Hon. Med. Staff.
Worcester County & City Asylum, Powick.—Temp. Asst. M.O. £7 7*s.* wk.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Kanturk, CORK.

Births, Marriages, and Deaths.

BIRTHS.

AVELING.—On Nov. 19th, at Dunstable, the wife of Captain K. J. Aveling, R.A.M.C., of Bushey, of a daughter.
CADDELL.—On Nov. 22nd, at Upper Fitzwilliam-street, Dublin, the wife of Major (acting Colonel) E. D. Caddell, M.C., R.A.M.C., of a daughter.
GOODWIN.—On Dec. 1st, at Mount Park-crescent, Ealing, the wife of Lieutenant-Colonel W. R. P. Goodwin, D.S.O., R.A.M.C., of a son.
HAMILTON.—On Dec. 2nd, at Princes-gate, the wife of Captain Keith Hamilton, R.A.M.C., of Egypt, of a daughter.
SCAWIN.—On Nov. 27th, at Selway, Fairford, Glos., the wife of Major Scawin, R.A.M.C., of a son.
THORNTON.—On Nov. 25th, at Cotswolds, Cosham, Hants, the wife of Captain Gerald E. Thornton, R.A.M.C., of a son.

MARRIAGES.

MARTYN-CLARK—RODGERS.—On Nov. 30th, at St. Paul's, Chichester, Robert Eric Noel Martyn-Clark, L.R.C.P. & S. Edin., to Ethel Maud, youngest daughter of the late C. J. Rodgers, Punjab, India, and Mrs. Rodgers, Handsworth Wood, Birmingham.
RIPPINER—HARVEY.—At Augustine Congregational Church, Edinburgh, on Saturday, Nov. 30th, 1918, Henry Anthony Rippiner, M.B., Ch.B., L.R.C.S. Ed., of Bradford, to Florence Maude Elizabeth Harvey, of Edinburgh.

DEATHS.

CROCKETT.—On Dec. 2nd, at his residence, Sinclair-road, Kensington, very suddenly, Edward Crockett, F.R.C.S., L.R.C.P. & S., aged 74.
LUSH.—On Nov. 28th, at 48, Avenue-road, N.W., from pneumonia, Percy J. F. Lush, M.A., M.B., B.Ch. Oxon., dearly loved husband of Lydia Lush, and youngest son of the late Rt. Hon. Lord Justice Lush, aged 60.
LYNCH.—On Nov. 26th, at Weymouth-street, W., Gilbert Lynch, M.A., M.D., M.R.C.P., aged 67.
STOPFORD-TAYLOR.—On Dec. 1st, from pneumonia following influenza, George Grayson Stopford Stopford-Taylor, M.D., of Rodney-street, Liverpool, in his 71st year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

FOOD, HEALTH, AND THE GENERAL ELECTION.

THE management of our food supplies, including their constitution and distribution, played an all-important part in the successful prosecution of the war; the subject touches all departments of life, and will be equally important in the days of reconstruction. With the advent of a new Parliament it is, therefore, reasonable that the attitude of prospective candidates towards the problems involved should be known, and with this object the National Food Reform Association, Danes Inn House, Strand, London, W.C., is putting a series of questions to all candidates for Parliamentary honours with regard to milk-supply, food adulteration, public kitchens, slaughter-houses, meals for children, the feeding of the Navy and Army, and other matters which have a direct bearing upon avoidable disease, preventive degeneracy, and upon the health of the people generally. Similar action was taken by the association during the elections of 1910, when on each occasion more than 100 candidates answered the questions in a sympathetic manner. In 1911, a meeting, convened by Dr. Christopher Addison and others, was followed by the formation of a Parliamentary Committee on Food and Health, whose activities have been suspended during the war. Its opportunities for useful work are now increased, and the support of Members of Parliament in sympathy with its operations ought to produce practical results.

THE MEDICAL MAN'S INCOME-TAX.

To the Editor of THE LANCET.

SIR,—I too have made application for the deduction from taxable income for subscriptions to the Royal Society of Medicine, THE LANCET and the *Practitioner*, and like "Medical Superintendent," whose letter appeared in your issue of Nov. 16th, was told that these items were not admissible deductions. The reason, given verbally, as I understood it, was that though these items would probably be accepted in a claim made under Schedule D they were definitely ruled out by the stricter legal terminology that appears to govern Schedule E. I then argued that as these subscriptions were made for the purpose of procuring the most recent professional literature in order to enable the doctor to keep himself up to date in his knowledge, and as this was a duty imposed on the doctor by his obligation to his patients, the items were properly most "necessary expenses," and, further, that their necessity was entirely unaffected by the particular schedule. The position would appear to be quite different from that in the case of Charlton *v.* The Commissioners of Inland Revenue, in which the reverend plaintiff was claiming relief for what was practically the voluntary purchase of a large ecclesiastical reference library.

The official to whom I applied appreciated my point, but said that in his opinion the Act was against it. It would be a graceful concession were the income-tax surveyors to receive instructions from the Commissioners to make all permissible deductions apply to both schedules equally. The cash value at issue is negligible, but the principle is worth a fight.—I am, Sir, yours faithfully,

Nov. 26th, 1918. A WHOLE-TIME MEDICAL OFFICER.

To the Editor of THE LANCET.

SIR,—Referring to the letter of "Medical Superintendent" in your issue of Nov. 16th the editorial view there expressed has been confirmed by authority higher than that of a surveyor of taxes. The real test is: Are the payments wholly and exclusively laid out for the purposes of the profession? Subscriptions paid to professional associations from which benefit is (or may be) obtained are usually allowed; but this does not, of course, cover subscriptions to private clubs. The cost of illustrated papers on waiting-room tables is not objected to. The renewal of professional books and instruments is always allowed. The word "renewal," of course, covers the purchase of a new edition to replace an earlier edition of the same book. But in my opinion it goes further and covers expenditure required to keep the medical man's library abreast of new developments, just as in the case of instruments. A medical man or a lawyer is not, as regards books, in the same position as a clergyman. In the medical and legal professions books are tools.

The outstanding income-tax case of Usher's Wiltshire Breweries is referred to officially as giving the high authority of the House of Lords for the proposition that, in calculating profits for income-tax, outgoings may be deducted, though they were not necessary, if they were commercially expedient. I am, Sir, yours faithfully,

Edinburgh, Nov. 27th, 1918. JOHN BURNS.

"DR. WISE ON INFLUENZA."

UNDER the auspices of Sir Auckland Geddes, President of the Local Government Board, a kinematograph film has been prepared by Mr. Jos. Best, B.Sc., on influenza. The film, which takes about 15 minutes to show, is entitled "Dr. Wise on Influenza." The doctor on the screen lectures to the audience on the precautions to be adopted by a person suffering from influenza, in the patient's own interest, as well as the interest of those he comes in contact with. The exhortations of the doctor are emphasised by the kinematograph pictures in a popular vein, designed with the intention of leaving a marked impression on the audience. The film is prefaced by an appeal from Sir Auckland Geddes to the public to assist the health officials by adopting the precautions indicated. The Board have a certain number of copies of the film which they are prepared to lend to medical officers of health for exhibition purposes. Application for the loan of a film should be addressed to the Medical Officer of the Board. Medical officers of health might find that the proprietors of halls would be pleased to show the film if requested.

DIARIES FOR 1919.

WITH the advent of the New Year thoughts naturally turn to diaries. Before the war diaries were far more abundant and cheaper, and perhaps not valued as they would be to-day. The first we have received is a block diary for 1919 with a tear-off blank page for each day, measuring $5\frac{1}{2} \times 4\frac{1}{4}$ inches, on which as many memoranda can be written as on a postcard, for example. The front cover has a "window" which permits the date and day always to be seen as each slip is detached. Medical men desiring it should make early application to the Anglo-French Drug Co., Ltd., Gamage Building, London, E.C.1.

THE MEDICAL PROFESSION AND THE PETROL RESTRICTIONS.

To the Editor of THE LANCET.

SIR,—Now that there is some sign of the petrol restrictions being abated I think it is not inopportune to direct the attention of the medical profession to an injustice under which they have laboured for some time past. I refer to the price they are being charged for motor spirit. I am informed that No. 2 war spirit is sold at 3*s.* 8*d.* a gallon, and a rebate of the Excise duty on this brings it—the net price—to the doctors, of 3*s.* 5*d.* per gallon. The commercial traveller or managing director of a firm, who uses his car for business purposes, buys No. 2 war spirit, *duty free*, at 3*s.* 3*d.* per gallon, so that he gets it for business purposes at 2*d.* a gallon less than does the doctor. The argument is adduced that the doctor sometimes uses his car for other than business purposes. I am sure we all wish that we had the time and the opportunity to do a little "joy-riding," but it is many a long day since we were able to do so.

I really think that now the general public are to be allowed to use their cars for pleasure purposes—and it is to be hoped that the present exorbitant price of motor spirit will drop to somewhere within the range of the peace-time price—this question of the cost to the doctor of his car for professional purposes might well be reopened.

I am, Sir, yours faithfully,

Nov. 26th, 1918. G. P.

WANTED, A HOME.

To the Editor of THE LANCET.

SIR,—A young married relative wishes to be received as a paying guest in a thoroughly comfortable home, and I have thought that through the medical profession she might hear of what she wants. Our colleagues in country towns often know where such an inmate could be received with mutual pleasure. It is not a question of a doctor's family.

I am, Sir, yours faithfully,

Dec. 2nd, 1918. M.D.

HEREDITARY ABNORMALITY.

To the Editor of THE LANCET.

SIR,—In connexion with this interesting subject (see THE LANCET, Nov. 30th), may I remind your readers of the remarkable instance brought by Dr. H. Drinkwater before the Royal Society of Medicine (Pathological Section) in February, 1917? Dr. Drinkwater's patients, two brothers, each presented symmetrical and bilateral phalangeal synostosis of both hands and both feet. Both patients were in the direct line of descent from John, Earl of Shrewsbury, who fell in battle in 1453. When the Earl's body was exhumed in 1874 it was found that his lordship had suffered from the same abnormalities as his present-day representatives, although thirteen generations had intervened between them.

I am, Sir, yours faithfully,

S. D. CLIPPINGDALE.

Holland Park-avenue, W., Nov. 30th, 1918.

THE FOOD FACTOR.

AT the Royal Institute of Public Health on Nov. 27th Alderman C. Spencer, Director of National Kitchens, traced the intimate connexion between the proper nutrition of the people and their health and productivity. In any scheme for protection against injury and disease local authorities should, he said, bear in mind the true principles of national feeding. In a town of 140,000 inhabitants, for instance, there were 4000 married women going out to work in factories, with the result that their children only obtained "scrap meals." Experience showed that where children got their food from a national kitchen weight regularly increased, while those fed on scrap meals often lost weight. Household methods of cooking had been proved inefficient and wasteful, and were often inimical to the health of the cook. A national kitchen should, in the lecturer's opinion, form an essential part of any new housing scheme. At present there were 800 voluntary and national kitchens in the country, practically all of them paying concerns. The effect of good food on productivity was shown by the fact that the presence of a canteen maintained the curve of output in the factory, which previously had been apt to fall after 11 A.M.

THE PRESENT EPIDEMIC AND THE PRESSURE ON PRACTITIONERS.

IT is necessary to call the attention of the public to means for alleviating the pressure on civil practitioners and enabling them to cope successfully with the excessive work entailed by the present epidemic. Experience seems to show that the most effective means has been the exhibition in a prominent place in the doctor's surgery of a notice saying that it would be impossible to guarantee attendance on patients the same day unless messages were left before a certain hour in the morning. Experience derived from many areas has convinced the General Purposes Subcommittee of the Central Medical War Committee that press notices have done little good compared with the above method.

THE MENACE OF THE MURINÆ.

DURING the year 1917, we learn from the Medical Officer of the Local Government Board, 38,106 rats were trapped in the London Docks. 2912 were examined and 2271 found to be *Mus decumanus*, 578 *M. rattus*, and 129 *M. alexandrinus*. One each of the two former were plague infected. The latest publication of the British Museum (Natural History) trustees, No. 8 of the Economical Series, deals with *Rats and Mice as Enemies of Mankind*, and is from the pen of M. A. C. Hinton (London Natural History Museum, B. Quaritch and Dulau and Co., 1*s.*). Its appearance is timely in view of the Rat Order of the Ministry of Food. In addition to a brief account of rats and mice in this country, their habits and breeding, the pamphlet deals with their relation to food and health, and suggests measures by which they can be controlled if not exterminated. An appendix contains notes on the structure and classification of the family of Muridæ, of which the Murinæ (rats and mice) are a sub-family, with a key to the British species. References for further reading and the excellent illustrations add to the value of the handbook.

NUTRIENT MEDIA IN THE SHOP.

To the Editor of THE LANCET.

SIR,—At this time one may see at many of the large "stores" little tables ready set out with attractive-looking sweet jellies which customers and their children partake of; they are not covered over, and are usually displayed where hundreds of people pass by, otherwise, no doubt, the latter might not realise they wanted jelly. I see larger savoury jellies also set out in "dressed provisions" departments. If a report on the number and variety of influenza and other disease germs that settle to the square inch on the exposed surfaces of these jellies were published, it might give consumers pause.

I enclose the names of two "emporiums" (which doubtless are only among many) where my statement as to the exposure of these refreshments can be verified.

I am, Sir, yours faithfully,

Nov. 24th, 1918. V. A. D.

Enquirer.—No official figures are available, but we understand that 10 years ago the names of about 800 women were on the Medical Register, and that the number now is between 1500 and 2000, out of a total of nearly 44,000.

Priority.—The subcommittee of the C.M.W.C. dealing with demobilisation has suggested certain principles for the guidance of the Ministry of National Service. The medical men of the T.F. and S.R.—numbering 1500 or so—mobilised at the outbreak of the war will have priority. Matters which will be taken into account in determining early demobilisation are age, civil state, financial and other responsibilities, and the type of practice. Other things being equal, the man over 45 will have preference over the younger man, married over single, private practitioners over whole-timers.

Observations ON THE MEDICAL EXAMINATION OF AVIATION CANDIDATES.

BY G. A. SUTHERLAND, M.D. EDIN., F.R.C.P. LOND.,
LATE MEMBER OF THE SPECIAL MEDICAL BOARD, ROYAL FLYING CORPS.

INTRODUCTORY.

THE aim of the special medical examination is to select from amongst civilians, cadets, and officers those who are constitutionally fit, or who appear to be fit, for flying duties. In order to arrive at correct decisions fitness for his work is also necessary in the examiner. Unfitness on his part may lead to two undesirable results: first, candidates who are physically fit may be rejected; and, secondly, candidates who are physically unfit may be passed. There is no doubt that in the past the flying services suffered from both of these results.

It has been assumed too readily, and not by the lay public only, that it was an easy enough thing to decide as to a man's fitness for any duty. Experience in the flying service has shown that it is by no means easy to do so as regards flying work. It is impossible to estimate how many physically fit men have been rejected for the flying service. The decision depended on the examiner's skill and experience, and on the standards he had been taught or had had laid down for him. Too often these were cast-iron standards, with a fine halo of antiquity about them, but quite unsuited for present-day purposes. The employment of the same standards led to the admission of many unfit men into the flying service. These results are more serious in this service than in the case of the older services, because a flying man's training is a particularly expensive one, and when he fails or breaks down it usually means that his flying days are over for ever.

The Scope of the Examination.

There are certain things that the examiner must bear in mind. It is not the case that flying duties require special qualifications other than those called for in many branches of sport and mountaineering and in many country occupations. If, for instance, we take the public-school boy who has been captain of his football team and has held his own in the class-room we require no elaborate examination with special tests to estimate his physical fitness for flying. At the other extreme we have the civilian lad who is town-born and town-bred, whose practical experience of athletics has consisted in looking on at football matches, whose working hours have been passed in an office, and his leisure hours in the streets or a music-hall. Merely by inspection one can decide at once that he is quite unfitted for flying work. Between these two extremes there is a large intermediary class requiring careful medical examination.

The examiner should also know that the diseases and disorders of flying men are not different from those met with in the civilian population. The contrast between the two lies in this, that the causes of flying disabilities are not present in ordinary life. The results are the same in both cases. Thus air-sickness bears a very close resemblance to sea-sickness. The man who gets sea-sick when the vessel leaves port on a calm day gets very much worse when the ship is storm-tossed. The pilot who gets sick at straightforward flying gets very much worse when the plane is buffeted about by pockets of wind or when stunting is indulged in.

While it is extremely desirable that the examiner should know how the causes of flying disorders will affect the candidate before him that knowledge is not yet forthcoming. It is asking too much of the examiner at the present stage of flying to expect him to recognise the proper flying temperament or any inherent tendency to develop disabilities in the air. What he should concentrate on is the selection of those only who are physically and mentally fit. The rest is guess-work.

Special Tests.

Attempts have been made both in this country and in America to standardise the examination by means of fixed tests. Some would allow the tests, or even a single test, to dominate and decide the examination. So far, however, no tests have been found which can be accepted as reliable, and most of them require much more testing, especially by experience, before they can be accepted as definite standards.

One must remember how fallacious tests have proved in the past. A systolic murmur heard at the apex was for long considered an infallible test of heart disease and disability. Its presence has led to the rejection of countless fit men for army and navy service. It was only after long experience and bitter controversy that this test was recognised to be of no value in deciding as to the condition of a man's heart. It was useful in calling for a careful examination of the heart, of the significance of the murmur, and of the presence or absence of any associated cardiac lesion or functional disability. This is the value of all special tests, that they direct one's attention to certain organs or functions which require specially careful examination. For this purpose they are to be welcomed and used as finger-posts, but not to be regarded as impassable barriers.

Guiding Principles.

Instead of endeavouring to standardise the tests I think that an attempt might be made to standardise the examiners. If certain guiding principles were drawn up and accepted the carrying out of these principles would bring all the examiners into line. If the examiners viewed the medical problems involved from the same standpoint the results of the examination would tend to be uniform.

In the following pages certain broad principles are suggested, as the result of my experience, which may serve as a guide to the medical examiner who is beginning this work. The examiner does not start with an aptitude for assessing the fitness of a candidate for air duties. It has been my experience and that of most trained examiners I have talked to, that a somewhat long and arduous apprenticeship has been necessary before a decision can be given with confidence. That has been partly due to the fact that we had no guiding principles and that the problems set were entirely new. This period of apprenticeship will be considerably shortened if the examiners are agreed about the principles of examination and the standards to be adopted, and can convey them to those who are beginners.

It is not advisable for the examiner to bring too many preconceived ideas with him on commencing this work. He may in the course of his professional work have acquired certain views which have not been submitted to the criticism and judgment of his compeers. He may feel inclined to reject or to pass a candidate on grounds which would not commend themselves to other examiners. Such views and such decisions may usefully form a subject for discussion at the Examiners' Board, but should not be carried out in practice at an early stage of the work. On the other hand, the new examiner is perfectly justified in declining to allow his judgment to be over-ruled because of some test, with an authoritative name attached, or because of some scientific toy which is stated to be an automatic pilot-finder. He is perfectly entitled to demand some definite proof of the validity of all such tests, and some more evidence of their value than that of the name behind them, or the fact that they are said to be amongst the latest scientific discoveries.

Essential Qualifications for Air Service.

The examiner must consider what are the special duties and dangers which will be experienced in a flying career. A pilot will have to carry out his duties in a new element, or at least in one which varies much in its composition from the stable atmosphere he has been accustomed to live and work in. He will have to acquire the complete control of a car moving through space in such a way that all his controlling movements become as automatic and unconscious as those of an expert bicycle-rider. He has, further, to be prepared for active fighting in the air, the attacking of enemy air-craft, and the protection of his own aeroplane and of his own life. No small requirements these.

From the medical standpoint I consider that there are certain necessary qualifications to meet these conditions successfully, or at least with the prospect of success. The first is a good physique; then comes a sound cardio-vascular system; and, lastly, a strong and stable nervous system. These are the essential qualifications required to meet the special conditions of the air service, on the principle that where the strain falls the resisting power must be strong.

The necessity for these qualifications is not based on theoretical considerations only. Practical experience at the Invaliding Board of pupils under instruction who have failed, and of officers who have broken down from accidents, or stress of service, or inability to continue flying, has supplied strong confirmatory evidence. The symptoms complained of are numerous and various, such as fainting, giddiness, loss of consciousness, loss of control, exhaustion, headache, sleeplessness, loss of confidence, &c. An examination of those who present such symptoms and who are not suffering from active illness or gross injury shows that there has been usually an exhaustion or a giving out of the cardio-vascular or the nervous system. This is the outstanding fact in the vast majority of cases, and it is an indication to the examiner that he will do well to concentrate on these two systems in determining the fitness of a candidate for the flying service.

The examiner should bear in mind that while he has to exclude candidates with gross disease of a disqualifying kind it is not from gross disease that the flying men break down and become useless. Apart from the direct injuries or wounds of the service and the effects of previous or recent illness, it is functional disabilities which bring flying men before invaliding boards and which swell the numbers of the "permanently unfit for further flying." Some organ or some system has given out and the flying power has gone, although the officer may be perfectly fit for general service on the ground. It is this tendency to functional disability and the importance it assumes in flying work that the examiner must remember. His duty is to seek out and discover, if possible, any such tendency. Sufficient evidence of its presence may be obtained in the previous history of the candidate or in the medical examination carried out on the above lines.

Limitations of the Examination.

The examiner will also bear in mind the limitations of his examination. It is primarily and essentially a medical examination to determine physical fitness. It is not expected that the examiner will be able to pick out the future cream of airmen at this early stage, any more than at an entrance examination at the university the future leaders of the medical profession are to be recognised. The examiner passes all those who come up to his standard of physical fitness and leaves to the future training and experience the development of the individual's flying ability.

As already stated, the examiner must not be expected to decide as to which candidates have "the flying temperament" and which have not. It may be apparent at once, but, on the other hand, it is an elusive qualification and may be entirely latent until developed under actual flying experiences. Attempts to determine at the examination as to what heights the candidates should fly and what line of flying work he is best suited for are, to say the least, premature. These questions can be settled only with knowledge and precision as the result of training and experience.

The mentality of the candidate must be considered, but a low grade does not disqualify unless the examiner considers that it is so low as to amount to mental defect or deficiency. The quick, alert examiner must not mistake the slow cautious youth for an imbecile. The mental calibre, if not up to flying duties, will be sufficiently tested at the examinations which the candidate has yet to pass as a cadet before entering on actual flying, and to that test the medical examiner may safely leave the doubtful cases.

Points to be Determined.

A careful examination must be made to determine the presence of any gross or disqualifying disease. That applies in every medical examination, and the candidates must be found "fit for general service."

Over and above this the examiner has to try to determine how the important vital organs and tissues are doing their work and how they are likely to respond to conditions of stress and strain. From his examination of the human machine at rest and under ordinary conditions he has to attempt to gauge how the mechanism will work under entirely different and much more strenuous conditions. It is not a question merely as to the sounds and size of the heart, but how the whole cardio-vascular system is to stand strain and what are its reserve powers. It is not a question of percussion resonance, or breath sounds about the lungs, but how efficiently the respiratory functions will be carried out in the flying sphere. Above all, has the candidate a nervous system which is strong and stable in itself and over which he can exercise control under novel and trying experiences?

This determination of the functional powers and of the reserve powers of the vital organs is difficult, but it is the chief problem which the examiner must try to settle. He must find out wherein the candidate is weak and wherein he is strong. It is in this connexion that single and standard tests fail, because their significance as regards the candidate's functional powers has not yet been ascertained.

The examiner has to form his decision on purely medical grounds. While appreciating a candidate's keenness to become a flying officer, which may tend to cloud his memory as to some points in his medical history, the examiner must not allow such keenness to counterbalance any evidence of physical disability. While dealing courteously with any special influences from the powers that be in favour of a particular candidate, he must not allow any such influence to affect his judgment or decision. An examiner recognising his professional responsibility in deciding on the fitness of a candidate for the arduous duties of the air service should give his decision without fear and without favour.

PREVIOUS HEALTH AND ILLNESSES.

The importance of a careful investigation into the previous health and illnesses of a candidate cannot be overestimated. No examiner, however experienced, can deal sucessfully with his work if he omits this, and bases his opinion solely on tests and physical examination. It may be said that the candidate will conceal important facts in his eagerness to be passed, and many do. But with the examiner noting down his replies and cross-examining him the truth will be elicited in the majority of cases. In this inquiry also stress is to be laid on a history of special symptoms, which may be of importance in directing attention to particular organs in the physical examination which is to follow, or may be of such importance as to render the candidate unfit for flying.

The examiner, for his own guidance, might lay down some such rule as the following: Any form of constitutional or acquired disability which has rendered, or which may render, the candidate liable to attacks of loss of consciousness, lapses of memory (mind a blank), fainting, loss of vision (hemianopia, temporary amblyopia), or prostrating headache should be a definite cause of rejection.

As regards special diseases the following list comprises those about which particular inquiry should be made: Asthma, malaria, syphilis, rheumatic fever and chorea, digestive disturbances, migraine, petit mal, epilepsy, nervous debility, neurasthenia, shell shock, concussion with unconsciousness, chronic joint disease (especially of the knee), and the diseases of active foreign service. Several of these form an absolute bar to acceptance, while others must be considered from the point of view as to whether recovery has been complete or not.

The complete examination of the flying candidate requires an investigation as to his fitness from a general surgical standpoint. A special examination must also be made as to the condition of the eyes, nose, ear, and throat. The candidate's vision must be tested, and this is the only part of the examination where definite standards have to be employed. It is to be hoped that the standard of normal binocular vision will soon be established. The examination of the ear, including the labyrinth, brings up the question of vertigo and balancing. On this subject my colleague, Mr. Arthur Cheatle, has introduced various testing exercises, which are useful not only as bearing on labyrinthine efficiency but also as indications as to the nervous tone and stability generally.

The internal organs must be examined in order to exclude organic disease and to test their functional activity. We shall consider more particularly the two most important systems—namely, the cardio-vascular and the nervous.

THE CARDIO-VASCULAR SYSTEM.

Our system of examination here proceeds on somewhat different lines from those of the naval and army services. Under the term cardio-vascular system are included the heart, the arteries, the veins, and the capillaries. Two entirely separate abnormalities are recognised—namely, organic disease and cardio-vascular debility.

I.—ORGANIC DISEASE OF THE HEART AND BLOOD-VESSELS.

Cardiac Murmurs.

Organic disease of the heart is not common amongst candidates, but none the less it must be carefully examined for. The definitely disqualifying lesions, which are generally accepted in all the services, are mitral stenosis, as shown by a presystolic murmur at the apex, and aortic regurgitation, as shown by a diastolic murmur at the base Expressing this in another way, one may say that a definite murmur occurring during the period of diastole is a cause for rejection. It is not necessary to discuss why these lesions should be viewed so gravely, because medical opinion seems for once to be unanimous on the subject. As regards our own experience amongst candidates previously examined we have found a tendency to diagnose a mitral presystolic murmur when it was not there and to overlook an aortic diastolic murmur when it was present.

Apart from these two conditions, little attention is paid to murmurs, systolic in time, which are heard about the præcordia, unless they are the result of rheumatic fever or are accompanied by definite pathological changes in the heart. A healthy youth who has never had rheumatic fever and who has never had any cardiac symptoms is not to be rejected because a systolic whiff or murmur is heard about the apex or the base. In the majority of the young candidates a careful examiner will detect a systolic murmur, with its maximum intensity over the pulmonic area; this is regarded as physiological and not pathological. A basal systolic murmur due to aortic stenosis is very rare—no case has occurred in my experience—and this lesion should not be diagnosed in the absence of clear evidence of hypertrophy of the left ventricle.

If a systolic murmur is present at the apex and is regarded as due to mitral regurgitation, and if there is a history of rheumatic fever, it will probably be advisable to reject the candidate. This decision would not be based solely on the mitral lesion, but also on the tendency to recurrence of the rheumatic disease. If a systolic murmur at the apex is regarded as due to mitral regurgitation, in the absence of a history of rheumatism we base our verdict on the presence or absence of any changes in the heart as the result of the mitral lesion. If the heart is not enlarged, or hypertrophied, as regards the right or the left ventricle, and if the sounds there are clear, and if the candidate has had no symptoms of cardiac disability, he may be regarded as possessing a functionally sound heart. In other words, a mitral lesion is weighed according to the effect it has produced on the musculature of the heart and the heart's efficiency, and if no effect can be detected the cardiac lesion may be ignored.

Cardiac Irregularity.

Cardiac irregularity is not to be regarded as an indication of cardiac disease. The most of the irregularities met with amongst candidates are not associated with any form of heart disease.

The most common form is "the youthful type of irregularity," a sinus irregularity which manifests itself by a quickening of the cardiac rate during inspiration, and a slowing during expiration. Every examiner should make himself familiar with this type of irregularity, which is extremely common amongst candidates, and has in the past been a common cause of rejection for the public services. This irregularity is of no significance or importance.

The occurrence of extrasystoles or premature contractions is another not uncommon form of heart irregularity, and is usually manifested by an occasional "missed beat" discovered while one is auscultating the heart or feeling the pulse. This form of irregularity is of no importance taken by itself. If the candidate is conscious of the "missed beat" and says he can feel his heart stop and go on again, he probably has that sensitive type of nervous system which is potentially neurasthenic.

In practice no candidate is rejected for any form of sinus irregularity or because of the presence of occasional extrasystoles. The more important forms of cardiac irregularity usually associated with an abnormal rhythm of the heart, such as auricular fibrillation or auricular flutter, heart-block, &c., are very rarely met with, but are to be regarded as evidence of disqualifying heart disease. Any form of paroxysmal tachycardia is a cause for rejection.

Area of Cardiac Dullness.

If there is marked dilatation of the heart with a persistently rapid rate there is probably serious myocardial disease or infection, and the candidate should be rejected. A slight alteration in size or shape from what is usually described as "the normal heart" must not be unduly emphasised. Candidates are not to be rejected because the apex beat is on or a little outside the nipple line, or because the normal area of cardiac dullness is slightly enlarged. At the age the candidates present themselves such variations in the size of the heart are common and are not of themselves of any special importance. On the other hand, cardiac hypertrophy, usually associated with dilatation, is always pathological. If there is a definitely heaving action of the right or left ventricle, a cause for this must be looked for, and full consideration given to the underlying cause and its probable effects. Dilatation of the heart must not be confused with displacement of the heart. In many cases the apex beat may be found outside the nipple line when the candidate is standing, and drops back within that line when he lies down.

The Arteries.

Organic disease of the arteries in the form of arteriosclerosis is not often met with; it is sometimes present in the older candidates. Arterial thickening, with or without tortuosity of the vessels, is probably always the result of some form of toxæmia. If associated with renal disease or retinal changes, or cardiac changes, or definite symptoms, it is clearly a cause for rejection. If it is present without any other evidence of disease, and the candidate is physically sound, he may be accepted.

A high systolic blood pressure—namely, 130 to 150, as estimated by the sphygmometer—is often found amongst candidates, and is not of itself a cause for rejection. If the examiner considers the blood pressure too high at systole or too low during diastole, or that the "pulse pressure" is unsatisfactory he must not reject the candidate on any one of these grounds unless he finds symptoms or signs of organic disease of the heart or blood-vessels. Striking variations in the sphygmomanometric reading are met with in connexion with cardio-vascular debility and in the absence of any organic disease.

II.—CARDIO-VASCULAR DEBILITY (C.V.D.).

This is a condition which has come to occupy a position of great importance in the examination of flying candidates. As a clinical entity it may be said to have established itself owing to the war, but there is no agreement as to the underlying cause or causes of the condition. We shall therefore deal with it from a clinical point of view.

In determining the symptoms and signs and their importance we have derived evidence from two sources—namely, (1) the condition as it is met with in civil life; and (2) the condition as it is met with in the case of flying officers who have broken down with similar signs and symptoms. A study of these two conditions will help one in determining the presence of cardio-vascular debility in candidates.

Clinical Experience in Civil Life.

In civilian practice clinical experience has marked out a type of individual characterised by certain cardio-vascular phenomena, present more especially during youth, but persisting in many cases through life. There is a tendency to breathlessness, to præcordial pain, to faintness or fainting, and to a rapid and thumping action of the heart under slight provocation. The faintness is often induced by a change of posture from the horizontal to the vertical, as on rising in the morning. The subject of this condition is in a chronic state of tiredness, and slight exertion soon brings on a feeling of exhaustion. Active games or heated rooms bring giddiness, fainting, or vomiting. He will state that he suffers from "a weak circulation," that his hands and feet are usually cold, that he has chilblains in winter, and that he stands cold weather badly.

On examination we find no evidence of organic heart disease. There may be an exaggerated sinus (respiratory) irregularity, or a rapid action of the heart, or some dilatation, or systolic murmurs heard over the præcordia. The pulse is a poor one in the sense that the tension is badly sustained. There may be exaggerated pulsation in the large vessels of the neck and in the abdominal aorta. The peripheral circulation is defective, as shown by the dusky

and cold hands and lobes of the ear. There is a tendency to venous plethora, which is present also in the large abdominal veins. Functional albuminuria of the postural type—that is to say, due to a change from the recumbent to the erect position—is often present.

These are some of the chief features of cardio-vascular debility as we have recognised it in civilian life.

Cardio-vascular Debility in the Flying Man.

Let us turn now to the symptoms and signs presented by flying men who have broken down under instruction, or as the result of a minor crash, or during active service.

Amongst the common symptoms are tiredness and a sense of exhaustion easily induced by any exercise, faintness, giddiness, blurring of the vision, headache, rapid action of the heart and palpitation, præcordial pain, and breathlessness on exertion. In a large number of these cases we shall find the evidences of a defective circulation which we have described in our civilian type.

It is not necessary to assume that all these conditions are the result of a flying career, or that they denote any special aerial malign influence on a healthy individual. Rather should we infer that the new surroundings and stress had acted on an individual already possessed of cardio-vascular debility, in a more or less latent form, so as to bring out the symptoms in a striking and disqualifying way. Those who have been engaged in the study of a similar (if not identical) condition known as "soldiers' heart" (D.A.H.) have been struck by the same fact. Hume and Parkinson have found that in a large number of cases of D.A.H. symptoms of a similar kind had existed during civilian life, and had only been intensified by army service, or intercurrent illness.

Significance of the Symptom-Complex.

It may be said that we are not dealing here with any known disease. This may be admitted, but a symptom-complex such as we are dealing with has its value. If in civil life men who have this symptom-complex are found to be limited in their activities according to the degree of its manifestations we are entitled to lay some stress on it. If in the flying service many men who break down more or less easily are found to show this symptom-complex in a marked degree, we are justified in considering it of some importance. If civilian experience and that of medical invaliding boards are to be made of practical value in the flying service it is of the greatest importance to apply them at the examination of candidates. Bearing these facts in mind the examiner will seek to determine the functional power of the cardio-vascular system in a candidate. Does it show any evidence of weakness? Will it probably be strong enough to stand the causes of disturbance associated with air work, or will it probably break down under the strain?

The results of the inquiry into the candidate's previous health as to such symptoms as fainting and faintness, shortness of breath, &c., must be considered in connexion with the cardio-vascular system. The information supplied may or may not be correct, but if there has been any evidence of former cardio-vascular debility, it will usually be possible to obtain it by cross-examination. For various reasons boys who suffer from cardio-vascular debility are often sent to school with the statement that they are "delicate," or have "a weak heart," or "must not overdo games."

Examination of the Heart.

From an examination of the heart itself we learn little of its efficiency from the cardio-vascular point of view. The sounds may ring clear and true, but the cardiac action may be weak. The sounds may be blurred or reduplicated, but no evidence of a defective circulation is revealed. The apex beat may not be felt, and yet the ventricular contraction may be a powerful one. On the other hand, cardiac pulsation may strike (apparently) strongly over a considerable area of the chest wall, simply as the result of nervous excitability.

The cardiac efficiency is to be tested by its response to effort, and more especially by the degree of breathlessness induced by physical exercises. As a matter of practical experience, it may be pointed out that at the age under consideration the cardiac action is seldom inefficient, and a breakdown of myocardial contractility is not to be anticipated. The disturbances which may arise in the heart are not primarily myocardial in origin, but are most commonly nervous.

Along with other organs the muscular tissues of the heart seem to suffer secondarily under stress from a loss of tone or power, but the ordinary physical examination of the heart does not supply any definite information as to the presence or absence of this condition. While evidences of organic heart disease are absent, this type of individual shows in great variety and with great frequency systolic murmurs about the præcordia.

The Heart Rate.

A difficulty which presents itself in the case of these young candidates is that the excitement and anxiety of a medical examination leads to a rapid cardiac action. We find not uncommonly a rate of 110, 120, or 130. If this were the usual rate of the candidate's heart he would probably be rejected. As his anxiety may persist through the whole examination the increase in cardiac rate may be maintained. As very few individuals possess any control over the cardiac rate we cannot always succeed in checking the rate by calming words to the candidates.

If the increased cardiac rate is due to nervous excitement there will usually be a diminution if the candidate is placed at rest on a couch and is asked to breathe slowly and deeply. Another test employed is as follows. The candidate, lying comfortably on a couch, is asked to breathe very slowly and very deeply. The apex is then carefully auscultated for any change in rate during inspiration and expiration. If the heart rate shows a respiratory variation, more especially a definite slowing during expiration, then in all probability the excited action is not cardiac in origin, but arises from some influence outside the heart, usually nervous and temporary. The reason for this conclusion is that the slowing of the heart is vagal in origin, elicited by respiration, and such slowing does not occur in hearts quickened by myocardial disease. If, on the other hand, the cardiac rate shows no change under rest or deep respiration there is probably some permanent disturbing factor at work, such as toxæmia or latent infection. In such a case the candidate cannot be accepted and must be refused or deferred for a time.

If the heart rate is found to be moderately increased on examination, up to 100 or 110 beats per minute, and if after exercise this rate is not increased or is definitely lowered, one may conclude that the disturbance is of nervous origin and no real importance.

The quickening of the heart rate is usually of nervous origin, and as such must be taken into consideration with the other signs of nervous instability which may be found. Amongst candidates it is a very common condition, and as a medical examination has often a similar effect on seasoned warriors, too much stress must not be laid on this condition when it is nervous in origin and temporary. On the other hand, a slow pulse—namely, a rate of 60 to 70—is usually a good sign. Its presence at once excludes the numerous causes of disturbance or disease leading to a rapid cardiac action. It is also helpful in enabling one to judge more accurately as to the state of the circulation generally than when an excited and rapid heart action is present.

The Pulse.

Passing from the heart to the larger blood-vessels, we find valuable information supplied by the pulse. In a good type of candidate the pulse at the wrist is of good volume, of well-sustained tension between the beats, and does not show any sudden rise or fall during the beats. Elevation of the hand while the pulse is being felt may show a brief falling off in strength, but this soon passes off and the pulse quickly steadies itself whatever position the candidate assumes and whether the hand is lowered or raised.

In another type of candidate (C.V.D.) we find a pulse of a different kind. The volume may be good but the tension is badly sustained. The beat may be strong, may appear stronger than usual, but it is quick and snappy, and the tension falls abruptly. We seem to have a sudden filling and a sudden emptying of the vessel, which in well-marked cases is strongly suggestive of the collapsing pulse of Graves's disease or aortic regurgitation.

Suppose this condition is present when the candidate is lying on a couch with the arm at his side. If the arm is raised vertically so that the radial artery at the wrist is some 2 feet above the shoulder we find the above conditions are

intensified to a marked extent. If the tension of the pulse (horizontal) seemed rather poorly sustained there is no doubt about it when the arm is raised, and, further, there is no recovery of tension while the arm is raised. It is found useful to make this test by feeling both pulses (radial) at the same time, the candidate's one arm being raised and the other horizontal or pendant. One can then feel clearly the differences in the two pulses which has just been described.

In extreme cases of C.V.D. we often find that the pulse falls away so markedly with the arm elevated as to become almost imperceptible. The beat itself is so weak and feeble that one cannot make out a diminution in tension between the beats. Whatever the cardiac driving power may be, its force seems to have been largely dissipated before it reaches the wrist. The healthy type of candidate seems to have circulatory organs always "on duty," as it were, ready to respond to any change in the circulatory conditions, and able to maintain a steady circulation under altered conditions. The C.V.D. type, on the other hand, seems to have a circulation always "off duty," as it were, never ready to respond to a sudden change in the circulatory conditions, and unable to main a steady circulation under altered conditions.

Readings taken by the sphygmomanometer in a number of C.V.D. cases vary much, but they seem to show that the systolic pressure is normal or raised while the diastolic pressure is normal or lowered. In other words, the "pulse pressure" is usually above 50, and may be considerably increased.

The Peripheral Circulation.

As regards the peripheral circulation, we expect a good type of candidate to present signs of a healthy circulation in the hands and lobes of the ear. The colour should be light red or ruddy, and after pressure the superficial circulation should quickly restore the normal colour, while the extremities should be warm under the ordinary conditions of examination.

In a C.V.D. subject we find that the hands are dusky and cold, and that on pressure the pale patch fades away very slowly to be replaced by the same blue colour. When the limb is elevated above the head the force of gravity slowly removes the cyanotic hue from the extremity, which may become quite pale in colour. One is not surprised to find that chilblains are common in these subjects or that they suffer much from cold hands and feet.

A few candidates have shown or given a history of white and cold hands instead of blue. This points to a condition of vaso-motor spasm in the arterioles rather than relaxation. It is a more crippling condition as regards the use of the hands, and a history of "white fingers" or evidences of the condition should disqualify, as it would probably be intensified under flying conditions. We have met with some flying officers permanently disabled for air work by this condition.

Venous Plethora.

A tendency to venous plethora undoubtedly exists in these C.V.D. subjects, but is difficult to determine by physical signs at an examination. It is probable that the symptoms in these cases are elicited under exertion or excitement by overfilling of the abdominal veins, the so-called "splanchnic flooding" and fainting. The venous plethora in the abdomen is probably associated with the lack of tone in the abdominal muscles, to which reference will be made later. It may be shown in some cases, if the examiner presses both hands on the abdomen, by a swelling up and pulsation in the veins of the neck.

Conclusions Reached from the Physical Signs.

The above may be termed the physical signs by which we seek to determine the presence or absence of C.V.D. In themselves they do not indicate inability to perform the physical duties of ordinary life, nor do they imply ill health, although they may follow an illness. But the examiner's task is in a sense a prophetic one, and the question to be decided is as to whether a candidate showing the above condition of the heart and blood-vessels has a strong and stable cardio-vascular system, fitted for the duties of a flying officer. To this the answer is that he has not, so far as we can judge from civilian practice, from army experience, and from experience of flying officers who have broken down.

Practical Tests.

It must be admitted that practical tests as regards the efficiency of the cardio-vascular system leave much to be desired. A candidate labouring under the excitement of a medical examination is not in a condition to show his best or his usual form at testing exercises. Before he has been asked to do anything we may notice the quickened pulse-rate and the quickened breathing, of nervous origin. The tests which we should like to apply are not available in the limited accommodation of the examination room. The tests we do employ tend to be of an artificial character, and such as the candidate has not been accustomed to do, and such as he would often do after a little practice. Hence the late comers in the day may have had time to practise successfully the tests which the early comers have described to them!

One tests the effect on the heart rate and respiration of a definite amount of physical exertion such as that of swinging the raised arms down to the toes four times, or rising from the floor on one foot on to a chair and back again four times. The pulse-rate and respiration-rate are then counted, and the time taken until these rates return to normal (or to the candidate's rate at rest) is noted. A quick return to normal, say under 30 seconds, is regarded as a healthy sign, while a delay of over two minutes is suggestive of C.V.D. Perhaps more valuable than the heart rate is the quickened and even laboured breathing which follows this moderate exercise in many cases of C.V.D.

A greater amount of physical exertion may be employed by making the candidate march quickly up and down the room, or up and down a stair, and noting the effect on the pulse and respiration. No absolute standards can be given, but the examiner notes whether the result appears to be normal or excessive.

Another test employed has been that of breath-holding. The candidate, when seated, is directed to expire as deeply as possible, to inspire fully, and then to hold his breath as long as possible while the nose is clipped or closed with the fingers. A minimum of 45 seconds has been suggested as the pass standard. There is a scientific preciseness as well as plausibility about this test which has rendered it popular with some examiners. A failure to attain to the pass standard has been ascribed to an inability to obtain sufficient oxygen owing to a low "vital capacity," or to hypersensitivity, or to diminished oxygen pressure, or to the fact that the candidate uses up his available oxygen more rapidly than a normal man. There is evidently room for more scientific inquiry to determine what the test really does imply and mean, and its value as a test for aviation purposes. A high standard in breath-holding would seem to be more called for in sub-aqueous than in aerial pursuits.

A Difficulty in Exercise Tests.

One great difficulty in establishing any satisfactory exercise tests for the efficiency of the cardio-vascular system lies in this—that other systems are necessarily brought into action. If the exercise test is unsatisfactory the question arises as to how far the result was due to the cardio-vascular system and how far to some other system.

For instance, if after a brisk walk the candidate's pulse-rate remains unduly high, and his breathing is unduly laboured, we shall have to distinguish between the effects of exercise on (1) the cardio-vascular system, (2) the respiratory muscles, (3) the muscles involved in locomotion, (4) the pulmonary organs, and (5) the nervous controlling and coördinating centres. We have not been testing the cardio-vascular system alone, but have also of necessity brought in those other complicating factors.

When we come to discuss the method of summing up the results of the candidate's examination we shall find that this difficulty is often solved by the fact that, as a rule, evidences (symptoms and physical signs) of C.V.D. do not stand alone, but are accompanied by signs of debility in other tissues and organs. A very common cause of rejection is a combination of cardio-vascular and nervous debility.

THE NERVOUS SYSTEM.

Gross organic disease of the brain or spinal cord is not often met with amongst candidates. An old lesion like infantile paralysis, which may render a man unfit for general service, is no bar to flying work, provided that the functional efficiency of the affected limb or limbs meets the requirements of the flying service.

Disturbances of nervous function, either masked, as in the form of petit mal or asthma, or open in the form of over-excitability or instability, are very common amongst candidates. Any pre-existing nervous weakness is apt to be intensified by the conditions of a flying officer's life. The youth who stammered as a boy, but has been free from the habit for some years, resumes it when he has been in the flying service for a time. The youth who never stammered before, but whose father had a stammer, develops the condition under the stress of flying work. The subject of a previous nervous breakdown at school will probably have another similar attack after a slight crash. In this part of the examination the history of any previous nervous disability, personal or familial, plays an important part.

Points Considered in Examination of the Nervous System.

As the nervous system is exposed to considerable strain in the flying service, we wish to have some tests to determine the *nervous tone* and *staying power*. The task, however, is not easy owing to the absence of any recognised standards. We have to recognise amongst the candidates a great variety of temperaments. We meet with the level-headed and calm, the keen and excitable, the somewhat dull and irresponsive, the youthful Hercules with sluggish mentality, and the absolutely stolid type. Each and all of these types may do good flying service in different departments of the work. Some of the excitable may become notable flying men; some of the phlegmatic may carry out routine duties for months without achieving anything brilliant, or, on the other hand, may become exceedingly good pilots.

The point to which we have directed attention in the selection is not whether a man is nervous and excitable, or dull and phlegmatic, but what *control* can he exercise. Before making a speech a public speaker may be intensely nervous, but, when he begins, calm and clear owing to the control which he has learned to maintain over himself. So in the case of nervous and excitable young men, the question is as to how much control they already possess, or are capable of developing, in view of the strain that lies ahead. It is impossible to pass a complete and final judgment on this question at one medical examination. Those who have been accepted and passed should also be carefully observed as to the above points at the flying schools by the C.O.'s and instructors, who see them at work under the actual conditions of service.

Another point which seems to have been brought out by experience is this, that the nervous type of individual, the man without much self-control, is apt to crack up readily under the stress of the minor accidents of training—e.g., a bad landing or a slight crash. There may be no physical injury, but the nervous control, such as it was, seems to be quickly and irretrievably lost. It is clear that a very large number of flying officers who have broken down never possessed a nervous system of even ordinary stability.

One must allow for the effects of excitement on the nervous system under a medical examination. This can usually be estimated at its proper value by putting the candidate at his ease. It may be considerably increased if the candidate has been kept waiting for some hours, or has been travelling all night, or is convalescing from acute illness. These points must be inquired into and taken into consideration.

Signs of Nervous Instability.

The condition of the deep reflexes is tested. As a rule they are fairly active in healthy candidates. An over-excitability and exaggeration of the knee-jerks and elbow-jerks has come to be regarded as an indication of nervous debility. When a brisk muscular response follows on tapping anywhere in the extremities there is positive evidence of an over-excitable nervous system. We do not find that these conditions stand alone, but that the candidate shows other signs of nervous instability. We have also found them present in flying men who have broken down in the service from nervous causes.

A persistent dilatation of the pupils with an excitable manner is regarded as suspicious of undue nervous excitability.

General tremulousness is not to be reckoned as a good sign, although it may be present merely as the result of excitement at the medical examination. A candidate is asked to hold out his hands and to close his eyes. The presence of tremor in the fingers and eyelids is looked for, and if this is constant and pronounced it is regarded as indicative of nervous instability.

Considerable emphasis is laid on the results of the balancing test, because healthy young men have no difficulty in balancing themselves steadily first on one foot and then on the other with the eyes closed and the hands at the sides. Many break down hopelessly from the start, and seem quite unable to maintain any stability on one foot. A man of this type will show other signs of nervous or neuro-muscular instability sufficient to cause his rejection. The pass standard requires that a candidate should be able to stand quietly and steadily on one foot for 15 seconds.

A candidate who sleeps soundly is usually healthy. On the other hand, a man who sleeps badly and who wakes unrefreshed and tired will usually have associated (as cause or effect) a weakened nervous system.

SUMMING-UP AND ASSESSING.

A certain number of candidates are eliminated because of some definite medical or surgical disease, or of their previous medical history, or of other clearly disqualifying condition.

Another group fall out, not from actual disease, but because the physique or cardio-vascular system or nervous system is so much below par as to show clearly that failure in the flying service would certainly follow.

Borderland Cases.

These two classes do not, as a rule, present much difficulty, but there is a third group of what may be termed borderland cases, in which the assessing of the candidate's fitness is no easy task. There may be no reasonable objection to his undertaking ground duties, but what we have to do is to form an estimate as to his stability or staying power for air work. Is the candidate suited for the special work during the training period and for the stress and strain of active service which will follow? As already stated, we are unwilling to base our decision on rigid single tests, first because it is easy to overestimate their importance, and, secondly, because we have not sufficient knowledge as to what they portend. The path of prognostic medicine is strewn with their discarded and dishonoured remains. In these borderland cases we lay most stress on the summing-up of the conditions found in connexion with the physique, the cardio-vascular system, and the nervous system.

The result of experience has been to show that if one of these systems is weak as a whole, functionally considered, there are several or many evidences to be found on testing. For example, if we find a weak flabby pulse we shall also usually find other evidences that a steady, strong, and effective circulation is not being maintained. If we find that a candidate is very unsteady and tremulous, we shall probably obtain other evidences of an unstable and imperfectly controlled nervous system. Further, as a matter of experience we find that when there are signs of cardio-vascular debility in a candidate the examination also reveals signs of nervous debility, and *vice versa*. It would appear that the two systems are often functionally weak in the same individual, so that in weighing the evidence we have to combine the results of the examination. A candidate may have certain signs of nervous weakness, not sufficiently pronounced to lead to his rejection, but when signs of a defective circulation are also present the combined weaknesses are sufficient to condemn him.

Not infrequently when the general physique of the cases which appear to be unsuitable from some systemic weakness is considered we shall find that it is definitely below the high standards and often distinctly poor.

Some Exceptions: Deferring Decision.

While the above experiences are common there are, naturally, exceptions met with. The candidate may have some weak points as regards the cardio-vascular system but be quite satisfactory as regards physique and nervous stability. He may be apparently weak in some points as to nervous control, but he may show a most satisfactory physique and cardio-vascular system. In such cases we should regard the weak points as being counterbalanced and compensated for by the strong ones, so far as the assessing is concerned.

"Be to his faults a little blind and to his virtues ever kind."

It is to be recognised that at the age we are dealing with the full development of the candidate has often not yet been

reached, and that while functional development in some parts of the body may be complete, it may be incomplete in others. It is also to be recognised that the effects of recent illness, of night travelling, or of the excitement of a medical examination, may cause temporary and local effects which must not be too much emphasised. For these reasons we do not reject candidates because of some evidences of defective functional powers, provided that they are counterbalanced by the presence of healthy functions generally, or can be explained by some temporary disturbance.

In some cases a final decision has to be deferred. A candidate suffering from active illness (for example, tonsillitis), or from recent acute illness, is not at his best, and if there is any doubt as to his suitability a final decision should be deferred until a further examination after his recovery. The case of the undeveloped boy presents some difficulty. He may be all right as far as he goes—but he has not gone far enough. It would be courting disaster to put him to work and strain for which he is not yet physically fitted. The examiner should state definitely about such a candidate that he is too undeveloped for flying work, and defer a final decision for 6 or 12 months. This period ought to be spent in physical training.

In the course of examination certain remedial defects or diseases may be discovered in otherwise eligible candidates which render them unsuited for air duties. In such cases the necessary treatment is to be ordered and the final decision deferred until a later examination, when the result of treatment can be estimated.

Suitability of Candidates for Various Kinds of Work.

It is not advisable to ear-mark the candidates who pass the medical examination for the special line of flying work they are fitted for. In the past we have made a distinction between those who were passed as pilots and those who were passed as observers. The latter were not quite up to the standard of the former, medically considered, and it was held that in the air the pilot had the more responsible post as, in addition to the control of his plane, his own life and that of the observer depended on his skill and judgment and self-control. On the other hand, if the observer broke down in the air the results would not probably be very serious. With the great intensification of aerial fighting that has taken place, and with the great nervous strain now imposed on both pilot and observer I am inclined to think that only first-class men should be passed as observers. Their individual responsibility may not be so great as in the case of pilots, but their duties call for physical and mental fitness of the highest order.

As regards the question of nervous strain there is no doubt that an observer, flying with a pilot he does not know or in whom he has lost confidence, may be much more strained, in a passive way, than the pilot whose mind is occupied with the immediate duties of flying his machine. He is so strained, in fact, in many cases that he is anxious to qualify as a pilot himself, in order to get relief at duties which he believes to be less onerous. Experience has confirmed this view, and many observers by becoming pilots—often very good ones—have probably been saved from a nervous breakdown. For these reasons, at the medical examination we are disposed to establish the same pass standard for pilots and for observers.

There are many types of work and many types of machine in the air force, but at the examination stage it is necessary to pass only first-class men. After qualifying they will be classified according to the type of work they show special aptitude for, and for which their physical powers and skill are best suited. Some will remain as home instructors, others will go in for scouting machines, bombing machines, low-flying machines, high-flying machines, &c. So far as their aptitudes, medically considered, are concerned, we think that there should not be an attempt at the examination to define them, or to impose any limitations as to the height at which a candidate should fly, or to specify the exact nature of his future work—e.g., artillery pilot, ferry pilot, &c. These matters can only be satisfactorily settled after the pilot has finished his regular course of training, when the commanding officer, the instructor, and the medical officer will have evidence before them of what actual experience has shown regarding each individual pilot. The examiner will do well to refrain from attempting to guess on limited knowledge what this actual experience will be.

TRENCH FEVER CACHEXIA.

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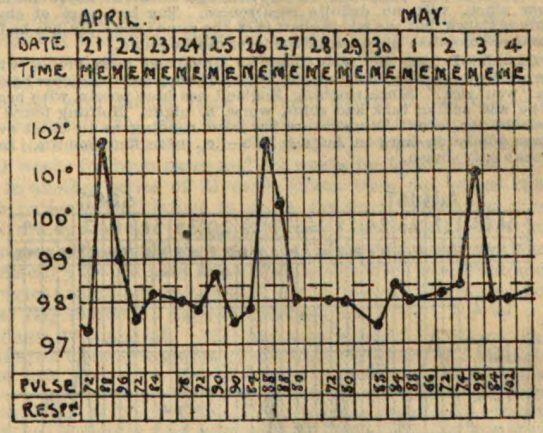
Trench fever has now become a "recognised disease" in the Army, and an enormous wastage of man power has been due to it.

Types of Trench Fever.

Major J. W. McNee, who early in the war did such good work on the condition, originally described two types of the disease—(1) the short type, and (2) the long one. The short type was characterised by a continued fever which lasted some eight days, then came down by crisis and was usually followed by a single short relapse, and then the disease was over. The long type, on the other hand, commenced with a short spell of fever, lasting perhaps four days, but this was followed some five to ten days later by a relapse of one or two days' duration, and such relapses usually recurred a number of times, and might do so for weeks or even months. Major McNee showed by inoculation experiments that these types were due to the same infection, in that volunteers inoculated with the blood of one type might sicken with either form of the fever. He stated that the long type of trench fever averaged four to six weeks, during which recurrences occurred at intervals, but he also said that "oscillation of temperature, with returns of pains and headache, may recur for weeks and (rarely) months." We now know this to be very true, as in hospitals in England we often come across such cases. Case 1 (Private M.) (see Chart 1) is an example of such, but they may recur for much longer than three months.



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The Army Commission upon Trench Fever described three forms of the fever[1]: (*a*) Relapsing class, (*b*) single short bout and no relapse, (*c*) prolonged initial fever. Class (*a*) had two subclasses: (1) Regularly relapsing with normal intervals, and (2) irregular relapsing, in which the intervals between relapses are not so definite, or if the intervals are definite the temperature remains above normal. They state that the "irregular fever may last for several weeks," and one chart given in their report shows it still present on the sixtieth day, after which the patient was evacuated to England.

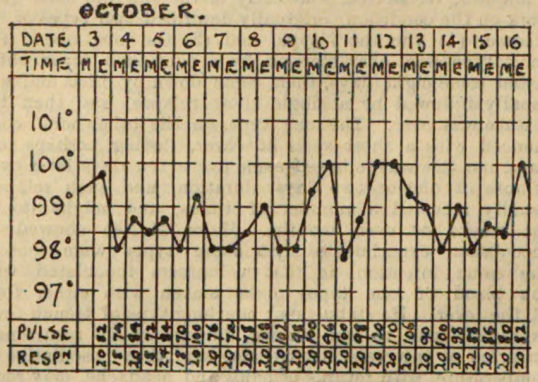
The American Red Cross Commission on Trench Fever, in their recent report, say that cases may last for 60 days or more, and the Hampstead Trench Fever Commission found the blood infective as late as the seventy-ninth day.

Cachectic Cases.

In one's work in the Canadian hospitals in England it is a very common thing to come across men who are debilitated and anæmic and suffer from pains, chiefly in the shins. If the temperature of these men be taken it is often found (although not in every case) to be running a little too high. If one looks at a *normal* temperature chart endways the

[1] Brit. Med. Jour., Jan. 19th, 1918, p. 91.

tracing tends to run below the 98·4° line; in other words, the normal temperature—so-called—is usually below the so-called normal temperature line marked on the charts. If, now, the temperature chart of a case such as we are describing be looked at in the same way, the average temperature will be seen to be set a degree or two higher than the normal, with occasional rises to 100° or perhaps 101°. A glance at the medical history sheets of these men will usually show that they were invalided from France as cases of P.U.O. or as trench fever, it may have been months or even over a year before.

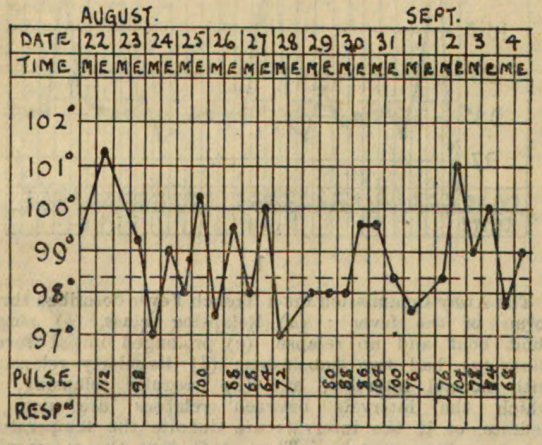


2

Cases 2, 3, 4, 5, and 6 are examples of this chronic fever, and they could be duplicated indefinitely:—

CASE 2.—Private S. (See Chart 2.) Took ill on July 28th, and was invalided as trench fever. Since then felt poorly, with aching shins. Temperature has remained on the average about 2° above normal ever since, with no definite recurrences. The last part of chart only is shown, but the whole chart is of the same type. He has had it for three months; no cause for the fever can be found.

CASE 3.—Private H. (See Chart 3.) Invalided from France with trench fever on May 23rd and had been suffering for some days before he "went sick." Since reaching England has been poorly, with headache and aching back and shins, worse at night. Nothing found to account for fever. Temperature has been running as in chart ever since admission here on August 10th—i.e., over four months. Last week's only shown.



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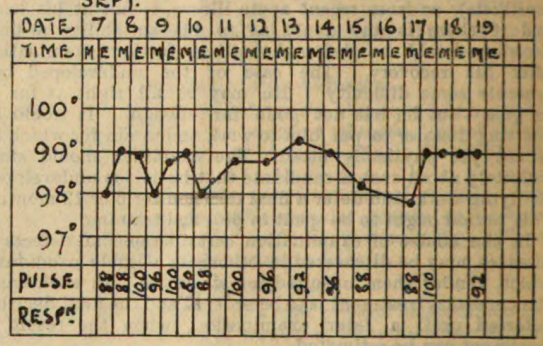
CASE 4.—Private M. (See Chart 4.) Invalided from France on April 19th last with trench fever; had been ill some time before. Ever since has been in same hospital and temperature running above normal at some time in the day, as shown in piece of chart reproduced. Still feeling poorly and has aching shins. Nothing found to account for condition.

CASE 5.—Private G. (See Chart 5.) Was invalided from France as trench fever, Oct. 17th, 1917, and had been ill for three weeks before that. Has been feeling out of sorts ever since, with sore shins that get easier on exercise. His medical history sheet shows that at various hospitals he had slight fever. Was treated for the fever in February and March with "606" (Wassermann was negative), but without benefit. Now, Sept. 30th, at a Canadian hospital, and chart of temperature for last week shows slight irregular fever. Nothing found to account for it. Thus he has been ill for at least a year, and is no better now than when he was invalided in October, 1917.

CASE 6.—Private E. Complains of pains in legs and small of back. Duration one year. History: Two weeks ill in France and invalided 29-10-17 as "trench fever." *Epsom*: Medical history sheet says 30-1-18. "On admission pain in legs below knee. No swelling. Urine negative. Remedial gymnastics; some improvement. Fit for discharge." No. 11, *C.G.H., Moore Barracks Hospital*: 27-6-18—15-7-18. M.H.S. "Headache, pains in body and shins. Temperature elevated. Recovery. Transferred to Cooden Hospital. Urine negative." Now has Major Carmalt Jones's areas of hyperæsthesia. Temperature, August 13th to Sept. 11th, was 97-99·2°.

Diagnosis.

In instances of slight rise of temperature, like those here shown, tuberculosis is naturally suspected, but in the great majority of the cases that I have carefully investigated in this respect there has been nothing to confirm the suspicion.



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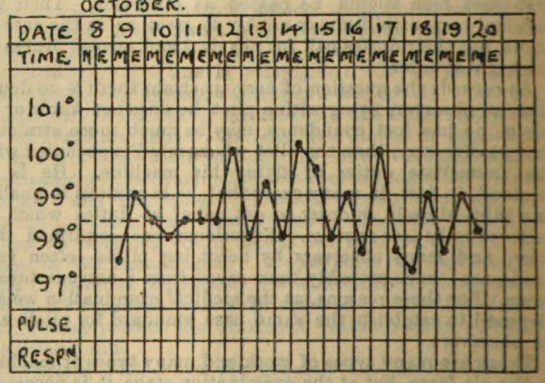
During some two years spent in base hospitals in France early in the war I saw many cases in which we were puzzled to account for just such slight chronic fevers, and, looking back on them now, it seems to me that they were examples of this trench fever cachexia, as one might well term it.

I mentioned above that the rise in temperature is not present in every case, because it is a common thing to see a man with the same appearance and same aching shins as the others who have no fever. Such cases may correspond to the afebrile type of malarial cachexia.

As regards the other symptoms of this chronic condition, one finds commonly that the spleen is enlarged, so that it is just palpable, and it is abnormally hard. I have observed no skin eruption. Blood examinations have shown nothing



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except a slight anæmia and occasionally a slightly raised leucocyte count. There is usually a relative rise in the lymphocytes, but according to D. L. Tate and J. W. McLeod, *M.C.*,[2] such a relative rise in lymphocytes is the rule in healthy soldiers.

I was much interested in a paper by Major D. W. Carmalt Jones[3] in which he shows that skin hyperæsthesia of a peculiar distribution is frequently present in trench fever, and as far as a few observations of my own (made since reading this paper) go this is so in most of these chronic cases. Thus, Private E., Case 6, showed hyperæsthesia exactly as described by Major Jones. These areas correspond to the eighth cervical, first and eighth dorsal, and all the

[2] THE LANCET, April 27th, 1918, p. 603.
[3] THE LANCET, Oct. 5th, 1918, p. 443.

lumbar segments of the cord. Major Jones states that this distribution of hyperæsthesia is found in malaria and trench fever, and in no other disease. If these findings are confirmed it may be of great help in the diagnosis of these chronic subjects of trench fever, who are apt sometimes to be considered as "lead swingers" or, at least, exaggerators, when they are really suffering from a definite and disabling condition.

The question of how long this chronic trench fever may last cannot yet be settled. The longest duration that I have yet noticed is a little over one year, but it is probable that it may go on for much longer than this. Patients are usually not very ill—only in low general health, with various pains—and so they are soon transferred to a convalescent camp, or put in low categories, where their slight fever is apt to be overlooked. Since I have asked at our convalescent hospitals that such cases have their temperatures taken regularly I have found a number who would otherwise probably have been missed. The resemblance of this condition to malarial cachexia is, in many ways, so great that I venture to suggest the name—trench fever cachexia—for it.

A NOTE ON THE VALUE OF GERMINATED BEANS IN THE TREATMENT OF SCURVY,

AND SOME POINTS IN PROPHYLAXIS.

BY H. W. WILTSHIRE, *D.S.O.*, M.D. CAMB., F.R.C.P. LOND.,

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I.—*The Value of Germinated Beans in Treatment.*

IN describing the distribution among foodstuffs of the vitamines needed for the prevention of beri-beri and scurvy Dr. Harriette Chick and Miss E. Margaret Hume[1] have demonstrated by animal experiments that germinated pulses are richly endowed with antiscorbutic vitamine, and they make the following practical suggestion: "To prevent scurvy, if a supply of fresh fruit or vegetables is not procurable, germinated pulses should be added to the diet."

Many Serbian soldiers were treated for scurvy in this hospital in 1917, and when the disease became prevalent again this year an attempt was made to test the value of these germinated pulses in treatment. Unfortunately, no suitable seeds were forthcoming for some time. All the lentils supplied were decorticated and so would not germinate, peas could not be obtained, and beans, though expected daily, took over a month to arrive. In the meantime over three-quarters of the clinical material, including all the best cases, had been admitted and treated by other means. After beans were at last received comparatively few and slight cases became available for the test, but the results obtained were so good that they are worth recording.

Haricot beans were prepared according to the directions given in an appendix to the article quoted above. They were first soaked in clean water for 24 hours and then placed in tin trays for 48 hours to germinate. Old ration biscuit tins, cut in half longitudinally and freely perforated with holes, were found serviceable for this purpose; they were easy to make, clean, and handle, and each half held 7 pounds of beans—a day's dose for 28 patients. Since germination takes about 48 hours at a temperature of 60° F., it can easily be carried out in this country in May, when the mean temperature is 67°. The whole process is very simple, the only essentials being that the seeds must be kept moist, but not shut off from free circulation of air. After germination ten minutes boiling was ample to fit the beans for eating.

In addition to general use for many patients, two wards, each containing 27 beds, were specially devoted to the purpose of comparing the therapeutic values of these germinated beans and fresh lemon juice. Scurvy cases were admitted to these two wards alternately without selection. In one ward each patient was given 4 oz. of fresh lemon juice daily, the juice being expressed in the ward, sweetened slightly, and given as a measured dose by the sister. In the other ward each patient received a portion of germinated beans which had weighed 4 oz. in the dry state, half being taken at dinner and half at tea. In respect of other forms of treatment, such as tonics and local treatment to the mouth, no difference was made between the two wards.

A certain amount of prejudice against the beans had to be contended with. Though perfectly good to eat, it cannot be said that they always looked appetising, and some with a dark husk had a disagreeable sour taste. These disadvantages might have been masked by mixing the beans in a general stew, but it was thought better to serve them apart in order to ensure some accuracy of dosage and that the cooking should be limited to the shortest possible time. Apparently, however, the greatest difficulty was based on the fact that these beans are regarded as pig food by some Serbs, and this necessitated frequent explanation of their functions through an interpreter.

Since the cases were mild and presented but slight changes, it was not easy to make comparisons. In no case did fresh scorbutic signs appear after treatment was started, and in many local lesions were limited to the gums and the hair follicles. The degree of general cachexia present was not a safe criterion of the severity of the disease, because in many instances it was partly due to chronic malaria. Hair follicle changes are not a good guide to progress, since they always take many weeks to return to normal, however quickly the active tendency may be abolished. Alteration in the condition of the gums seemed to be the best index, although allowance had to be made for the presence of dental caries and previous pyorrhœa alveolaris.

In the special wards 30 patients were treated throughout with lemon juice, and 27 with beans. Contrasting them as regards severity of disease at the commencement of treatment, those treated with beans were, on the whole, slightly worse. The difference would be too small to mention, save that it justifies the definite statement that the bean cases were certainly as severe as the lemon cases. Comparing the results of treatment, there is a small but definite difference in favour of those treated with beans, 70·4 per cent. being cured within four weeks, as against 53·4 per cent. of those treated with lemon juice. These figures favour the bean cases unduly, the real difference being better expressed by the time taken for the gums to return to normal, which was 3·1 weeks for bean cases and 3·4 weeks for lemon cases.

In another series of 21 cases beans were not given until the patients had failed to make satisfactory progress after an average of four weeks' treatment in hospital by other means. These, although they had shown themselves rather refractory to ordinary treatment, all showed acceleration of progress when put on the beans, and in some the difference was very marked. For example:—

CASE 17.—Age 51. No previous scurvy. Patient had suffered from symptoms of scurvy, sore gums and pains in the legs, for three weeks before admission to hospital at X——. He was transferred to this hospital after 25 days' treatment at X——. On admission his gums still showed marked swelling and tendency to bleed, but there was no dental sepsis to delay healing. The hair follicles on the front of the legs and thighs showed a few fresh petechial hæmorrhages. There were no big muscle or joint hæmorrhages. General anæmia was marked. After 26 days' further treatment with 4 oz. of lemon juice daily, local treatment to the gums by hydrogen peroxide and tincture of iodine, and administration of an iron and arsenic tonic, so little improvement was seen that the treatment was changed by the simple substitution of the lemon juice by 4 oz. of germinated beans. In five days definite improvement was apparent, in 13 days the gums were noted as practically normal and in 20 days as quite normal.

These clinical results, then, confirm the experimental results of Dr. Chick and Miss Hume, and permit the definite conclusion that dry beans develop, upon germination, an amount of antiscorbutic vitamine at least equal to, if not greater than, that contained in fresh lemon juice.

II.—*Deductions from Consideration of the Rations upon which our Patients became Scorbutic.*

(*a*) *Meat.*—Of 132 cases of scurvy whose previous diet was investigated last year all had received a ration of frozen fresh meat practically every day; and of 175 investigated this year very few had received it less than three times a week. Fresh raw meat is known to contain a small amount of antiscorbutic vitamine. To what extent freezing and subsequent cooking are respectively responsible for the destruction of this vitamine remains uncertain, but it is obvious that between them they render meat practically useless as

[1] Harriette Chick and E. Margaret Hume: The Distribution Among Foodstuffs (especially those Suitable for the Rationing of Armies) of the Substances Required for the Prevention of (*a*) Beri-beri, and (*b*) Scurvy, Journal of the R.A.M.C., xxix., No. 2, August, 1917, p. 121.

an antiscorbutic. In the case of tinned meat the vitamine seems to be completely destroyed by the temperature needed in the process of tinning, so that for practical purposes the meat-supply of troops in the field must be regarded as totally devoid of antiscorbutic properties.

(*b*) *Lime juice.*—In the past lime juice had a well-deserved reputation as an antiscorbutic. The vast majority of the patients admitted to this hospital had never received a single dose. Three, however, were exceptions, having developed scurvy after taking a small quantity every day for a month. These become significant in conjunction with the fact that Dr. Chick and Miss Hume found by experiment that modern preserved lime juice has but feeble antiscorbutic power, and suggest that it would be unwise to place too much reliance upon modern supplies for prophylaxis. Probably, as suggested by Dr. Chick and Miss Hume, the lime vitamines are destroyed by modern methods of manufacture.[2]

(*c*) *Fresh fruit.*—According to their own statements, not one of the patients seen this year or last year had received any fresh fruit previous to admission to hospital. Oranges and lemons become available in the early spring, but even when a sufficient quantity can be obtained they are difficult to store and transport, owing to their bulk and perishable nature. This difficulty seems to have prevented them from reaching the troops at the front last year, and would operate in the same way in future. Further, these fruits cannot be obtained in sufficient quantity in the early months of the winter, the time when they are most needed to combat the early stages of vitamine deficiency.

(*d*) *Vegetables.*—In the last two winters the vitamines received by scurvy patients before admission to hospital had been limited to those contained in potatoes and onions, with the addition, late in the season, of spinach. The potatoes, when issued, were always greatly diluted with rice, so that the amount received by each man was very small. This year out of 175 patients 101 stated that their weekly allowance of vegetables had been one, or at most two, issues of potatoes with rice, and one issue of onions. Most of these were admitted early in the season. Fifty-eight men, most of whom were admitted rather later, had fared better, receiving potatoes with rice twice a week, onions once or twice a week, and spinach once or twice a week. This should be a fairly generous supply of vitamine, and is unlikely to be exceeded next winter, but the fact remains that these men became scorbutic.

Sixteen patients were of special interest, because their diet for a month before admission should have contained sufficient vitamine not merely to prevent scurvy but actually to cure it. Eleven of these had received "plenty" of onions daily, most of them having also had potatoes with rice twice a week and spinach twice a week. Two, in addition to the above, had also received a small dose of lime juice every day, and the remaining three had received spinach every day. Now, onions, potatoes, and presumably spinach are very rich in antiscorbutic vitamine in the raw state. Granted that these men may have reached a serious stage of vitamine deficiency before their diet became so generous, the fact that they did develop scurvy on the above diets is difficult to explain except on the assumption that nearly all the antiscorbutic vitamine of the vegetables must have been destroyed in the process of cooking. This point is referred to later.

III.—*Conclusions Regarding Preventive Measures for the Coming Winter.*

(*a*) *Preventive measures should be commenced not later than the end of November and should be continued through the whole winter.*—It is essential to remember that the occurrence of the first case of scurvy in an army does not mark the beginning of vitamine deficiency. There is a prescorbutic stage, comparable to the incubation period of infective disease, during which, although the troops may appear to be in excellent health, they are in reality far from physically fit. In the case of troops rationed as the Serbian front line regiments were during the last two winters the duration of this stage probably varies between two and four months. Apart from the possible occurrence of clinical scurvy later on, so long as an army is in this prescorbutic stage of vitamine deficiency it is in danger of breaking down from various causes, such as extra physical stress, exposure to severe weather, or the presence of epidemic infections. In other words, an army deficient in vitamine is an army of deficient vitality, although until recognisable scurvy actually breaks out there is nothing to demonstrate the fact and serve as a warning.

During the last two spring seasons scurvy was sufficiently prevalent amongst Serbian troops to show that the Serbian Army, as a whole, was suffering from this vitamine deficiency to a serious extent. Clinical scurvy appeared in November, and continued until May. Vitamine deficiency must have commenced in November and continued until May, so that in any army placed under similar conditions in the future preventive measures should begin not later than the end of November, and be continued throughout the winter.

(*b*) *The destruction of antiscorbutic vitamine which takes place in cooking must be avoided as far as possible.*—The exact mechanism of this destruction is not known, but it is generally allowed that vegetables lose antiscorbutic power when cooked, and some of our patients mentioned above afford clinical proof of the fact. Simple heat and altered chemical reaction are both under suspicion as the destructive agents. Dr. Chick and Miss Hume quote an experiment which shows that cabbage leaves lose half their antiscorbutic power when boiled for half an hour, but more experimental data dealing with this point are needed.

Recently Harden and Zilva[3] have shown that the antiscorbutic principle of orange juice is rapidly and permanently destroyed when the juice is made N/20, or N/50, alkaline with caustic soda, and they suggest that any cooking entailing alkalinity will injure the antiscorbutic potency of the substance cooked. Army cooking of vegetables does not entail alkalinity. Some salt is always added to the water in which vegetables are boiled, and this may be either "issue" salt or salt in which bacon has been packed. In distilled water both of these give a solution which is neutral to litmus and is certainly not alkaline to phenolphthalein. A raw potato is acid to litmus and it remains acid when fully cooked. The water in which potatoes have been cooked remains neutral. Onions are acid when raw, and not only remain acid when fully cooked, but impart a definitely acid reaction to the water in which they have been boiled. The same is true of germinated beans. These also not only remain acid when cooked, but impart some acidity to the water in which they have been boiled. In consequence, the question of alkalinity produced by cooking does not exist as far as Army methods are concerned, and in the present state of our knowledge it will be safe to regard heat as the destructive agent and to reduce the heating of all vegetables to the absolute minimum required to make them digestible.

The reduction of raw potatoes to the condition of a digestible cream would be too difficult to carry out on a large scale without the provision of some special apparatus of the type of a "Hercules press"; but small quantities of onion and spinach would be sufficiently digestible if chopped or minced into fine particles. If thoroughly mixed with a stew at the completion of cooking these vegetables should be well taken in the raw state, and would add very greatly to the antiscorbutic value of the diet.

(*c*) *The addition of some fresh vitamine-containing substance being needed germinated pulses, as suggested by Dr. Chick and Miss Hume, would provide the easiest and cheapest method of effecting this addition.*—As shown above, modern lime juice is not to be trusted as an antiscorbutic, and fresh fruit and vegetables (in the quantities available) have failed to prevent scurvy for two years in succession, but germinated haricot beans, even when fully cooked, contain at least as much vitamine as fresh raw lemon juice. Other pulses which might be germinated and would probably give as good a result are peas, beans of any variety, and unmilled lentils. It only remains to show that it would be practicable to provide these for troops in the field.

In this country germinated pulses would only be required during the winter, a season which has the disadvantage of necessitating the provision of some artificial heat to ensure germination. This disadvantage is counterbalanced by the fact that the movement of troops is lessened during the winter months.

The advantages of these dry seeds over all other forms of fruit and vegetables, both for storage and transport, are obvious. Since they double in weight and bulk and require to be kept moist when germinated, this process should be carried out as near the site of consumption as possible. In stationary trench warfare it should not be necessary to attempt germination in the actual front line, because the supply of vitamine by this method is so generous that it would suffice for preventive purposes if given every other week, or every other fortnight, when the troops were in rest.

[2] THE LANCET, 1918, ii., 735.

[3] A. Harden and S. S. Zilva: A Note on the Susceptibility of the Antiscorbutic Principle to Alkalinity, THE LANCET, Sept. 7th, 1918, p. 320.

Should, however, a battalion be compelled to stay in the front line for longer than a fortnight it would not be difficult to supply it with pulses already germinated, since at most two hundredweight (100 kg.) per day would be needed for a thousand men, and this weight represents so much food transported as well as so much vitamine.

In the case of a war of movement local conditions and temporary needs and opportunities would have to be considered as they occurred, again always keeping in mind the fact that the supply need not be continuous for preventive purposes, and that these pulses provide their full value of food as well as their supply of prophylactic vitamine.

As regards germination, the preliminary soaking for 24 hours can be done anywhere. For germination itself the essentials are moisture and protection against cold, but without the exclusion of air. The rate of germination varies with the temperature and the type of pulse. Seeds were not obtained here until too late to test them in cold weather, but, judging by the season at which peas and beans are sown in England, no cold short of definite freezing would arrest the process completely, though it would, of course, lengthen the time required for growth to take place. Hence, if facilities are lacking for keeping a supply in process of germination, the time taken must be shortened by the provision of artificial warmth.

The space required and needing to be kept warm is very small. Allowing 2 oz. per man per day, a dose which should be ample for prophylaxis, a day's supply for 1000 men could easily be accommodated in a space of 30 cubic feet. On an average of three days for soaking and germination this means that a space of 100 cubic feet would suffice to provide a continuous supply for 1000 men.

In Salonika during the three cold months, December (mean temperature 46° F.), January (mean temperature 42° F.), and February (mean temperature 45° F.), artificial warmth would be essential. For this a building or tent would be a great advantage, but failing these the necessary warmth might still be obtained by means of a hotbed anywhere within reach of fresh horse or mule manure. During November (mean temperature 52° F.) and March (mean temperature 50° F.) germination could be carried out in the open without artificial warmth, provided that some protection were given at night and during spells of bad weather. A few boxes and some old sacking would provide all the protection needed.

The beans soften so much in the process of germination that ten minutes' boiling is ample to cook them fully. If crushed or pounded they can be eaten raw, but this should rarely be necessary unless the supply ran short.

Allowing for the fact that beans are food and lemons are not, the vitamines supplied by the former are really obtained almost free of cost. Even if no allowance is made for the food value of the beans, the cost of the vitamines supplied by them would still be only 60 per cent. of the cost when supplied by lemons.

General Conclusion.

The statement of Dr. Chick and Miss Hume that germinated pulses are richly endowed with antiscorbutic vitamines is amply confirmed by the fact that germinated beans were found quite as potent as raw lemon juice in the treatment of scurvy. Their suggestion that germinated pulses should be used for the prevention of scurvy is capable of practical application, and would be the easiest and cheapest method by which to prevent the occurrence of scurvy in an army in the field.

In the case of vegetables cooked in the Army manner the destruction of vitamine which takes place cannot be ascribed to the production of alkalinity.

In conclusion, my thanks are due to Lieutenant-Colonel A. R. Greenwood, R.A.M.C., for permission to publish these cases; to Miss M. J. Ahern for careful clinical notes; and also to Quartermaster-Sergeant Andrews, R.A.M.C., for constant supervision of the germination and cooking of the beans.

DEATH OF HENRY ALBERT PATTINSON, M.R.C.S. Eng., L.R.C.P. Irel.—Mr. H. A. Pattinson died recently at Seafield House, Seaton, Devon, in his 79th year. He had practised in Seaton for more than 50 years, and had been medical officer of health for the town since the formation of the Seaton Urban Council in 1892. Expert at all games, he was prominent in founding the Seaton Cricket and Lawn Tennis Clubs and the Axe Cliff Golf Club, of which he was honorary secretary for many years.

BEER AND SCURVY.

SOME NOTES FROM HISTORY.*

BY ALICE HENDERSON SMITH.

(*From the Lister Institute of Preventive Medicine.*)

Captain Hamilton Dyke's account in THE LANCET of Oct. 19th of an outbreak of scurvy in the South African Native Labour Corps, and his demonstration of the useful place taken by kaffir beer in the diet of these natives in their homes, are very interesting in view of the use of small beer of various kinds in the Navy and other ships, and the belief that long obtained in its antiscorbutic power. During a search in the Admiralty records for information on another subject some points have come up in this connexion that it may be worth while to record briefly.

Long History of Use of Spruce-beer against Scurvy.

Beer was held for generations to have considerable value as an antiscorbutic, and was long used as such on sea-voyages. The virtue of it was not attributed solely to the various ingredients from which it was brewed but largely to the fermentation itself, and beers were made of different materials and in different ways. The early spruce-beer, which was indebted for its potency, at least in some methods of preparing it, to the fresh leaves from which it was named, has a long history. It was used by explorers at least from the time of Willem Barentz [1] and probably before that. Barentz carried on his voyages in 1594–97 casks of the "*jopen-bier*" or "*sprossen-bier*" that was then made round the Baltic with the green leaf buds or *sprossen* of the fir-tree in it, the original spruce-beer. The *sprossen* used were generally those of the spruce (*Pruce* or *Prussian*) fir (*Abies excelsa*). In this beer the green buds seem sometimes to have been added to the fermented malt, as hops are added now. Alternatively the fir was boiled in water and the infusion fermented, and since a mere infusion of spruce-tips or the fresh spruce-tips eaten as a salad have proved useful, it is probable that the original spruce-beer was of some value. Dr. Lind says [2] (in 1757):—

"A simple decoction of the tops, cones, or even bark and wood of these trees is antiscorbutic, but it becomes much more so when fermented, as in making spruce-beer. Spruce should be carried to sea; if not, the common fir-tops used for fuel should be first boiled in water and the decoction afterwards fermented with mollasses, in the common method of making spruce-beer."

He himself prescribed at Haslar, with beneficial results, a daily pint of "strong beer medicated with the most powerful antiscorbutic herbs." It was long the custom on distant voyages always to make spruce-beer on touching land, if it were possible.

But the name spruce-beer came to be applied often to beers that were entirely innocent of the fresh *sprossen*, as in the modern Dantzic spruce, whether or not the spruce flavour was introduced. The essential element, of course, from the point of view of scurvy, was the freshness of the vegetable ingredient, and, as has happened in the history of other antiscorbutics, the belief in the value of the drink persisted after the elimination of the element on which that value depended. We find later an Arctic officer stating that spruce-beer was brewed on board his ship when she was in the ice several degrees of latitude beyond the highest at which the fir grows. This beer was sugar or malt beer, flavoured with "essence of spruce."

Value of Sweetwort.

The value of fresh germinated barley has been shown anew recently by Fürst,[3] and the actual experience of its use seems to suggest that malt which is not "highly dried," as in the modern manner, probably retains much of its potency. Even in a simple brewing process the beer may

* Companion papers entitled (1) The Relative Content of Antiscorbutic Principle in Limes and Lemons together with Some New Facts and Some Old Observations Concerning the Value of "Lime Juice" in the Prevention of Scurvy, (A) *Experimental Inquiry*, by Harriette Chick, E. Margaret Hume, and Ruth F. Skelton, (B) *Historical Inquiry*, by Alice Henderson Smith, and (2) An Investigation of the Antiscorbutic Value of the Raw Juices of Root Vegetables, with a View to their Adoption as an Adjunct to the Dietary of Infants, by Harriette Chick and Mabel Rhodes, appeared in THE LANCET of Nov. 30th, 1918 (p. 735), and Dec. 7th, 1918 (p. 774), respectively.

[1] "Journal of the Three Voyages of Willem Barentz," Gerrit de Veer, published by the Hakluyt Society, 1876.

[2] A Treatise on the Scurvy, Lind, 2nd edit., 1757.

[3] Fürst: Zeitschrift f. Hygiene, 1912, vol. lxxii.

still keep some of the barley's virtue, apart from any that the fermentation or added ingredients may give it. Captain Dyke shows that this is the case with the germinated millet of the Kaffirs, and malt beer and an infusion of malt called "sweetwort" were used, with a profound belief and a good deal of evidence in their favour.

Sweetwort was proposed for use in the Navy by Dr. David McBryde in 1762. It was an infusion prepared by pouring boiling water over malt and allowing it to stand for three or four hours, after which it must be used at once. It is, so far, similar to the kaffir beer, but the sweetwort was not fermented; and, of course, the African drink has this advantage, that the grain is germinated as it is required and used absolutely fresh, whereas the sweetwort was made from malt carried to sea. Preliminary trials of Dr. McBryde's receipt at the Royal Hospital, Plymouth, were unfortunate owing to his demanding for its best demonstration the exclusion of all fresh meat and vegetables from the patient's diet. Naturally it was with great reluctance that the patients submitted, and when a man died of scurvy under the treatment the experiment was stopped. It was then suggested by the Sick and Wounded Board of the Admiralty for use on board ship, where fresh food was not available, and it was ordered to be carried to sea, but the peace of 1763 put an end to opportunities for testing it. It was as an experiment still, in 1770, that "barrels of well-dried malt" were ordered to be put on board two of H.M. ships for trial in scurvy cases, and in the following year an "inspissated juice of malt" was tried. Captain Cook seems to have had both of these when he sailed in 1772. In this classical example of a long voyage without serious loss from scurvy in days when great suffering and loss from the disease were the rule, sweetwort was the prophylactic to which he attributed much of the credit of the immunity. After his ship, the *Resolution*, had been at sea continuously from Nov. 22nd, 1772, until March 26th, 1773, we read [4]:—

"After such a long continuance at sea in a high southern latitude, it is but reasonable to think that many of the people must be ill of the scurvy. The contrary, however, happened. Sweetwort had been given to such as were scorbutic. This had so far the desired effect, that they had only one man on board that could be called very ill of this disease, occasioned chiefly by a bad habit of body and a complication of other disorders."

And this sweetwort is described [4] as "one of the best antiscorbutic sea-medicines then discovered when used in time." Other antiscorbutics that Captain Cook had with him were saurkraut and a "rob" or essence of lemons and oranges. He also brewed malt or spruce-beer whenever opportunity offered.

Another explicit statement of the value of the sweetwort occurs in a letter [5] from Admiral Graves to the Victualling Board of the Admiralty in 1794, in which he says:—

"On the American voyage of the *London* essence of wort [the same malt infusion apparently, from the context] had been given, with such vegetable acids as the surgeon had. Scurvy gradually gave way, and they sent only four to hospital instead of thirty or forty, as other ships did at New York."

It was among several antiscorbutics in constant requisition in the Navy, until they were abolished on the introduction of lemon juice.

Further Experience of Malt Liquor as an Antiscorbutic.

Dr. James Lind [6] says that beer, wine, and other fermented liquors are all antiscorbutic. Sir Gilbert Blane [7] held the same opinion, and, when speaking of the "extremely wholesome and antiscorbutic" nature of malt liquor, he says:—

"The common quantity of small beer allowed (in the Navy) is so liberal that few men make use of their whole allowance; and there is no objection to the constant use of it except that it is apt to spoil in the course of a few weeks, and that upon foreign stations the stock can seldom be renewed. One of the greatest improvements that could be made in the victualling of the Navy would be the introduction of porter, which can be preserved in any climate for any length of time that may be necessary."

As a matter of fact, porter was sometimes refused, when asked for for the sick, on the ground of expense, wine being given instead. He goes on:—

"I was furnished by Dr. Clephane, physician to the Fleet at New York, with the following fact. In the beginning of the war two storeships called *Tortoise* and *Grampus* sailed for America under convoy of *Daedalus*, frigate. *Grampus* happened to be supplied with sufficient quantities of porter to serve the whole passage, which proved very long. The other two ships were furnished with the common allowance of spirits. The weather being unfavourable the passage drew out to fourteen weeks, and upon their arrival at New York the *Daedalus* sent to hospital a hundred and twelve men, the *Tortoise* sixty-two, the greater part of whom were in the last stage of the scurvy. The *Grampus* sent only thirteen, none of whom had the scurvy."

Sir Gilbert believed, also, in the virtue of spruce-beer, and says that as the fir "seems to be more medicinal and antiscorbutic than hops, it is therefore perhaps preferable to malt liquor." Beer was issued in the Navy in his time at the rate of a gallon per head per day so long as the supply taken out lasted; but this was never for more than about a fortnight, after which grog or wine was given, the allowance of wine being a pint a day. For foreign service beer was not supplied at all.

When the war with Spain, in 1796, sent up the price of lemon juice by cutting off a source of supplies, the Sick and Wounded Board wrote to the Lords Commissioners that "though they do not consider strong beer a substitute for lime juice and sugar for scurvy, yet as it is conducive, they recommend" that the experiment be made of substituting it on some ships.

Beer, then, had a solid reputation as an antiscorbutic, although by the beginning of last century the first place was, of course, given to lemon juice. When the end of the long wars permitted the renewal of the search for the North-West passage in 1818, malt and yeast were taken on the exploring ships and small beer was brewed on board. Sir Edward Parry himself attributed great importance to it, and other explorers of his time concur in this opinion. Malt was carried, too, by the whaling vessels, whose business took them farther into the North than any others except the explorers, and who were, like them, liable to be detained in the ice for long periods. When Sir John Franklin went out in 1845, and was followed later by many ships sent out to seek him, a brewing apparatus was carried and beer was brewed on board these ships. But they also carried Allsopp's pale ale in casks and used it while it lasted, generally through the first winter. The belief in beer was firmly established, and it was always issued at once to men on the sick-list on these expeditions. It was also issued on some ships as an extra safeguard against scurvy for some time before sledging parties went out; and by Sir Leopold McClintock it was actually issued at times as an alternative to lemon juice.

Elimination of Antiscorbutic Element.

But by the time the Franklin Search ships went out the malt used was "high-dried, kilned malt."[8] Again the essential element is removed without its importance being observed, and the traditional belief now pertains to a beer from which the antiscorbutic value of the germinated malt has been removed unwittingly by the improvement of the malting processes. This alters the whole question and throws on to other elements in the drink any dietetic value it may have possessed. Moreover, in view of the unstable nature of the protective element it is probable that, whatever the malt used, any antiscorbutic value that beer may have must be greater in a freshly brewed beer, consumed immediately, than in ales made for export and kept for many months before they are used. The tradition was strong, however, and the officers of the Franklin Search ships believed in their beer; many of them speak of it as a wholesome and suitable beverage for Arctic service, and attribute to it something of the good health and freedom from scurvy of their men. In so far as it was substituted for rum, it could be only good, but when tested as an antiscorbutic it fails. The British ships were at this time fortified effectively against scurvy with lemon juice, but the American ships of the Grinnell Expeditions [9] that took part in the search for Franklin did not use lemon juice; they relied principally upon raw potatoes and molasses, but beer brewed on board ship was reckoned a considerable part of their defence. The first Grinnell ships left the States in May, 1850, and scurvy began to show on board of them so early as September. There is surely little practical antiscurvy value in a regimen that permits the onset of scurvy in so short a time, and that notwithstanding the fact that the ships had a certain amount of fresh meat in summer. Dr. Kane, who was medical officer of the first Grinnell Expedition, was commander of the second, and went out

[4] Voyages of Discovery by Captain Cook.
[5] Pub. Rec. Off., Admiralty Sec.'s Letters—Digests.
[6] Lind 1757): L.c. [7] Diseases of Seamen, 1785.

[8] Messrs. Samuel Allsopp and Sons have kindly given me explicit data about the beer supplied by them to these ships.
[9] "U.S. Grinnell Expedition in Search of Sir John Franklin." Dr. Elias Kent Kane, 1851; Arctic Exploration: the Second Grinnell Expedition, Dr. Elias Kent Kane, 1856.

again in 1853. In his long wrestling with scurvy he spent his resources, apparently out of all proportion to the results, to produce any sort of fermented drink for his men; and his laborious achievement of a sort of beer when there were only three men, himself included, of the ship's company able to move from their bunks, argues a great faith in its value. But there is nothing to show that it justified his faith. All his ingenuity may possibly have delayed the onset and progress of the disease, but his men were in the last stages of scurvy and it was only their occasional supplies of fresh meat that saved them.

At its best, under the most favourable conditions, it has never been claimed that beer is a complete protection from scurvy over any extended period of time; and even in Cook's time his beer and his infusion of malt did not alone confer invulnerability. But (before lemon juice removed the need of it) malt preparations do seem to have given a very considerable measure of protection when methods of malting and brewing were simple. Later, as a nourishing drink, and as a substitute for spirits, beer still had value for the seaman on Arctic service; but with the elaborating and perfecting of malting and brewing processes, the antiscorbutic element seems to have been largely if not completely eliminated. Thus the conclusion drawn by Harden and Zilva [10] from their recent experiments with beer made from kilned malt is confirmed by the history of its failure in Arctic experience. But Captain Dyke's account confirms and justifies the belief in the beer used by earlier generations in the Navy, a hundred and twenty years ago.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

PRE-OPERATIVE X RAY DEMONSTRATION OF SILENT INTRATHORACIC METASTASES OF MALIGNANT DISEASE.

BY C. HAMILTON WHITEFORD, M.R.C.S., L.R.C.P.

THERE are probably few surgeons who, after having removed a malignant growth with its lymphatic area, have not experienced the disappointment of seeing the patient rapidly die from intrathoracic metastases, while the operation area remained free from recurrence. In not a few of these cases the symptoms of intratboracic involvement appear so soon that there can be no reasonable doubt that the secondary growths were actually present at the time of the operation. Secondary deposits within the thorax are often "silent"—i.e., may exist for a long time and reach a considerable size before giving a distinctive clinical picture. Radiography is in many cases able to demonstrate the existence of these metastases while still silent. Of this the following case is an example.

A stout multipara, aged 60 years, was seen by the writer last spring. The right breast contained a cancerous mass, the size of a lawn-tennis ball, which had invaded the skin surrounding the nipple, but had not yet ulcerated. The breast was freely movable on the chest wall. No glandular involvement could be felt. Clinically the thoracic contents appeared normal. Except for a somewhat feeble pulse there was no obvious reason why a radical operation should not give a chance of cure, provided that radiography showed no intrathoracic metastasis. The skiagram, however, showed, in both sides of the chest, masses of growth, which appeared as shadows, 5 inches in vertical extent, to the right and left of the sternum and pericardium. The husband was informed of the impossibility of a cure by operation, but was advised to sanction a simple removal of the breast in order to prevent the sepsis which would occur as soon as the involved skin gave way.

The breast was removed, and 14 days later the patient left the nursing home. The pathologist reported that the growth was an alveolar carcinoma with very little connective tissue. Three weeks after operation a slight cough developed, but subsided under treatment. Six weeks after operation dyspnœa commenced and the cough returned, with crepitations in both lungs, death occurring three months after removal of the breast.

In nearly every form of malignant disease the thoracic contents are a possible site of metastases which for a time may cause no symptoms. The presence or absence of such metastases cannot be decided by a consideration of either the size, duration, or position of the primary growth. Further, the metastases frequently cannot be detected by ordinary clinical methods.

Radiologists are now usually able to demonstrate the presence of secondary malignant deposits within the chest. There is no reason why the radiographic examinations should not include regions other than the thorax in which deep-seated silent metastases are prone to occur.

The principle of employing routine pre-operative radiography in those varieties of malignant disease, both sarcoma and carcinoma, which are liable to cause intrathoracic metastases is relatively new, and at present is but little acted upon. Its importance for the prevention of useless operations is obvious. The principle is deserving of wide recognition and application.

The results of its adoption in the surgery of malignant disease may be expected to include: 1. A diminution in the number of radical operations performed on cases in which the disease has, prior to operation, produced inoperable metastases, and this elimination of incurable cases will, as time goes on, result in a higher percentage of cures among the cases on which radical operations are performed. 2. A decrease in the number of palliative operations, because many patients decline any form of operation unless the surgeon is able to hold out a definite possibility that the operation may result in cure.

Plymouth.

[10] Harden and Zilva, 1918. Journal of the Institute of Brewing.

TOTAL EXCISION OF THE URINARY BLADDER.

BY JOHN C. JEFFERSON, F.R.C.S. ENG.,
HONORARY SURGEON, ROCHDALE INFIRMARY.

THE following record gives an account of a case of total excision of the urinary bladder in a woman for advanced epithelioma of the urethra.

A married woman, aged 60, admitted to Rochdale Infirmary, stated that three months before she had noticed pain on micturition and difficulty in emptying the bladder, these symptoms gradually becoming worse. About two weeks before admission incontinence took the place of retention. An advanced epithelioma of the urethra was found. I am of the opinion that it originated within the urethra, as the greater part was inside the urethral orifice and not actually about it. Further, though the growth had invaded the sphincter vesicæ, causing incontinence, it had not become attached to the pubic rami. The inguinal glands on the left side were enlarged, but freely movable. The patient was in good condition. Some urine obtained by taking catheter specimens was not foul, though it contained pus, and it improved considerably under treatment. As the patient was in a very miserable condition owing to the constant dribbling away of the urine, I decided to transplant the ureters with their vesical orifices into the colon, to remove the bladder and urethra completely, and at a subsequent operation to remove the inguinal glands.

On March 4th, 1918, with patient in high Trendelenburg position, I opened the abdomen in the middle line, the incision extending from pubis to umbilicus. The intestines were thoroughly packed off with gauze and the wound edges protected with tetras. A transverse incision was made through the vesico-uterine fold of peritoneum and the bladder separated from the cervix uteri and vagina. The ureters were readily distinguished and isolated for not more than ¼ inch from their entry into the bladder, a stout loop of silk passed beneath each facilitating handling. The peritoneum on the superior aspect of the bladder was peeled off and the viscus freed on all sides until the pelvic floor was reached. The bladder was opened and the ureteric orifices, with a small circle of mucous membrane around each, excised.

The pelvic colon, which, fortunately, had a long mesentery, was next brought down and each ureter transplanted into it separately, as follows. A linen thread stay suture was passed through the mucous membrane around the ureteric orifice. A small incision was next made into the lumen of the colon through the anterior muscular band. Both free ends of the thread were now passed through the eye of a long curved intestinal needle, the needle passed into the lumen of the bowel through the incision and out again through its walls about 1 inch from the point of entry. By drawing on the thread the ureter was then pulled well inside the bowel and retained there while the aperture was closed around it and the terminal free part of the ureter enfolded in the bowel wall with Lembert sutures. The stay suture was then cut and removed. By this means the

ureter was drawn through a considerably smaller aperture in the bowel than otherwise would have been possible, and one was enabled to work with a shorter length of isolated ureter.

The transverse incision through the peritoneum of the utero-vesical fold was now sutured around the portion of pelvic colon which had been brought down and the abdomen closed without drainage. The patient was placed in the lithotomy position and the removal of the bladder, together with the urethra and the lower part of the anterior wall of the vagina, rapidly completed. A large drainage-tube was inserted into the space left.

The patient bore the operation remarkably well and, with the exception of a little bronchitis, made an uninterrupted recovery. Thirty days after the first operation I wished to remove the inguinal glands on the left side, now considerably enlarged but still freely movable. The patient, however, insisted on returning home for ten days. I reluctantly agreed to this, but owing to an attack of pleurisy she did not return to hospital until August 5th. By this time the glands were so extensively invaded that it was impossible to remove them completely.

The patient has fair control over her rectum, though the bowels are moved on an average five times during the day and twice during the night. There have been no symptoms of ascending infection of the ureters and kidneys. This I consider due to the fact that the whole orifices of the ureters into the bladder, and not the ureters only, were transplanted. There has been no recurrence of growth in the vagina.

I cannot help thinking that had the patient consented to earlier removal of the glands the result would have been much more fortunate. The operation itself was tedious but not difficult. The transplantation of the ureters in the depths of the pelvis was a delicate procedure, requiring care and patience, though it was much facilitated by the stay suture.

Rochdale.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PATHOLOGY.

Discussion on the Pathology of Gas Gangrene.

A MEETING of this section was held on Dec. 3rd, Professor W. BULLOCH, the President, being in the chair, when a discussion took place on the Pathology of Gas Gangrene.

Incidence and Bacteriology.

Dr. JAMES MCINTOSH, speaking on researches on the bacteriology of the condition, said that gas gangrene appeared to have been almost unrecognised previous to the Crimean campaign, when it was described under the name of "gangrène foudroyante." Later it seemed to have been confused with various inflammatory conditions, such as hospital gangrene and erysipelas.

On the Western front during the present war its incidence had varied from time to time according to the battle area and the efficiency with which the wounded were dealt, so that reliable statistics were difficult to compile. The incidence among British troops, declining since the early months of the war, has lately only been about 1 per cent. during the most active operations. But even this meant a good deal when many thousands of wounded were being dealt with.

The researches of Pasteur, Koch, Welch, and others showed that the exciting agents were anaerobic bacteria, which were present in all cultivated soils, and thus contaminated the wounds at the time of their infliction. The injured tissues seemed to provide a suitable nidus for the growth of these bacteria, as within a few hours of the infliction of the wound gas gangrene might have already developed. Previous to the outbreak of hostilities Breiger and Ehrlich had shown that the bacillus of malignant œdema (*Vibrion septique*) was capable of infecting man, whilst Welch and Fraenkel demonstrated that the *Bacillus aerogenes capsulatus* had similar pathogenic properties. There was no doubt as to the cause of gas gangrene, but there was considerable diversity of opinion with regard to the most prevalent type, and to the chief features of the types isolated. This was due to (1) the difficulty of isolating many of these anaerobes and of obtaining pure cultures; and (2) the methods of isolation employed in many instances being such as would tend to bring out the saprophytic forms in preference to the more delicate pathogenic varieties. As an indication of the relative incidence of the different anaerobic bacteria met with in cases of gas gangrene, Dr. McIntosh gave some results compiled from his own observations made on behalf of the Medical Research Committee. In a series of 41 cases from 1914–17, *B. welchii* occurred in 43·9 per cent., *B. sporogenes* (types 1 and 2) in 29·2 per cent., *Vibrion septique* in 19·5 per cent., terminal oval sporing bacilli in 17 per cent.; and of undifferentiated types, type No. 13 in 7·3 per cent., type No. 18 in 4·8 per cent., and type No. 19 in 4·8 per cent. In a second series of 52 cases during 1918, *B. welchii* occurred in 67·3 per cent., *B. sporogenes* in 38·7 per cent., *Vibrion septique* in 16·3 per cent., *B. œdematiens* in 4 per cent., terminal oval spores in 8·1 per cent., and *B. pseudo-tetanus* in 2 per cent.

Results of Investigations on Causation and Treatment.

Major J. W. MCNEE laid emphasis on the large number of men who, in the first two years of the war, lost their lives or their limbs from gas gangrene. Owing to the early onset of the complication, which usually developed within the first 48 hours after injury, many cases never reached the base, so that for many workers there could be no clear mental picture of the fulminating cases. The earliest development of gas gangrene which he had seen occurred 3½ hours after receipt of the wound, and it was often well established in 10 hours. The rapidity of spread was far in excess of any microbic infection of which he knew, and half an hour's delay in operation might make all the difference between life and death. Gas gangrene reached its height during 1915, and at this time meant the death of the patient or, at best, his survival after amputation of a limb.

In 1916, in close association with Surgeon-General Cuthbert Wallace, deliberate work was begun in the First Army on the pathology of the condition, especially by Captain Shaw Dunn and himself. This work arose out of various clinical observations. It was insisted on by Wallace and Kenneth Taylor that gas gangrene was essentially a disease of muscle, and never arose when muscle injury could be excluded. It was also observed that in early cases of gas gangrene single muscles of a group were often involved whilst neighbouring ones escaped. These observations had special reference to gas gangrene spreading in a limb with an intact blood-supply, and the method of spread in such cases formed their first line of research. It was realised that cases of what came to be known as *group* gangrene were in a different category as regards spread. In them a large blood-vessel was always divided—e.g., the popliteal—and gangrene of gaseous type commenced in all the muscles of the group simultaneously. The onset of gangrene in such devascularised segments of limbs was seen to be analogous to invasion of the warm tissues after death, such as occurs in hot weather. Sections illustrating the spread of gas gangrene in living muscle with an intact blood-supply were shown. In their account of their work, which has already been published in full, great emphasis was laid on the *spreading edge of the gangrene*, a histological study of which gave the clue to the method of spread. The essential factor in the spread was the passing up of a fluid substance in the sheaths of the muscle fibres, causing death and coagulation necrosis of the muscle fibres. In the muscle fibres so killed off an invasion by the anaerobic bacilli at once took place, the muscle sugar being split to give the characteristic evolution of gas. It was not until Bull's work on *B. welchii* toxin was published that the full truth was known. They called the spreading edge where the muscle had just been killed off the "pre-gas" zone of gangrene. Experiments on rabbits showed that if the organisms freshly isolated from a human case were injected intramuscularly no spreading gas gangrene followed unless the muscle was first extensively injured or blood clot was produced.

In wounds of this war, in contrast to those of other wars, all the necessary conditions for the origin of gas gangrene were provided. This war had been fought on a heavily manured soil, saturated with the anaerobic bacilli derived from animal manure. We had had the composite bullet, which breaks up readily, and we had had the short-range warfare of the trenches, so that

when a bone was struck it shattered into fragments, tearing up the muscles around. Moreover, we had in this war as never before all the varieties of jagged and irregular missiles, often carrying in cloth along with them, derived from the bursting of shells and bombs of every kind. As a consequence every wound in this war was accompanied by great laceration and damage to muscle, while practically every wound was infected with anaerobes from the start, by clothing, dirt, &c.

During 1916 and 1917 the dead and damaged muscle, in which alone gas gangrene could commence, was removed by operation, and for the treatment of early cases, knowing the method of spread, single infected muscles or parts of them could often be removed in time to arrest the disease, while the limb as a whole was saved. It was obviously necessary that operations should be carried out at the earliest moment possible after wounding, and for this reason the casualty clearing stations were pushed as far up as possible. The results of these measures were very soon obvious. Whereas during the previous year in one C.C.S. the gas gangrene incidence ranged around 8 per cent. in quiet periods, and was known to be almost double in periods of activity when the wounded came back slowly owing to numbers, with the new methods of wound treatment the incidence of gas gangrene fell towards the end of 1917 to just below 2 per cent. This was before any serum therapy had been thought of, and before Bull had announced the discovery of *B. welchii* toxin. During the end of 1917 and the present year the majority of cases of gas gangrene had occurred amongst men who had either had to be brought to the casualty clearing stations over long distances and bad roads, or who had arrived in a pulseless condition from shock or hæmorrhage, or both, and consequently unfit for operation. When gas gangrene is developing the blood pressure rises at first, and the medical officer, unless he is on his guard, may think that the man is recovering.

Speaking of the bacteriology of the condition, he said that in the acute spreading gangrenes of limbs *B. welchii* was evidently the chief organism concerned. It could be found in great numbers, and in almost pure culture, close up to the spreading edge of the gangrene. Such rapidly spreading gangrenes exhibited an intense toxæmia in the later stages, but the organism seldom invaded the blood stream except just before death. During the past year, with the *B. welchii* infections well controlled by surgical methods, other forms of gas gangrene associated more with toxæmia than rapid spread in muscle had consequently come into more prominence. They were of intense toxæmic type, and gave positive blood cultures of a motile anaerobe, the *Vibrion septique*. In his own army area such cases had been rare. With regard to the third great toxin-producing anaerobe (*B. œdematiens*) isolated in cases of gas gangrene by Weinberg and Seguin, he had only seen two or three cases where its presence as the main factor in etiology was suspected. The epoch of serum therapy dated from the time when Bull, working in the Rockefeller Institute, found an exotoxin produced by *B. welchii*, and by the injection of this produced an antitoxic serum. In his work in France he met with many disappointments, but he came at a time when the *B. welchii* infections were already well controlled by surgical methods, and a large proportion of the men on whom he had to make his tests were those developing gas gangrene while lying in a state of shock in the resuscitation wards. The results were encouraging, however, from the way in which some of the toxæmic cases were controlled. In other cases in which the toxæmic symptoms were unchecked, the cultivation of *V. septique* from the blood showed clearly that this organism must be considered in any future serum developments. This year a fairly extensive prophylactic trial was made in three divisions of the First Army with an antitetanic serum containing also anti-substances to *B. welchii*, being controlled by a comparison with neighbouring divisions in the army; the serum was injected as soon as possible after wounding, generally within 3–5 hours. There was no reduction in the case incidence in the C.C.S. zone as compared with control divisions, but the figures seemed to show a reduction in case mortality at the bases. In connexion with the sera used curatively, the cases developing gas gangrene were mostly men in a condition of shock, or in whom operation had been much delayed by long travelling over bad roads. The results were therefore difficult to appraise, and were certainly not dramatic.

Professor M. WEINBERG, the PRESIDENT, Major A. W. M. ELLIS, and Captain H. P. M. HENRY also spoke.

SECTION OF SURGERY.

The Closure of Cavities in Bones.

A MEETING of this section was held on Dec. 4th, Sir JOHN BLAND-SUTTON, the President, being in the chair.

Lieutenant-Colonel PERCY SARGENT read a paper on the Closure of Cavities in Bones.

Processes of Repair in Bone.

He said that the processes of repair in bone differed in no way from those which occurred in other vascular tissues; but they were modified by its peculiar and complex structure. Tissues healed well or ill according to their vascularity, and so cancellous bone was more adapted for recovery than compact bone, and the abnormally dense bone which resulted from chronic inflammation was a great handicap. Another factor which retarded the healing of cavities in bones was the fact that the walls were not collapsible. It was necessary for the walls to be approximated until the granulations which covered them were able to coalesce. Two processes combined to bring about the coalescence of the granulations covering the wall of a cavity: (1) the falling together of the adjacent structures, and (2) the process of contraction which was always associated with the development of granulations. In the case of a bone cavity, it was clear that its walls could not fall together from the pressure of the surrounding structures, nor could they be drawn together by the contraction of the developing fibrous tissue. Colonel Sargent then described a case in which a cavity had been in existence for 16 years after a two-year-old sequestrum had been removed from it, the cavity measuring 3 inches in length, the sequestrum 4 inches. It had taken 16 years for the cavity to be reduced in length 1 inch. We might therefore suppose that the process of filling up a bony cavity, by the growth of new tissue upon its walls, whilst it might slow down, did not necessarily come to an end completely; that, although in theory a cavity of any size might ultimately be obliterated in this manner, the process would be so slow as to need longer than the life-time of the patient—a life-time apt to be shortened by chronic septic absorption, or by any of the accidents which threatened a patient who bore a source of chronic suppuration.

Methods of Filling Cavities in Bone.

The problem of filling up old bone cavities had been attacked in different ways:

1. In 1886 Schede recommended a procedure based upon the process of "healing by blood clot." His method was as follows: An Esmarch's bandage having been applied to the limb, the cavity was prepared with the greatest care so as to render it as clean as possible, and the wound was closed. On removal of the bandage the cavity would fill with blood, which, the wound being relatively aseptic, would become organised into, or replaced by, fibrous tissue.

2. Pieces of sponge had been packed into the cavity, in the expectation that such tissue would form a framework for the growth of granulations.

3. Neuber's method consisted in laying open the cavity by removal of one of its bony walls and inverting flaps of skin into the groove so formed, the flaps being secured in position by means of nails.

4. Senn advocated the use of decalcified bone which had been prepared by soaking in 1 in 500 sublimate alcohol. The cavity, carefully prepared, and rendered as aseptic as possible, was to be firmly packed with chips of this decalcified bone.

5. A method of plugging bone cavities with a paste compounded of iodoform, spermaceti, and oil of sesame, was described by Moorhof and Seymour Jones in 1905. The cavity to be treated was to be cleaned, dried, and filled up with this paste, which was stated gradually to disappear, and to be replaced by bone. Moorhof claimed to have treated 220 cases in this manner without a failure. Both the last described method and that of Schede demand conditions which must rarely be attainable. "It is an absolute *sine qua non*," wrote Moorhof and Jones, "that the walls of the cavity to be plugged should contain no diseased tissue, and should be perfectly aseptic."

6. Another method of filling the bony cavities was described by Hollander. The cavity was carefully cleansed and prepared, and was then filled up by pouring melted human fat into it. The fat so obtained at operation from lipomata or omentum was freed from connective tissue and melted in a water-bath. It was claimed that in some instances healing by first intention occurred, but that in the majority the wound took about three weeks to heal. It was further stated that the scar, instead of being adherent to the bone and depressed, was freely movable and flush with the surface.

7. Professor A. Broca said that the persistent sinus was due to the persistence of osteitis and the existence of a suppurating cavity, the obliteration of which should be at least as much the object of operation as the removal of sequestra. Broca's radical operation aimed at the obliteration of the cavity by the falling in of the soft parts. The bone was freely exposed through an incision situated at the most convenient place as regards its anatomical relationships; existing sinuses at a distance from the site of election were ignored. The cavity was converted into an open trough or gutter by the free removal of one of its walls. Any sequestra and all diseased tissue were removed, special care being taken to follow up all recesses and diverticula from the main cavity. The overlying soft parts were then encouraged to sink into and gradually to obliterate the resultant cavity.

Technique of Modification of Broca's Operation.

The method which the speaker wished to advocate was a modification of Broca's operation, and one which he thought in most cases offered certain definite advantages. It might be called that of muscle-grafting, to which might be prefixed the term (as Professor Shattock suggested) "continuous"—in contradistinction to "discontinuous"—grafting, seeing that the slip of muscle used to fill the cavity was not completely separated but retained its continuity with the main mass. Before undertaking the operation the bone was carefully examined by means of stereoscopic radiograms.

The technique of the procedure was as follows. No tourniquet was employed. The use of a tourniquet certainly rendered certain stages of the operation more easy, but the subsequent oozing was a great drawback. Hæmorrhage was easily kept under control by the frequent application of large pieces of gauze wrung out in very hot saline. As a rule, the operative field could be kept dry by this means. Further, it was easier to judge of the condition of a bone which bleeds under the curette than of one which was temporarily deprived of its blood-supply. Again, as these operations consumed a considerable amount of time, the total deprivation of blood for an hour or more of skin whose nutrition was already impaired by scarring might result in subsequent sloughing. One of the most essential points in the operation was to secure a sufficiently thorough exposure of bone both above and below the site of the cavity which was to be attacked. The surgeon must see exactly what he was doing in every part of the operative field, and not trust to the curette for discovering hidden recesses. He usually began by a fairly wide excision of the wall of the sinus which leads down to the bony cavity. When more than one sinus existed he selected the one which was most conveniently situated and which gave the easiest and most direct access to the bone, having regard to the anatomy of the structures in the neighbourhood. Any other sinuses might or might not be dealt with, according to their situation and the density of their walls. The periosteum was next incised to the extent of the whole length of the wound and stripped from the bone so as to bare it completely, not only at the actual site of the cavity, but for some distance both above and below. At this stage it was convenient to employ Lane's bone levers instead of the ordinary retractors so as to bring the bone into prominence by depressing the soft parts; they were inserted between the periosteum and the bone. Before attacking the bone it was necessary to pack it off by means of gauze pads, partly to prevent soiling of the wound generally, but particularly to prevent fragments of bone getting lost amongst the soft parts and being accidentally left behind. This was most important, more than one of his own failures being due to the leaving behind of bone chips. That part of the operation which consisted in preparing the cavity for the graft was entirely subperiosteal. The bone so exposed could be thoroughly examined, and a decision made as to which wall of the cavity could best be spared from the point of view of strength of the bone. Other things being equal, that aspect of the bone was selected for removal which was most conveniently related to such overlying muscles as could best be employed for filling the cavity. These points being decided, the cavity in the bone was fully opened up by means of a chisel and mallet until every part of it could be thoroughly explored. All granulation tissue and dead or carious bone must be removed, and all recesses carefully followed up and cleansed. The cavity was next washed out with hot saline solution and plugged tightly with gauze. This completed the first stage of the operation.

The second stage was not commenced until all soiled packing had been removed, the towels changed, the instruments re-sterilised, and the surgeon's and assistant's gloves had been changed. From this point onwards the operation must be regarded as an aseptic procedure. The wound, of course, was not free from bacteria, but their number had been so reduced that the tissues could deal with the remainder. The best method of filling the cavity with muscle was different in every case: what one must do was to fashion from the most conveniently situated mass of muscle a thick, broad-pedicled flap of approximately the same size as the cavity. It was a plastic operation based upon the same principles as those which govern plastic operations in general, and the main point to be kept in mind was to secure an adequate blood-supply to the transplanted muscle. The muscle graft was now pushed into the cavity and pressed home firmly; it readily adhered to the bone. A few stitches of catgut might be required to bring together the overlying muscles and to assist in keeping the graft in position. The skin was loosely sutured and the subsequent escape of exudate was provided for by means of rolls of rubber sheeting inserted in convenient parts of the wound. It was important to place one such drain in the space from which the muscle graft had been cut. These drains were usually removed at the end of 48 hours. The limb was splinted in such a way as to relax the parent muscle.

In some cases these wounds had healed practically by first intention, but there was often a considerable reaction, which might last for several days, the temperature being raised to 101° or higher and the wound discharging a quantity of exudate, which was sometimes thin and watery and sometimes frankly purulent. In one or two instances severe suppuration had occurred, but the wounds had, nevertheless, eventually healed soundly.

Advantages of the Muscle-graft Method

The advantage of the muscle graft over the method of Broca was that less bone need be removed, and it was not necessary to convert the whole cavity into an open gutter. Hence the bone need not be weakened to the same extent. (Broca spoke of fractures having occurred during his operation.) Further, the cavity often extended into the articular end of a bone, in which case it could not be converted into an open trough in its whole extent. The obliteration of the cavity by the falling in, or pressing in, of the overlying soft parts might take some time, and might fail to be complete; by means of muscle grafting we got an immediate and entire filling up of the space. In contrast with the other materials which had been used, we had in muscle a living vascular tissue which might be presumed to furnish cells and fluids capable of completing the removal of such micro-organisms as might remain. It was possible that, in parts at least, union between the raw bone and raw muscle might occur by first intention, or the bone and muscle might each become covered with granulations which might subsequently unite. In either case the respective blood-vessels of bone and muscle coalesced, so that an additional supply of blood was brought to the bone. We had no evidence that bone formation occurred in the graft, but it might conceivably occur should the parts concerned be not strictly aseptic, and the graft become the seat of a chronic myositis. The graft retained its connexion with the parent muscle and might take with it a nerve-supply, in part at least. It need not cease to function if the arrangement were such as merely to make the transplanted slip arise from, or shift its insertion into, another part of the bone. The fate of the graft was a matter of subsidiary importance; for if the procedure had successfully obliterated the cavity, its real object had been attained—namely, sound and final healing. Whether ossification ultimately would take place

was immaterial from the point of view of strength, for, as the patient used the limb, and so subjected the bone to strains and stresses, compensatory overgrowth occurred. This was well exemplified in a radiogram taken by Captain Keen.

Discussion.

Captain B. S. SIMMONDS spoke of the work he had carried out with Colonel Sargent and Major Oswald Shields at Tooting Military Hospital in dealing with gunshot fractures which were unhealed, owing to the presence of septic tunnels and cavities in bone. Their object had been in all cases (1) to expose freely by periosteal resection the whole area of the injury to the bone; (2) to open up thoroughly the cavity or tunnel so that its whole extent could be explored; (3) to remove all sequestra and diseased bone, and the fibrous tissue and granulations lining the cavity or tunnel; and (4) to arrange for soft parts to fill up the cleaned cavity completely. He thought that every case should be treated on its merits without one method exclusively being adopted. Many cases of tunnel and cavity which could, without removal of too much bone, be converted into a shallow cavity could be cured by Broca's method; but other cases, such as cavities involving the condyles of the femur, and cavities in which removal of sufficient bone would endanger the function of the limb, were best treated by the muscle graft.

Captain Z. MENNELL said that during the past year he had performed this operation on about 27 cases, 23 of which could be traced. He wished to emphasise certain points: 1. The need for complete excision of the sinus which leads to the bone cavity and of the surrounding scar tissue. It was essential that the incision should run through healthy skin, so that the stitches need not pass through scar tissue or sustain any tension. 2. The careful packing off of the wound so as to avoid bone chips being overlooked. 3. The muscle tissue used as a graft must be muscle tissue only, without tendon or fascia attached to the surface which comes into contact with the raw bone surface. The graft must have a good blood-supply and be free at one end. 4. Efficient drainage of the cavity from which the muscle has been taken through a separate wound in the most dependent position possible. 5. The need for firm pressure over the muscle in the cavity when the dressing was applied. 6. Careful examination of each case for any interference of the blood-supply to the limb. Referring to the after-effects, he said that there was very considerable oozing. This need not cause alarm, and only necessitated packing the wound outside the original dressing and perhaps a firm bandage in addition. There was often considerable reaction and sometimes, in addition to constitutional symptoms, such as fever, an apparent severe local infection. This only lasted a short time, and if there was sufficient drainage no ill-effects appeared.

Mr. C. H. FAGGE and Major OSWALD SHIELDS also spoke.

Major JOHN R. LEE read a paper on Compound Fractures of the Femur in its Upper Third and demonstrated his pelvis-femur splint, and also a splint for fractures of the upper extremities. The paper will be published in a later issue of THE LANCET.

SECTION OF ANÆSTHETICS.

The Present Position of Spinal Anæsthesia.

A MEETING of this section was held on Dec. 6th, Dr. LLEWELYN POWELL, the President, being in the chair.

Dr. F. S. ROOD opened a discussion on the Present Position of Spinal Anæsthesia. He said that he had nearly always used a 5 per cent. solution of stovaine, the density of which was increased by the addition of 5 per cent. of dextrose. He preferred this to a solution of stovaine in saline. The difficulty of the conscious patient was overcome by combining general anæsthesia or a modification of twilight sleep with spinal anæsthesia. The question of shock was discussed, spinal anæsthesia having been given up in the military hospitals in France owing to the danger of administering it to patients who would be seriously affected by a fall in blood pressure. On the other hand, spinal anæsthesia protected patients from the onset of shock due to prolonged and severe surgical procedures. Difficulties due to a fall of blood pressure in his own cases had been much less frequent since the adoption of the recumbent position. Dr. Rood's paper will appear in full in a later issue of THE LANCET.

Mr. P. LOCKHART-MUMMERY said that the object of anæsthesia was to protect the patient from loss of vital energy, which occurred in two ways: (1) by afferent impulses reaching the brain from the site of operation; and (2) by fear. Inhalation anæsthesia protected the patient against fear, but not against impulses reaching the brain; spinal anæsthesia protected against pain but not against fear, and fear affected the patient as much as pain in producing a lowered blood pressure. It was therefore advisable to use both forms. The best results he had seen yet had been from a combination of twilight sleep and spinal anæsthesia, but it was difficult to estimate the amount of scopolamine-morphine needed. The greatest advantage of spinal anæsthesia was that it did not produce vomiting. It was necessary to keep up the vital energy by feeding, and with spinal anæsthesia the patient could be fed until the time of the operation, and food could be given immediately afterwards. This made a very marked difference. During the last five years he had reduced his mortality from excision of rectum from 30 to 40 per cent. to 5 per cent. With regard to the question of shock, it should be realised that under spinal anæsthesia the patient was under the influence of gravity (the case being comparable to that of the hutch rabbit) and so must be kept head downwards. The careful moving of the patient afterwards was of extreme importance.

Mr. P. P. COLE said that with regard to the prevention of shock, the posture and the maintenance of the same position after operation were both very important. Such operations as that for a large umbilical hernia in a very stout woman should not be done without spinal anæsthesia, owing to the strain on the stitches when vomiting occurred. If vomiting were eliminated the success of the operation was assured. Spinal anæsthesia was also invaluable in prostatectomy and for all urethral work; with it he had never found an impassable stricture. It was also very useful in emergency operations in acute abdominal conditions where the surgeon was single-handed.

Mr. ROBERT DONNELLAN said that he had administered spinal anæsthesia for some years in thousands of cases. He preferred the saline form, because the operation could be begun at once and because pallor, sweating, shock, and collapse were less than with the glucose solution. Temperament played a large part; there was far more shock, sweating, &c., in the case of nervous patients. He asked if stovaine was a vaso-dilator. He had watched the pulse and had found the radial pulse large, soft, and flabby before shock came on. He had had a certain number of cases of retention of urine due to atony of the bladder, in which catheterisation was needed for some days.

Mr. H. M. PAGE said that he had begun by using the heavy solution and had gone on to the light, and did not wish to change. With the patient in the Trendelenburg position he had seen no shock, vaso-dilation, collapse, &c. Paralysis of eye muscles and headache also occurred after spinal puncture for fluid.

Dr. F. E. SHIPWAY thought that the fall of blood pressure was the chief question. It did not depend upon the lightness or heaviness of the solution used so much as on the paralysis of a large portion of musculature. He asked if the headache was a nervous phenomenon and due to the patient being apprehensive.

Dr. J. BLOMFIELD thought that Crile had underrated the power of general anæsthesia in preventing shock. It was difficult to produce shock in anæsthetised animals. Spinal anæsthesia was of great value in selected cases; he found it of most value combined with general anæsthesia.

Dr. ROOD, in reply, said that a fall of blood pressure superimposed on shock was dangerous. If the patient were in such a condition it was unsafe to give an anæsthetic which cut out the splanchnics. He had never seen a case of continuous retention of urine.

DEVON AND CORNWALL SANATORIUM FOR CONSUMPTIVES, DIDWORTHY.—The fifteenth annual report shows that during the year 148 patients were admitted in the first stage of tuberculosis, 155 in the second stage, and 20 in the last stage. Of the last-named cases half were discharged improved. The average stay of each patient was 90 days. The average cost per case amounted to just over 35s. weekly. The income was £5883, and an unfavourable balance of £191 remained.

Reviews and Notices of Books.

I. *A Short Practice of Midwifery.* By HENRY JELLETT, B.A., M.D., F.R.C.P. Irel. Seventh edition, revised. With 4 coloured plates and 236 illustrations. London: J. and A. Churchill. 1918. Pp. 545. 12*s.* 6*d.* net.

II. *A Short Practice of Midwifery for Nurses.* By HENRY JELLETT, B.A., M.D., F.R.C.P. Irel. Fifth edition, revised. With 6 plates and 169 illustrations in the text; also an Appendix and a Glossary of Medical Terms. London: J. and A. Churchill. 1918. Pp. 464. 8*s.* 6*d.*

I. THE present edition of this well-known text-book has been revised and seen through the press under the stress of war conditions in Flanders. In spite of this, the revision appears to have been carried out carefully and thoroughly, and it remains one of the best short text-books on the subject of midwifery. Naturally, it reflects the teaching of the Rotunda School, of which the author is so widely known an exponent. In the chapter on Eclampsia we notice that the rapid emptying of the uterus is not regarded with much favour. The question is a difficult one, but in view of the increasing number of advocates of the rapid termination of the pregnancy by the performance of Cæsarean section it is interesting to note the recommendation that if the patient's condition is becoming worse in spite of the medicinal treatment advised the uterus should be emptied after the use of Champetier de Ribes's bag or Frommer's dilator. Surely a more rapid and more surgical method in such a case is the performance of an abdominal Cæsarean section. The uterus can be emptied with greater safety by this method than by any vaginal operation. But apparently the author rejects Cæsarean section altogether, and would use in preference a Frommer's dilator, an instrument the employment of which most obstetricians have abandoned. It must be admitted, however, that the routine medicinal treatment as practised by the author and others, such as Stroganoff, has given very good results. A work which has reached its seventh edition requires no recommendation on our part; we endorse the favour with which it has been received by students and teachers.

II. The present edition has been carefully revised and brought into conformity with the existing practice of the Rotunda Hospital. A number of new illustrations have been added and others have been redrawn. As Dr. Jellett points out in his preface, the first duty of a nurse when the labour she is attending is not a normal one is to send for medical assistance, and her second duty is to do the utmost for her patient that she can until assistance arrives. She cannot perform the second of these duties, nor can she give intelligent aid to the medical man, if her knowledge is limited to the bare essentials which will enable her to conduct a case of normal labour. For the purpose of acquiring a theoretical knowledge of the other details of the management of a pregnant, parturient, and puerperal woman, a nurse cannot do better than consult this book by Dr. Jellett. In it she will find clearly and concisely described all the facts she should know, and we can confidently recommend it to all nurses studying midwifery.

Gynecology. By WILLIAM P. GRAVES, A.B., M.D., F.A.C.S., Professor of Gynæcology at Harvard Medical School, &c. With 368 half-tone and pen drawings by the Author, and 123 microscopic drawings and 100 illustrations in colour. Second edition, thoroughly revised. London and Philadelphia: W. B. Saunders Company. 1918. Pp. 883. $7.75.

IN the second edition of this book the section on the relationship of gynæcology to the internal secretions has been rewritten almost entirely and considerably amplified. This subject is one of the greatest importance to the gynæcologist, and how thoroughly it is treated by the author is shown by the fact that he devotes some 130 pages to it. A new section also has been added dealing with the relation of gynæcology to the sex-impulse, largely based upon the theories of Freud regarding infant sexuality. Other interesting additions are to be found in the sections dealing with ovarian organotherapy, ovarian transplantation, the radium treatment of cancer, and the use of radium in non-malignant gynæcological diseases. A special description is given of the very thorough operation for cancer of the vulva in two stages recommended by Taussig. Indeed, the portion of the book dealing with operative gynæcology is particularly interesting, as a number of operations are described which are not to be found in the ordinary text-books—for example, the author's method of performing anterior colpoplasty, Clark's perineoplasty, and Studdiford's modification of the same operation. Another useful procedure described is Bartlett's method of transplanting a portion of the fascia lata from the thigh in the treatment of ventral hernia. The whole work is most interesting and beautifully illustrated, upon which we can heartily congratulate the author, and it should be read by all teachers of gynæcology.

Simplified Method of Tracing Rays through Any Optical System. By LUDWIK SILBERSTEIN, Ph.D. London: Longmans, Green, and Co. Pp. 37. 5*s.*

THERE is something very fascinating about the apparent (but deceptive) simplicity of quaternions and vector analysis, but it is well to remember that such a good mathematician as Lord Kelvin confessed that for years he was unable to understand Heaviside's vector analysis. Dr. Silberstein, however, tells us in his preface that only the rudiments of vector algebra are involved in this little book, and that "a reader who is entirely ignorant of the subject could in a few hours acquire this amount of knowledge from one of the existing treatises on it." We think the author has underestimated the elusiveness of the method. For instance, on p. 17 a simple vector formula is said to show

"at a glance an interesting and perfectly general property of the prism. ..... Thus the final emergent ray makes with the edge (!) the same angle θ as the original incident ray, whatever its orientation. In other words, the only effect of the prism is to *turn the ray rigidly round the prism edge* as axis." (The italics are the author's.)

This statement is not a mere slip, for it is repeated on p. 27. It is, however, well known that the deviation of a ray due to the interposition of a prism is the angle between the incident and emergent ray, so that the axis, about which the ray is turned, passes perpendicularly through the intersection of these rays, and not through the edge of the prism. The book cannot therefore be recommended in its present form, and the 18 blank pages at the end might well be utilised in the explanation of the fundamental principles of vector analysis required in tracing rays by this method.

Reminiscences of a Student's Life at Edinburgh in the Seventies. By ALISMA. Edinburgh: Oliver and Boyd. 1918. Pp. 115. 4*s.*

THIS is a pleasant, modestly written little book of recollections of various events and people, and we may at once say that the people are far more important than the incidents which are mentioned in connexion with them. "Alisma" plunges at once into his subject with a reminiscence of Professor John Hutton Balfour, Professor of Botany (1845–79), who had told "Alisma" a botanical riddle the answer to which is the calyx of the wild rose, and it ran thus:—

Quinque sumus fratres, unus barbatus et alter,
Imberbesque duo, sum semiberbis ego.

(Two of the sepals of the calyx are bearded, two are not, and one is bearded on one side only.) This riddle in one form or another is of great antiquity, and John of Gaddesden, our first English Court physician, used it to describe the sections of his Rosa Anglica in this form:—

Tres sunt barbati, sine barba sunt duo nati,

signifying that of the five books into which his treatise was divided three were long and two were short.

Among other names of famous men mentioned by "Alisma" are Blackie, Crum Brown, Chiene, Christison, Turner, Huxley, and Lister. The last chapter recounts how the author returned after a lapse of 15 years to receive his Doctor's degree, and how he experienced that mournful feeling of loneliness which all of us who have been educated at a public school or university have felt on returning to the scenes of our youth. But the book will recall pleasant memories to all Edinburgh men of the period dealt with, and will serve for some half-hour to make them renew their youth as the eagle when [illegible] read it.

THE LANCET.

LONDON: SATURDAY, DECEMBER 14, 1918.

Medicine and Aviation.

THE Report of the Civil Aerial Transport Committee, issued last week by the Air Board, makes it certain that the developments of aviation during four years of war will find expression in the life of the world during the peace upon which we are now entering, and within which we aspire to abide for the future. The report indicates that certain types of flying machines will be promptly available for use upon the air routes of the globe, not only for mail and parcel traffic, but also for business, travel and even pleasure touring. With respect to the organisation of this tremendous revolution in transit and transport much, of course, remains for discussion. Of the character of the machines, it is obvious that they will have to be made to suit the circumstances of their employment, and elaborate rules will have to be laid down for the maintenance of certain streams of traffic. Similarly, the establishment of adequate aerodromes will be required, as well as landing-stages and garages, so that convenient starting- and stopping-places may be at public disposal. Systematic meteorological observations will have to be arranged, and as some of the activities postulated will not only entail flying by night, but to some extent flying at regular intervals in accordance with a time-table, weather forecasts will be needed, as well as knowledge of air currents at high altitudes. All this information must be forthcoming and available for ready distribution. It is clear that before a regular commercial air service can be established a vast amount of preparation remains to be undertaken.

But that regular aircraft services for various purposes will come into being no one can doubt who has followed in imagination the intensive experience obtained by the flying services in the course of the war—experience that will be largely wasted unless it is to form the foundation of the new developments. This experience has been of a terrific character, associated in many cases with violent death and permanent injuries, although the highest medical talent has been freely placed at its disposal. Without this medical service, which grew up almost within a night at the call of urgent need, flying would still be in large measure the approach to suicide which it was a decade ago. Obviously, the pleas which have been put forward for a first-rate medical service attached to the Royal Air Force during the war hold good also for the aviation service which peace brings in. The human bird, whether vulture or carrier-pigeon, is exposed to many and peculiar strains requiring close and special medical supervision if accident is to be avoided. The flying man is an artificial combination in which man and machine become to all intents and purposes one. Histologically such a symbiosis has generally taken æons to evolve. The last few years, and especially the last year of all, have seen its meteoric development in the airman; but its maintenance will for that very reason require the more systematic care. The principles on which personnel is chosen will require working out. The physiology and psychology of candidates for service must be closely scrutinised, as the responsibility in life and limb of the recruiting officer will be a very heavy one. Recruiting officers must form part of a highly equipped and properly trained service. Of all factors probably the most important in the art of flying is the coördination and prompt action of reflexes necessary for the successful management of mechanical accessories which have become part of the human person. It has been stated, and we have never seen it contradicted, that in practically no other accomplishment has the man to keep so many groups of antagonistic muscles in a state of static wakefulness, or to perform such a variety of coördinated leg and arm movements. The statement was made with reference to the management of fighting machines, where alone experience can be quoted. But while the more stable commercial machines will not make such demands, the need will still remain that the period of training for flying should be adequately long; and it also means that the candidate, when found physically fit to fly, should be able to call during his training for the best medical advice, and to feel that he is receiving responsible care, which does not mean grandmotherly supervision.

How the selection of aviation candidates is to be accomplished is the subject of an exhaustive article by Dr. G. A. SUTHERLAND in our columns this week. Medical examination of would-be-flyers is the first link in a chain which should support every flying service at every stage. Dr. SUTHERLAND, writing as a late member of the Special Medical Board of what was the Royal Flying Corps, begins with detailing the essential qualifications for air service, and goes on to indicate the special conditions of the cardio-vascular and nervous systems which make the candidate a likely or an unlikely flyer. This examination involves points more difficult than the essential integrity of the sense organs, which is comparatively easy to determine. Only during a preliminary period of probation will some of these points become clear. Ground training of candidates will include athletic sports, not only to keep them fit but to afford medical indications both on the physical and temperamental sides. Much has been said that is wise, and much that is less than wise, concerning the temperament of the aviator, and a large proportion of these reflections have been made with the fighting man alone in mind. Aviation, when it becomes a branch of the Civil Service or a part of our domestic machinery, will remain for the present a dangerous occupation, or we should not be claiming that those who pursue the occupation should have at their beck and call a highly qualified medical service. But with the disappearance of war there goes a class of risk which called for an ultra-courage and activity. For those heroic

souls, whose absolute fearlessness, love of adventure, determination to overcome difficulties, and devoted patriotic obedience played so large a part in the war, a white-hot enthusiasm was necessary which will hardly be at the disposal of commercial life. And with that fact vanishes the force of much of the lurid writing about the temperament of the flying officer, but in no way whatever is proper medical supervision of commercial flying rendered unnecessary. It is urgently necessary.

Beer, Germinated Beans, and Scurvy.

THE processes of seed germination and the complex and interesting changes involved therein have long attracted the attention of chemists and biologists. The subject received the most earnest and fruitful study when science came to the aid of the brewing industry, and it is worthy of observation that both chemical and biological science gained greatly by the researches connected with the brewing of beer. The maltster did but imitate the natural processes of germination by soaking the grain in water under favourable conditions until it sprouted—a period of growth which meant the beginning of important changes in the constituents. It meant the development of the enzyme which transformed insoluble starch into soluble sugars, and these being capable of fermentation became further simplified and were succeeded by alcohol showing the constitution of water, in which one hydrogen atom is replaced by the ethyl group. That seems simple chemistry enough, but the changes are more complex than thus described, for besides dextrins and sugars there are other very important products elaborated which, though present in minute amount, are now found to exercise a remarkable influence on the human metabolism. In an interesting historical sketch which we publish this week, by Mrs. ALICE HENDERSON SMITH, on "Beer and Scurvy," reference is made to the value of fresh germinated barley as a material possessing marked antiscorbutic potency, which is preserved in the beer produced from the malted product so long as it is not dried at too high a temperature. In an account in THE LANCET of Oct. 19th of an outbreak of scurvy in the South African Labour Corps Dr. HAMILTON W. DYKE observed the useful place taken by kaffir beer in the diet of these natives, which would appear to confirm and justify the belief in the value of beer as an antiscorbutic used in the Navy 120 years ago. Under, however, modern methods of malting and brewing the antiscorbutic element appears to be largely, if not completely, eliminated. Recent experiments, again, made by A. HARDEN and S. S. ZILVA with beer made from kilned malt led to the conclusion that the malt liquor so made was deficient in antiscorbutic properties, a conclusion which explains the history of its failure as a defence against scurvy in certain of the Arctic expeditions. Beer made by modern methods may therefore be ruled out as of any value as an antiscorbutic, but the fact that the process of germination develops an antiscorbutic factor must not be lost sight of.

In describing the distribution among foodstuffs of the vitamines needed for the prevention of beriberi and scurvy, Dr. HARRIETTE CHICK and Miss E. MARGARET HUME[1] have demonstrated by animal experiments that germinated pulses are richly endowed with antiscorbutic vitamine, and they made the practical suggestion that in order to prevent scurvy, if a supply of fresh fruit is not procurable, germinated pulses should be added to the diet. In our columns this week we publish a very interesting note "On the Value of Germinated Beans in the Treatment of Scurvy and Some Points on Prophylaxis," by Dr. H. W. WILTSHIRE, who had under his observation in 1917 many Serbian soldiers affected with scurvy, and when the disease became prevalent again this year an attempt was made to test the value of germinated pulses in treatment. The clinical results he reports confirm the experimental results of Dr. CHICK and Miss HUME, and "permit the definite conclusion that dry beans develop, upon germination, an amount of antiscorbutic vitamine at least equal to, if not greater than, that contained in fresh lemon juice." The results are remarkable, for they show that the use of germinated pulses is capable of practical application for the effective prevention of scurvy, and in the opinion of Dr. WILTSHIRE this would be the easiest and cheapest method by which to prevent the occurrence of scurvy in an army in the field.

All this should give fresh stimulus to probe further into the exact nature not only of these antiscorbutic elements, but of the antineuritic elements also. In neither case has a specific substance been isolated, and consequently no definite chemical constitution can be ascribed to them. It would appear that all attempts to isolate an exact substance by well-known methods of separation are frustrated by an instability of character. These accessory food substances, for instance, will not survive prolonged heating and alkalies are fatal to their activities, which would seem to point to their being of a basic nature, the alkali setting free possibly a nitrogen group. We know that the antineuritic element can be differentiated from the antiscorbutic element by adsorbents. Fuller's earth, for example, adsorbs, as HARDEN and ZILVA have shown,[2] almost quantitatively the antineuritic factor out of autolysed yeast, but does not reduce the antiscorbutic potency of orange juice, so that in a fluid containing autolysed yeast and orange juice the antineuritic factor is removed, while the antiscorbutic activity remains unimpaired. The same authors[3] have shown, again, that by eliminating the free citric and other organic acids in lemon juice an antiscorbutically active residue is obtained, and therefore these organic acids are not concerned in the prevention of scurvy.

[1] Harriette Chick and E. Margaret Hume: The Distribution Among Foodstuffs (especially Those Suitable for the Rationing of Armies) of the Substances Required for the Prevention of (a) Beri-beri, and (b) Scurvy, Journal of the R.A.M.C., xxix., No. 2, August 1917, p. 121.
[2] THE LANCET, July 13th, 1918, p. 52.
[3] Biochemical Journal, October, 1918.

It is to be hoped that the chemistry of these accessory factors will soon be cleared up and a method found for their isolation in the pure state. Biologists have done well in developing this new scientific aspect of dietetics, and so far chemists have not kept pace with them. We may appropriately, in connexion with the whole subject, congratulate Professor FREDERICK GOWLAND HOPKINS, University Reader in Chemical Physiology and Prælector in Bio-chemistry in Cambridge University, on having been awarded at the last annual meeting of the Royal Society, held on St. Andrew's Day (Nov. 30th), the Royal Medal of the society. As stated on the occasion of the presentation of the medal, Professor HOPKINS was among the very earliest, if not actually the earliest, to recognise and announce that minute quantities of certain bodies, the nutritive value of which had hitherto been unsuspected, exert an enormous influence upon growth and upon normal adult nutrition. He showed that without these accessory factors a diet otherwise full and seemingly complete is incapable of allowing growth and even of maintaining body-weight or life. Subsequent events have abundantly proved what a valuable observation in dietetic research was thus made.

Demobilisation and Venereal Diseases.

THE Local Government Board is alive to the very pressing danger of the mobilisation of venereal diseases on demobilisation of the Armies to which we made extended reference last week. The Board has issued a circular (V.D.19) to county and borough councils, asking them to secure at once a considerable extension of facilities for the free treatment of venereal diseases. In the first instance arrangements are suggested for more frequent clinics, including evening sessions at existing treatment centres, and in the second for the provision of additional centres. The Board suggests that in many cases it will not be practicable to provide sufficient centres by arrangement with the voluntary hospitals, and that it will therefore be necessary for the borough councils to make arrangements on their own premises, possibly utilising a tuberculosis dispensary or isolation hospital. For the treatment of gonorrhœa, in the intervals between the clinics treatment by a trained nurse or attendant (subject to medical supervision) is suggested, the treatment to be given either at the hospital where the treatment centres are or at new auxiliary centres. The latter should also serve the requirements, between the dates of attendance of the doctors at the regular clinics, of persons who are apprehensive that they may have contracted disease, although no medical diagnosis has yet been made. Borough councils of the larger areas are urged to consider at once the desirability of appointing whole-time venereal disease officers. Negotiations are proceeding with the naval and military authorities for the early release of doctors specially experienced in the treatment of venereal diseases, of whom a list will shortly be available.

Annotations.

"Ne quid nimis."

A NATIONAL TRIBUTE TO VOLUNTARY AMBULANCE WORKERS.

A LETTER from Lord Ranfurly in another column calls attention to the admirable work, extending over 40 years, which has been done by the Ambulance Department of the St. John Ambulance Association. And in our correspondence columns last week Sir Rickman Godlee and Sir James Cantlie, respectively President and Principal of the College of Ambulance, Vere-street, W., entered a plea for funds in order that the College may have an assured income, and be enabled to carry out in peace time the useful—the immeasurably useful—work which it has done during the war. Everyone should recognise the important part which first-aid teaching has played in the saving of life during the war, while the Home Office regulations with regard to emergency treatment in factories is a proof of the value of prompt surgical aid in the civil direction. First-aid is, indeed, an essential adjunct to medicine and surgery; immediate attention after injury, wherever it may take place and by whatever means, often saving lives, and always assisting treatment. It should be realised that men, women, and children of these islands also leave the homeland to reside under unusual climates and in thinly populated districts, as the need of the workers dictates, and these localities are surrounded by many dangers to health which are new to them, and which present themselves in circumstances where the threatened persons are bound to depend on their own ingenuity. A part of the work of the College of Ambulance is to guard against these dangers. At any time the healthy individual life is an asset to the nation, but at the present moment such a life has an artificial value when war has left its hideous mark on the population. The College of Ambulance was founded in September, 1914, when Sir James Boyton gave the magnificent buildings, 3, Vere-street, London, as a home for the College free of rent for a year, the expenses of the work being paid in part by the fees of the pupils, and Sir James Cantlie giving his services as teacher free. In September of the present year the incorporation of the College took place, and now, if the institution is to form a sufficiently noble memorial to the thousands of voluntary workers who have given their services to the country in time of need, and adequately play its part in the reconstruction work that is before us, it is necessary that substantial financial aid should be forthcoming. The very nature of the work prevents it from being self-supporting, for large teaching fees cannot be asked from those who freely give their services to the country without pay. The sum required to establish the association on a permanent basis as a national memorial is £100,000, and Lord Mount Stephen has started the list of subscriptions with £500. We hope the appeal will receive the whole-hearted support of both the public and the medical profession. Subscriptions should be sent to the Honorary Treasurer, 3, Vere-street, London, W. 1.

AN ANOMALOUS DISEASE.

THERE was a curious epidemic at Taranto in May and June of this year, attacking the civil population and the crews of the men-of-war. Ships might

have three or four hundred cases on board in a very few days. Luckily the cases only lasted two days usually. The very young and the very old were not attacked. The disease was clinically differentiated from dengue, influenza, and pappataci fever, and a *Micrococcus tetragenus* was found in the blood and pleural exudate; a streptococcus was sometimes present. The disease was characterised by pharyngitis, headache, pain in the back, pyrexia (104° even), and in severe cases pneumonia, pleurisy, albuminuria, enlargement of spleen. Endocarditis is mentioned in the post-mortem report of ten fatal cases. Gargling the throat is mentioned as a prophylactic, and in treatment aspirin is forbidden, as weakening of the heart is specially feared. Relapses did not occur, so some immunity is probably set up. We quote from the report of Lieutenant-Colonel Saccone in the *Annali de Medicina Navale*.

WAR NEPHRITIS OR TRENCH NEPHRITIS.

AMONG the many controversial questions raised by the conditions of medicine and surgery which seem to be directly dependent upon war the problem of war nephritis or trench nephritis occupies a prominent place. There seems to be little doubt that its incidence is determined entirely by war conditions. It affects almost exclusively troops in the front line, civilians having in great proportion escaped. Few cases occur amongst officers or in units that are well housed. Numerous theories have been evolved, most of them speculative in character and based upon little evidence, though there seems to be an increasing consensus of opinion in favour of an infective agent in the causation. We published in a recent issue of THE LANCET an admirable summary of the clinical features of this disease by Professor H. B. Day,[1] Professor of Clinical Medicine, Egyptian School of Medicine, based upon a careful personal study of 50 cases in the early stages and a critical examination of the records of other observers. Professor Day excludes the cases of recurrent nephritis and of infective nephritis with more or less obvious primary focal disease, and bases his observations on what may be regarded as war nephritis or trench nephritis proper. This he divides into two main groups—the common form characterised by breathlessness, œdema, and the urinary signs of acute nephritis, and a smaller group distinguished by hæmaturia and involvement of the lower urinary tract, which he follows Dr. R. G. Abercrombie in calling "lower tract cases."[2] Professor Day finds, in agreement with Dr. Abercrombie, that the onset of war nephritis is almost invariably associated with fever which may be of very short duration, so that the general course of the disease is in the main afebrile. He points out that pains in the limbs and back occur, often severe enough to keep the patient awake, and also observes that the spleen was enlarged in all of his cases, and that it became actually palpable in 50 per cent. of them. Professor Day was early impressed with the periodicity of some of the manifestations of the disease. He found that the daily output of urine increased at regular intervals or that it might show periodical falls with a temporary increase of the albuminuria or a visible return of hæmaturia. Such slight recurrences or relapses were often associated with a distinct febrile reaction lasting three days, with a change in the pulse-rate and a fall of blood pressure. Professor Day has observed in cases of trench fever a periodic variation in the enlargement of the spleen which occurs in that disease. He found that the spleen showed alternate advances and recessions in size at regular intervals of five or six days. In war nephritis he noted an exactly similar condition, the spleen varying in size with a periodic variation of identical character. The illustrative details of some of his cases were accompanied in the contribution to our columns with charts showing the variations in temperature, quantity of urine, and splenic enlargement, and his observations were summarised by claiming that the course of war nephritis is marked by more or less evident changes at regular intervals of five or six days—a feature which it shares with trench fever—and he asks whether war nephritis is a complication of trench fever. He admits that the actual proof or disproof of this hypothesis can only be settled by experimental and laboratory work. His reflections are of such interest that they should attract the attention of other observers to this question.

[1] THE LANCET, 1918, ii., 660.
[2] Journal of Royal Army Medical Corps, August, 1916.

THE MEDICAL PARLIAMENTARY COMMITTEE.

MEETINGS of the Executive Committee of the Medical Parliamentary Committee have taken place since our last issue, at which the work ahead was discussed. Coming into existence at so short a period before the General Election the Committee could not expect to play any prominent part in the election; but its offer to supply medical speakers to medical candidates has been welcomed in several directions. The fact that the Committee takes no cognisance of party distinctions will thus be made apparent on several platforms, and in this way the public will see that the Committee is standing for the principle that the medical profession should receive a full share of responsibility in the inception and administration of national health legislation, because the foundation of national progress is national health.

A NEW SIGN OF FOREIGN BODY IN THE TRACHEA OR BRONCHI.

IN the *American Journal of the Medical Sciences* for November Professor Chevalier Jackson has called attention to a new sign of foreign body in the trachea or bronchi which he terms the "asthmatoid wheeze." Further help in the diagnosis of such a body is desirable, for the usual methods—auscultation, percussion, and the X rays—though valuable when positive, do not allow the conclusion to be drawn that a foreign body is absent when they are negative. The new sign is called the "asthmatoid wheeze" because it is similar to the wheezing heard when the ear is placed close to the mouth of an asthmatic. The chief difference is that with the latter râles are more or less associated. In the case of the foreign body the sound is drier when typical, though it may be associated with the bubbling sounds arising from secretion. In a typical case the wheeze is much more marked after coughing out of all secretion than before. This is probably because secretion more or less occludes the spaces by which air escapes between the wall of the bronchus and the irregularly shaped foreign body. When cleared out more air passes and the wheezing is louder. Numerous cases of foreign body in the air passages are reported in which

sounds have been heard with the stethoscope or ear applied to the chest wall or over the cervical trachea or larynx, but the sounds emitted from the open mouth do not appear to have been studied. The nearest approach is the "croupy cough" mentioned as indicative of a foreign body in the larynx, but it is not in laryngeal cases that the "asthmatoid wheeze" is heard. If there is croupy cough the larynx must be looked at. But the indications for bronchoscopy are not so clear. The "asthmatoid wheeze" is elicited by placing the ear in front of the patient's open mouth while breathing deeply and regularly, and is heard during expiration. If wheezing is not noticed the patient is asked to carry respiration to the extreme limit, as though endeavouring to expel all residual air. In a number of cases the wheezing has been apparent only at the termination of this prolonged forced expiration. In others it was so loud as to be noticed all over the room. Care is necessary to distinguish between wheezing due to secretion and wheezing due to a foreign body. This cannot always be done with certainty. Moreover, secretion is usually present in the neighbourhood of a foreign body. As a rule the sounds of secretion disappear after cough and expectoration, while the wheeze of a foreign body remains after the most violent coughing unless the body has been shifted. Of 62 cases, in which the presence of a foreign body was proved, Professor Jackson found the wheeze in 41. It would not, of course, be produced by a smooth foreign body which corks a bronchus tightly.

THE MEDICAL DIRECTORY FOR 1919.

WE have received the Medical Directory for 1919 a few weeks earlier than last year, and take it as the harbinger of a return to more normal conditions in the publishing world. The number of names in the Directory is now 43,100, being an increase of 69 over last year, which itself showed an increase of 152 over 1917. The London total shows an increase of 30, while 119 fewer names are recorded in the provinces, the deficit being made up in Wales, Scotland, and Ireland. But these numbers have special sources of fallacy at the present time. It would have been easy to state the numbers of men and women respectively in the total list or in the respective sub-lists, and we are sorry that this has not been done. The number of women is commonly stated at between 1500 and 2000, which is only a rough approximation to the truth. The useful section summarising the principal laws affecting the medical profession has been brought up to date, and enumerates the drugs prohibited from sale to members of the Forces, with the recent additions of acetanilid and phenacetin. The Honours List in the Directory is no longer complete; the Order of the British Empire has been omitted altogether, as well as the Companions of the various Orders and the holders of the Victoria Cross, the Military Cross, and the Distinguished Service Cross. If the V.C. is not to count as a distinction worthy of record, it is a little difficult to see what is, but of course many holders of this distinction have not survived its bestowal. The high standard of accuracy we have been led to expect is maintained in this new edition.

THE House of the Royal Society of Medicine will be closed from Monday, Dec. 23rd, to Saturday, Dec. 28th, inclusive, but the Library will be opened to military medical officers except on Christmas Day and Boxing Day.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

THE time is approaching in the opinion of the Committee of Management of this Fund when a decision will have to be made as to the future of the Fund. The money in hand is nearly exhausted, and the war is over, but the needs remain, and what part, if any, the Fund can still play in meeting these needs must soon be determined.

Sir RICKMAN GODLEE, the Chairman of the Committee, has received the following letter from Dr. V. Pechère, the President of the Comité National de Secours et d'Alimentation, representing the Aide et Protection aux Médecins et Pharmaciens Belges Sinistrés; this is the representative Belgian Committee, sitting in Brussels, to which the mensualities of the Belgian Doctors' and Pharmacists' Relief Fund have been transmitted for distribution, while the *comptes rendus* of this Belgian body have been summarised frequently in our columns and those of our contemporaries, to show alike the receipt of our contributions and the manner of their allocation. Dr. Pechère writes:—

Bruxelles, Rue des Drapiers, 25.

MON CHER COLLÈGUE,—La guerre est virtuellement terminée. Le droit et la justice triomphent du mensonge et de la force brutale.

Les derniers soldats allemands quittent Bruxelles. Demain il n'y en aura plus un seul dans nos murs. On me dit que les communications postales sont rétablies entre la Belgique et l'Angleterre; et je trouve un ami qui part demain pour Ostende. Je saisis avec empressement cette occasion pour lui confier ces lignes qui, cette fois,—j'en ai l'espoir,—vous parviendront.

Elles iront vous dire en mon nom et au nom de mes collègues l'hommage ému de notre reconnaissance. Le moment n'est pas aux longs discours. Un mot résumera tous les sentiments dont nos cœurs débordent et dont, plus tard, nos lèvres essayeront de vous traduire l'expression. Ce mot, c'est: Merci!

La nation belge sait et n'oubliera jamais ce qu'elle doit à l'Angleterre et à ses alliés.

Les médecins et pharmaciens belges savent et n'oublieront jamais ce qu'ils doivent à leurs confrères anglais et à tous ceux qui ont contribué par leur générosité à soulager leurs misères.

Grâce à vous, grâce à eux nous avons pu sauvegarder la dignité morale de nos confrères nationaux, et les tirer d'une détresse matérielle que nos moyens professionnels eussent été impuissants à combattre.

Votre témoignage constant de solidarité corporative a été pour le corps médico-pharmaceutique belge un précieux et perpétuel réconfort.

Soyez-en remerciés, tous, du plus profond de notre cœur. Nous vous adresserons sous peu un rapport complet sur l'activité de notre œuvre commune.

Croyez, mon cher collègue, à mes sentiments les meilleurs.

Vivent les Alliés! Rule Britannia! Vive la Belgique!

Votre dévoué,
DR. V. PECHÈRE.

Sir Rickman Godlee, Président du Belgian Doctors' and Pharmacists' Fund.

SUBSCRIPTIONS TO THE SECOND APPEAL.

The following subscriptions have been received up to Monday last, Dec. 9th:—

	£	s.	d.
Dr. H. O. Williams ...	2	2	0
Mr. S. Osborn	1	1	0
Dr. C. C. S. Watson ...	5	0	0
Woolwich and Lewisham Divn. B.M.A. (per Dr. C. J. Fuller, hon. sec.)	7	0	0
Sir Alfred Pearce Gould (monthly)	5	0	0
Ross and Cromarty Divn. B.M.A. (per Dr. E. Mackenzie, hon. sec.)	8	17	6
Mr. E. Boulanger	7	15	8
Royal Faculty of Physicians and Surgeons of Glasgow	26	5	0

Monthly Subscriptions.

The following monthly subscriptions have been received for November:—

	£	s.	d.
Dr. Vincent Tighe... ...	0	10	0
Dr. G. Grey Turner ...	1	1	0
Dr. W. E. Good	0	10	0
Dr. W. Luffman	0	10	0
Dr. A. E. Naish	0	10	0
Dr. J. O. Musson	0	10	0
Dr. T. W. Goodbody ...	1	0	0
Sir T. Barlow	0	10	0
Surg. P. G. S. Davis, R.N....	0	10	0
Dr. A. B. Stevens	1	0	0
Major E. R. Fothergill...	0	10	0
Dr. W. S. Hart	1	0	0
Dr. A. Graham	1	1	0
Dr. Hyla Greeves	0	10	0
Dr. H. Caiger	0	10	6
Dr. K. J. Dougall	0	10	0
Dr. A. W. Forrest	1	0	0
Capt. H. L. P. Hulbert, R.A.M.C.	1	0	0
Dr. E. C. Morland... ...	0	10	6
Dr. H. Whitehouse ...	0	10	0
Dr. A. Hawkyard	0	10	0
Dr. W. Stewart	0	10	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

THE King has sent a donation of £5 to the Queen's Hospital for Children, Hackney-road, E., for the Christmas Fund.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

—o—

SATURDAY, NOV. 30TH.

The Case of Frederick Charles Beaumont, L.D.S. R.C.S.

THIS case having been referred to the Dental Committee to ascertain the facts, the committee now reported that they had received shorthand notes of divorce proceedings, in which a decree nisi and absolute had been obtained, with Mr. Beaumont as co-respondent, the respondent having at one time been his patient. Mr. Beaumont also, they reported, gave evidence before them.

The Council deliberated *in camera* on the case, and the PRESIDENT then delivered its judgment, which was that Frederick Charles Beaumont had been adjudged guilty of conduct disgraceful in a professional respect, and that the Registrar was instructed to erase from the Register his name.

The Apothecaries' Hall of Ireland.

Sir JOHN MOORE presented the report by the Examination Committee on various matters relating to the Apothecaries' Hall of Ireland. The report ran as follows :—

On May 31st, 1918, the Council received and entered in its minutes a report by the Examination Committee, and adopted the following recommendations contained therein :—

"1. That the report of Dr. William Boxwell and Dr. Robert Rowlette on the examinations held from December, 1916, to November, 1917, be forwarded to the Apothecaries' Hall of Ireland for their information, with the request that they will favour the General Medical Council with any remarks they may desire to make thereon, in time for the meeting of the Council in November, 1918

"2. That the Apothecaries' Hall be requested to continue to furnish the Tables of Exemptions from, and Results of, Examinations as heretofore, giving particulars of marks, and when the candidate had been previously examined by the Hall, and had passed some portion of the examination, the date of such examination."

These resolutions were conveyed to the Apothecaries' Hall of Ireland on June 5th, 1918.

On Nov. 11th the Apothecaries' Hall forwarded the following remarks on the report of Dr. William Boxwell and Dr. Robert Rowlette :—

"Apothecaries' Hall of Ireland, Mary-street, Dublin,
Nov. 11th, 1918.

The reports of Drs. Boxwell and Rowlette on the examinations held by this body have been considered by the Court of the Hall.

The Court desires to protest in the strongest possible manner against the continued reports and inspections on this institution.

The Court appoints examiners of the highest professional qualifications. Five are professors and one a lecturer in a recognised university; two are members of the Council of the Royal College of Surgeons, Ireland, while seven are members of leading clinical hospitals in Dublin. The Court therefore thinks that its Board of Examiners compares most favourably with any examining body in the United Kingdom, and considers that the perseverance of the General Medical Council in causing constant inspections to be made on the Hall to be due only to prejudice, and to be most unjust."

A Table of Exemptions from, and the Results of, the Examinations of the Hall, held in June, 1918, was received on Nov. 23rd, and is appended to this report. It calls for no comments.

Appendix to Report by the Examination Committee, Apothecaries' Hall of Ireland, June, 1918.

No.	Preliminary Examination. When and where passed.	Primary.	Intermediate.		Pharmacy.	A Medicine.	B Surgery.	C Midwifery.	Result.
			Anatomy, Physiology.	Pathology. Medical Jurisprudence and Hygiene, Materia Medica.					
B 25 ...	R.U.I., 1907.	A.H.I., 1909.	A.H.I., 1910.	A.H.I., December, 1915.	A.H.I., December, 1916.	A.H.I., June, 1918, 65%.	Not entered.	A.H.I., January, 1917.	P., A.
B 41 ...	R.U.I., 1900.	R.C.P. & S.I., 1901.	R.C.P. & S.I., 1903.	A.H.I., July, 1910.	A.H.I., July, 1910.	A.H.I., June, 1918, 81%.	A.H.I., June, 1918, 59%.	A.H.I., July, 1911.	P., A., & B.
B 59 ...	R.U.I., 1902.	R.C.P. & S. Ed., April, 1905.	A.H.I., October, 1912.	A.H.I., December, 1916.	—	Rejected in Clinical, June, 1918.	Rejected in Clinical, June, 1918.	Rejected. June, 1918, 33½%.	R., A.B.C.
C 44 ...	N.U.I., 1912.	N.U.I., 1914.	N.U.I., October, 1917.	A.H.I., March, 1918.	—	Not entered.	—	A.H.I., June, 1918, 60%.	P., C.

On Oct. 28th, 1918, the Hall intimated that it would hold examinations, including the Final Examination, covering the period Nov. 11th to 25th, 1918, and this was communicated to Dr. Finny, who had been deputed to attend these examinations on behalf of the Council during the current year. Dr. Finny thereupon consulted the Council as to when he should present his report, and on the instructions of the President he was advised that it would be expedient to submit one annual report. This may therefore be expected to be ready for the consideration of the Council at the May session, 1919.

The following draft recommendations concluded the report :—

1. That the Apothecaries' Hall be requested to continue to furnish the Tables of Exemptions from, and Results of, Examinations as heretofore, giving particulars of marks, and when the candidate had been previously examined by the Hall, and had passed some portion of the examination, the date of such examination.

2. That the Irish Branch Council be authorised to appoint for the period of one year a deputy to attend and be present on behalf of the General Medical Council at the professional examinations held by the Apothecaries' Hall for the purpose set forth in Section 18 of the Medical Act, 1858; that the deputy so appointed present to the Council a report on the general character of such examinations; and that he be paid a salary of £50 for the year in question.

The report having been received,

Dr. MAGENNIS said that he thought that an injustice had been done in the report to the Apothecaries' Hall. For five years he had done what he could to render the examinations of that body what they should be. After a couple of years of effort he induced this Council to make certain recommendations, and every recommendation which had been made had been carried out by the Apothecaries' Hall. The examiners would compare favourably with those of any examining body in the Kingdom. The only real objections seemed to have been to clerical errors in the examination papers and to the fact that on occasion it was difficult to get some of the examiners there in time. He asked what were the reasons for the exceptional treatment meted out to the Apothecaries' Hall? The Council insisted on a deputy being appointed, but he knew the animus which actuated their deputies.

The PRESIDENT said that the reason for this method of dealing with the Apothecaries' Hall went back to the appeal made by that Hall to the Privy Council against the General Medical Council, in which it appeared that the Council had refused to appoint examiners in surgery in a certain case on the ground that the appointment of examiners in surgery in that case would not help the Council to determine whether the examinations in medicine and midwifery were conducted in a proper way. The Privy Council directed the General Medical Council to appoint examiners in surgery, pointing out that they had means of obtaining efficiency in the other examinations. Those means were the appointment of a deputy from the Council, and other persons had also been appointed to look after the other parts of the examination, not in the way of fault-finding, but in order to know what took place. The proceedings had been quite regular and carried out the terms of the Privy Council.

Sir ARTHUR CHANCE thought the Council ought to resent any imputations cast upon it.

Sir JOHN MOORE said the Council was bound to see that the whole conduct of the examinations was up to the standard considered necessary by them. At page 29 of the Interim Volume (1917) of the Transactions, Dr. Boxwell said: "On these and other grounds I think the examination in pathology, as conducted at the Apothecaries' Hall, is definitely below the standard required by any other licensing body I know of." Page 31 contained a summary of Dr. Boxwell's conclusions: "What strikes one most about the examinations, taken as a whole, is a certain inequality in the standard. The examination in pathology, for instance, is badly planned, although well carried out as far as it goes; whereas others are, through the peculiarities of examiners, sometimes rendered nugatory. I refer to the indulgence shown to outrageous blunders." If this report were adopted, it would be necessary to meet in London to appoint a deputy.

The report was adopted.

Report of the Education Committee on the Nature of the Recognition to be extended to the Schools Examinations recently established by the Board of Education.

The Report was presented by the Chairman of the Committee, Dr. J. Y. MACKAY. A general description of the purposes for which these examinations had been instituted by the Board of Education in England will be found in the Minutes of the Council, Vol. LIV., 1917. The Report thus defined the certificates issued by the Board of Education to the successful candidates according in each case to the educational level attained :—

(1) The certificate of success in the "Second" examination, which follows on a specialised course of study, bears the names of the subjects in which the candidate has passed, and is accepted *pro tanto* by the Universities in respect of the subjects they themselves recognise as satisfying their regulations for matriculation. Similarly it is accepted by the General Medical Council.

(2) That form of certificate of success in the "First" examination in which the candidate has obtained a "pass with credit" in certain of the subjects bears the names of the subjects passed with credit; and in respect of these subjects, should they be included in the University and Council Lists, it is accepted *pro tanto* by the Universities and by the General Medical Council. Candidates who have already obtained the School Certificate may, in subsequent examinations, enter for subjects in which they have not previously passed "with credit," and success in such subjects will be recorded on Supplementary Certificates.

(3) That form of certificate in the "First" examination issued to candidates who have not passed with credit in any of the subjects is termed an "ordinary pass." In it the names of the subjects actually passed are not detailed, but only the "groups" to which the subjects passed belong. As the "groups" referred to are of a very wide nature, and as the Council, like the Universities, has always required that certain subjects should be included, and has allowed only a limited selection in the case of others in its entrance examination, it is certain that it cannot under its present regulations, and could not, without a profound change in the methods hitherto followed, accept either the "ordinary pass certificate" ((3) above), or, in particular cases, the special certificates granted under the "pass with credit" or the "second examination" regulations ((2) and (1) above).

The Report set out the scope of the examination and the general view taken consistently by the Education Committee of the Council and recommended to the Council as follows :—

That the Council endorses the proposal contained in the Report—viz., that the certificate of the "First Schools' Examination" of the Education Board in England be accepted as affording sufficient evidence that the holder has fulfilled the educational conditions required of candidates for admission to its Register of Medical Students, provided that the subjects of English and Mathematics have been passed "with credit."

Dr. MACKAY, in presenting this report, said it was hoped in time to reach the higher standard which the Council had always had as its object. A very important step had recently been taken by the English Education Board in establishing "leaving certificates." In the absence of these latter, the schools had been preparing for a large number of external examinations, and the teaching had suffered greatly owing to the pressure exerted to meet the necessities of all those examinations. The result of having a general education examination would be to free the schools from this pressure. A similar arrangement had been operative in Scotland for a number of years, and he hoped to see such an arrangement in Ireland. The important matter in the future would be the mental training which the student had received, not his proficiency, as tested by examination, in any set subjects; and the Council had chosen the subjects best suited to that end. He proposed the adoption of the report.

Dr. NORMAN MOORE seconded.

The PRESIDENT congratulated the committee on the successful issue of their long negotiations with the English Education Board. The Council desired that a system of examinations should be established which would harmonise all the examinations throughout the country. The merit of the new scheme consisted in the fact that it was based on education, not on examination only, no inquiry being made as to the source of the information.

Dr. LANGLEY BROWNE asked whether there might not be some difficulty due to some of the schools not knowing how to work the scheme.

The PRESIDENT replied that many of the Universities would accept the certificate; the whole machinery became automatic.

The report was agreed to.

Report of the Pharmacopœia Committee.

This report, which was adopted, was as follows :—

The number of copies of the British Pharmacopœia, 1914, which were sold by the publishers between May 26th, 1918, and Nov. 23rd, 1918, was 1512. The number sold in the year ending Nov. 23rd, 1918, was therefore 2382. The total number sold since the date of publication is thus 31,736. Of the third issue of 5000 copies, about 3200 remain in stock.

The Committee are informed that the conditions governing the supply of glycerin, sugar, fats, and oils do not yet permit of the withdrawal of the notices respecting emergency "Alterations and Amendments" of the Pharmacopœia issued during the war.

The Ministry of Public Health.

The Council, sitting *in camera*, discussed the Bill to establish a Ministry of Health and a Board of Health to exercise in England and Wales and in Scotland respectively powers with respect to health and local government. (See THE LANCET, Nov. 16th, p. 685.)

On resuming after the sitting *in camera* the President announced that the Council had passed the following resolution :—

"The General Medical Council cordially supports the proposal to establish a Ministry of Health, and requests the Lord President to submit for its observation the draft of any future Bill on the subject. The Council hopes that any such measures may be applied in its general terms to all parts of the United Kingdom."

The report of the Students' Registration Committee on exceptional cases was also received, without discussion, on the proposition of Dr. NORMAN MOORE, seconded by Dr. KNOX.

Dental Education and Examination.

Mr. C. S. TOMES, in bringing forward the report of the Dental Committee, said that the Council had been approached by a number of embassies or ministries of foreign countries and by the representatives of the colonies asking the Council to make an important departure from previous practice. They had requested that the dental registers of these foreign countries and colonies be accepted *en bloc* by the Council; in other words, that an entry upon those registers should carry the right of entry upon the Foreign or Colonial List of the British Register. That course had never been followed by the Council, largely on the ground that admission to those registers might have been secured under various conditions; in fact, in one of the registers they had discovered 12 different grounds on any one of which people might get on to the Register. The Council had always taken the view that not a mere inscription upon a foreign or colonial register should qualify for admission to the British Register, but only that the courses of training and examination tests should be roughly equivalent to those obtaining in the United Kingdom. The Dental Committee now recommended the Council to keep to this practice and to refuse *en bloc* admissions. One reason that had influenced the Committee was that the Departmental Committee, recently appointed to consider the alleged shortage of qualified dentists, would shortly issue its report, and the present, therefore, was not an opportune moment for the Council to depart from any previous practice. He brought forward recommendations relating to Belgium and to Japan. The recommendation with regard to Belgian dentists was that a request for the Belgian Register to be recognised *en bloc* be not acceded to. This having been agreed to, he moved a further recommendation in the same terms with regard to the Japanese Register, with the addition, however, that the diplomas granted by the Nippon Dental College and the Tokyo Dental College be recognised as admitting to the Foreign List of the British Register. He said that the Tokyo College claimed 66 per cent. of the dental list of Japan, so that in recognising this they were recognising a material part of the Japanese Register.

Sir ARTHUR CHANCE seconded the recommendation, which was adopted.

Mr. TOMES brought forward a further recommendation that the request for the recognition *en bloc* of the New Zealand Register be not acceded to. This request was by the Deputy Director of Dental Services in the New Zealand Expeditionary Force, Major Rishworth, and had been forwarded through the Colonial Office. The Council already admitted one New Zealand diploma—the B.D.S., U. New Zealand degree—as qualifying for the British Register. It was stated, however, that this diploma only included 10 per cent. of the dentists of New Zealand. A letter setting forth reasons for not immediately granting the request had already been sent, but another answer, setting out very fully the reasons why this was not an opportune time for making the alterations suggested, would have to be sent later.

The recommendation was agreed to, as was a recommendation acceding to a request by one dentist to be admitted to the Foreign List on the ground that he entered the Dental College of the University of Michigan in 1891, obtained the D.D.S. Michigan in 1894, and had for 22 years

practised in Dublin. The degrees of the University of Michigan were recognised for registration here up to 1893, when recognition was suspended.

Mr. TOMES also stated that the British Dental Association had expressed its regret at the action of the Council at the May session in approving the scheme of the Birmingham Education Authority for the training and employment of dental nurses. The Representative Body of the Association believed that the approval had conveyed to the public the impression of some recognition of unqualified practice. The Council in giving its approval to the scheme had, of course, made it plain that such dental nurses must be thoroughly under the supervision of registered practitioners. The committee was unable to recommend the Council to make any alteration in its previous resolution.

The Council adopted a recommendation that every person whose name was entered for the first time in the Dentists Register should be entitled to receive a copy of the Register.

After votes of thanks to Dr. Norman Moore for ten years' assiduous service as Chairman of the Business Committee and to the President for his conduct of the chair the session closed.

URBAN VITAL STATISTICS.

(Week ended Dec. 7th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 28·6, against 36·3 and 36·5 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 26·0, or 6·8 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 11·6 in Portsmouth, 12·7 in East Ham, and 12·8 in Enfield, to 53·4 in South Shields, 54·9 in Rochdale, 63·9 in Warrington, 65·6 in Nottingham, 70·5 in Walsall, and 91·6 in Sunderland. The principal epidemic diseases caused 154 deaths, which corresponded to an annual rate of 0·5 per 1000, and included 49 from infantile diarrhœa, 42 from diphtheria, 25 from whooping-cough, 19 from scarlet fever, 18 from measles, and 1 from enteric fever. Scarlet fever caused a death-rate of 1·2 in Birkenhead. The deaths from influenza numbered 3574, against 5119 in the previous week, and included 660 in London, 276 in Birmingham, 254 in Manchester, 172 in Sunderland, 162 in Nottingham, and 97 in Sheffield. The 1099 cases of scarlet fever and 1028 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 37 below and 14 above the respective numbers remaining at the end of the previous week. The causes of 79 deaths in the 96 towns were uncertified, of which 11 were registered in Birmingham, 9 in Liverpool, 6 each in Nottingham and Manchester, and 5 each in St. Helens and Sunderland.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 19·8, against 24·3 and 23·7 per 1000 in the two preceding weeks. Of the 911 deaths from all causes, 24 were classified to influenza, which was also stated as a secondary cause in 165 deaths classified to other diseases; in the previous week these numbers were 47 and 212 respectively. The 376 deaths in Glasgow corresponded to an annual rate of 17·6 per 1000, and included 7 from whooping-cough, 3 each from diphtheria and infantile diarrhœa, and 2 from enteric fever. The 131 deaths in Edinburgh were equal to a rate of 20·5 per 1000, and included 4 from whooping-cough and 1 from infantile diarrhœa.

Irish Towns.—The 172 deaths in Dublin corresponded to an annual rate of 22·5, or 3·5 per 1000 below that recorded in the previous week, and included 42 from influenza, 5 from infantile diarrhœa, and 1 from diphtheria. The 314 deaths in Belfast were equal to a rate of 41·7 per 1000, and included 3 from infantile diarrhœa, and 1 from scarlet fever.

UNRECORDED BIRTHS.—Writing to the Worthing corporation about the incomplete notification of births, the Local Government Board suggests that fathers should be prosecuted, and if this does not result in a considerable improvement in the proportion of births notified, proceedings should be taken against all persons liable—that is, father, doctor, and midwife.

NOTIFICATION OF INFLUENZA IN BELFAST.—At a specially summoned meeting of the Corporation of the City of Belfast, held on Dec. 7th, a resolution was passed unanimously ordering that the Infectious Disease (Notification) Act, 1889, should apply in Belfast for the disease known as "septic pneumonia" for the six months to end 14th June, 1919. In the discussion which took place it was stated that the drivers of the tram-cars (motor-men) had suffered from influenza in a larger proportion than conductors, although the latter were necessarily in closer contact with passengers in crowded cars than the former, who were standing out in the open air. Some of the speakers said it was all very well to make the disease notifiable, but how were they going to cure and to prevent it; others urged that the malady should be made permanently notifiable, but it was shown that it could be made notifiable at any time, subject to the approval of the Local Government Board, by giving fourteen days' notice through a resolution in the City Council.

The War and After.

THE CASUALTY LIST.

THE names of the following medical officers appear among the casualties announced since our last issue:—

Died of Wounds.

Capt. N. K. Foster, R.A.M.C., was educated at University College, London, and qualified in 1908. Prior to joining the R.A.M.C. he was in practice at Oxford.

Died.

Lieut.-Col. C. D. H. Corbett, Royal Air Force Medical Service, was educated at Oxford University and at St. Thomas's Hospital, London, and qualified in 1908. Prior to the war he was in practice in Welbeck-street, London, specialising in dermatology, and contributed many articles to medical literature. He died at Felixstowe of influenza.

Capt. W. R. O'Keefe, R.A.M.C., qualified in Ireland in 1912, and prior to joining the R.A.M.C. was in practice in Sheffield.

Capt. W. H. Compton, R.A.M.C., was a student at Charing Cross Hospital, London, and qualified in 1886. He held appointments as medical referee to several assurance companies, and was at one time a surgeon to the Royal West Indian Mail Steam Packet Co. He died of pneumonia.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. A. B. Beesley, R.A.F., died of pneumonia, second son of Dr. C. Beesley, of Exmouth.

Capt. D. N. Carr, S. Persian Rifles, died in Persia of pneumonia, only son of Dr. D. W. Carr, of the Church Missionary Society, Ispahan.

Able Seaman G. M. Davis, *Benbow* Battalion, R.N.D., died in Holland of septic pneumonia, second son of Temp. Capt. G. W. Davis, R.A.M.C., of Sidcup, Kent.

Second Lieut. F. Sansom, killed in a bombing raid over Germany, third son of Dr. C. L. Sansom, C.M.G., of Kuala Lumpur, F.M.S.

Capt. W. R. Bruce-Clarke, R.A.F., died of pneumonia following influenza, only son of the late Mr. W. Bruce-Clarke, of Harley-street, London, W.

OBITUARY OF THE WAR.

PATRICK JOSEPH O'REILLY, L.& L.M. R.C.P. & S. IREL.,

MILITARY CROSS,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain P. J. O'Reilly, who was killed in action in France on Oct. 11th, was eldest son of the late John O'Reilly, J.P., of Strabane, Ireland. Educated at St. Columb's College, Londonderry, where he was distinguished in the playing fields, at Black Rock College, and at the Royal College of Surgeons in Ireland, he qualified in 1914, and was appointed ship's surgeon on the Blue Funnel Line. Arriving home from China at the beginning of October, 1914, he obtained a commission in the R.A.M.C. and went to France with his regiment, the 9th Devons. In the fighting around Hulluch in September, 1915, he was wounded in the leg, and later gained the Military Cross for conspicuous bravery and devotion to duty, remaining at his post although himself wounded. In May last he was badly gassed, losing his sight completely for several weeks. He met his death whilst tending the wounded. Captain O'Reilly married in 1916 Sybil Olive, daughter of John Collins, of Romsey, Hants. The photograph which we give of him has been enlarged from a snapshot.

THOMAS RICHARD BEALE-BROWNE, M.R.C.S. ENG.,

WEST AFRICAN MEDICAL SERVICE.

Mr. Beale-Browne, who was drowned by the collision of the *Burutu* with the *City of Calcutta* within a few hours of reaching port on Oct. 3rd, at the age of 40 years, was the eldest son of Colonel Beale-Browne, of Andoversford. Educated at Dean Close School, Cheltenham, he proceeded to Guy's Hospital, where he qualified in 1901. He was a keen athlete, taking prizes for running in the Inter-Hospital Sports. Afterwards he made his mark in rifle-shooting, taking prizes at meetings of the Society of Miniature Clubs and at Lagos. After a few years spent in lunacy work at Taunton and the County Asylum, Northampton, he entered the W.A.M.S. On his first tour in 1907–08 he accompanied the Anglo-German Boundary Commission, and afterwards did good work as medical officer in various districts of West Africa. While stationed at Yaba he carried out research work on leprosy. In several cases he noted improvement as the result of his treatment, and in one case apparent cure, but he never afterwards had an opportunity of continuing this work.

Mr. Beale-Browne was a man who put his whole heart into his work, and had the trust and respect of all who came in contact with him. At the time of his death he was homeward bound from the Cameroons, where he had done duty for 21 months. He married in 1910 Helen H. Hay, daughter of the late Donald MacDonald, of Edinburgh, who survives him.

LAWSON TAIT McCLINTOCK, M.B., CH.B. EDIN.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain L. T. McClintock, who died on Nov. 11th at the age of 39 years, was younger son of the late Dr. J. R. McClintock, of Church Stretton. Educated at Shrewsbury and Edinburgh University, he took the M.B., Ch.B. degrees in 1901, and after qualifying filled the post of assistant house surgeon at Salop Infirmary. Settling in Loddon in 1902, he was appointed medical officer to the rural district council and later to the Loddon and Clavering union. At the outbreak of the war he organised the Red Cross Hospital at Loddon and held the post of medical officer there, as well as at the Red Cross Hospital at Hedenham. In 1917 he was appointed medical officer to the 342nd Brigade, R.F.A., and was gazetted captain in the R. A. M. C. in 1918. His death was caused by pneumonia following upon an attack of influenza.

Captain McClintock lived a very active life, took a keen interest in local affairs, and his early death is felt as a calamity. He married in 1903 a daughter of the Rev. S. Irvine, of Londonderry, and leaves a widow and four children.

Correspondence.

"Audi alteram partem."

PHTHISIS IN FACTORY AND WORKSHOP.

To the Editor of THE LANCET.

SIR,—In his interesting article on the prevalence of pulmonary phthisis in relation to industrial conditions (THE LANCET, Nov. 9th) Professor Benjamin Moore affirms the two main factors to be: long-continued working strain and case-to-case infection in unhealthy workshops. I should like to ask Professor Moore, What about the wives of these tuberculous men? Are they not in more unhealthy conditions in their homes? Are not these homes even more ill-ventilated, ill-cleaned, ill-illuminated than the workshops? Are the women not just as much over-strained by domestic work? Moreover, if tubercle bacilli can infect the workmen at a range of 2 or 3 feet in the workshop, surely the same bacilli must be twenty times more infective to the wife of the tuberculous man at point-blank range?

The cause of the different incidence as between men and women must, in fact, be looked for elsewhere, in what French pathologists have long called the *terrain*. It is the individual resistance that counts. Professor Moore records the fact, observed by my friend Dr. Ed. Bertholet, of Lausanne, that up to the age of 25 years more females than males die of tuberculosis. Dr. Bertholet adds that these deaths are largely of abstainers and suggests hereditary tuberculosis as the cause. After 25 years of age more men than women die of tuberculosis, or, as Dr. Bertholet puts it, more drinkers than abstainers. Professor Landouzy said long ago, "L'alcool fait le lit de la tuberculose." Professor Moore has made observations on the printing trade, in which, as Dr. W. C. Sullivan has set out, the average conditions of employment promote industrial alcoholism. No doubt the alcoholic atmosphere of the metropolis contributes to this result. On the other hand, in the country men are scarcely more infected than women. This is in accord with the different conditions of rural life in that (1) the men are seldom exposed to infection and (equally with the town areas) not more than their wives; (2) they lead a healthy outdoor life; (3) they are occasional, not regular, drinkers. Thus the essential cause of adult tuberculosis—alcoholism—is lacking in the case of the rural male. Pathologists tell us that 93 per cent. of the hospital population show at death signs of tuberculous lesions in the lungs, active or healed. This means that practically everyone in poorer urban areas has been exposed to tuberculous infection, but probably at least three-fourths of these infections heal without giving rise to much disturbance of health; only the chronic drinker and the predisposed develop severe disease.

True we must, with Professor Moore, try to stop the contagion in the workshops. But we must at the same time tell the workmen this is only one part of the scheme, and the worker's part is to put an end to the chronic alcoholism.

I am, Sir, yours faithfully,

M. F. BOULENGER,

Ex-Assistant Medical Officer of the Tuberculosis Dispensary "Albert Elizabeth" of Brussels; Assistant Medical Officer, Darenth Industrial Colony.

Dartford, Kent, Dec. 6th, 1918.

THE AMBULANCE DEPARTMENT OF THE ST. JOHN AMBULANCE ASSOCIATION.

To the Editor of THE LANCET.

SIR,—I notice that your reference to "First Aid in Ordinary Life" in your issue of Nov. 30th has been followed by a letter from Sir Rickman J. Godlee and Sir James Cantlie, K.B.E., a Knight of Grace of the Order of St. John.

I feel I must call attention to the fact that the St. John Ambulance Association is the pioneer of voluntary ambulance work, having been formed so long ago as 1877. This fact is, however, already well known, and I wish to refer more particularly to the need for maintaining or acquiring a knowledge of first aid. As Sir Rickman Godlee says, you rightly emphasise its importance, but he is inclined to think that with the advent of peace there will be a falling off in the attendance at classes of instruction. This ought not to be the case, especially if the public can be made to realise

that with the advent of peace their responsibilities are increased owing to the return of so many maimed and crippled prisoners and those utterly wasted and permanently ruined in health.

It will be our duty to attend to the wants of all such persons, and the importance of possessing a knowledge of first aid cannot be exaggerated or too often brought before the public. I am, Sir, yours faithfully,

RANFURLY,
Director.

St. John's Gate, London, E.C. 1, Dec. 11th, 1918.

*** Nothing was further from our desire than to belittle in any way the St. John Ambulance Association, whose service has been regularly noticed in these columns.—ED. L.

THE ABDERHALDEN REACTION.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Nov. 2nd there is an annotation dealing with Dr. J. M. Retinger's investigations on the detection of organic brain tumours by means of the Abderhalden's dialysis method, and the conclusion is reached that "in some hands, at any rate, the method may come to possess a more than academic value." In THE LANCET of Jan. 16th, 1915, I published the results of my clinical investigations based on the methods of Abderhalden. On a series of tests conducted with both the dialysis and the polariscope methods I came to the conclusion that in pregnancy, as well as in cases of malignant disease and many other morbid conditions, proteolytic and peptolytic ferments are present in the blood serum which cannot be demonstrated in the blood of a healthy person. On the other hand, I was unable to find the *specific* ferments claimed by Abderhalden and many of his followers.

Were it actually possible to demonstrate the presence of specific ferments in the blood serum the Abderhalden test would have to be considered as the greatest and the most useful discovery ever made in the domain of medical science. It would only require to devise a routine laboratory test for the purpose of establishing a diagnosis of any diseased condition. Nearly four years have passed since I published my results, and still we do not see this test introduced as a routine examination in the clinical laboratories all over the world. How is it to be explained? The complicated technique is certainly not at fault. No doubt a certain skill is required, but nothing beyond the power of an average laboratory worker. The explanation, I think, is a different one. The test is not generally applied, because it is *of no use for clinical purposes.* It is, in fact, not a clinical test at all. The whole history of the Abderhalden discovery is that of a great scientist who comes out prematurely with a statement, sticks to it, tries to find more and more proofs for its authenticity, and by his personal influence induces many others to repeat his assertions. Over 300 separate investigations were published before I communicated the results of my own work, the great majority confirming Abderhalden's results. Only a few recorded results differ from those of Abderhalden. But in this case time has amply proved that these few and not the majority of workers were right.

I am, Sir, yours faithfully,

J. O. GAVRONSKY.

Cambridge-terrace, Regent's Park, N.W., Dec. 9th, 1918.

ADVANCES IN THE TREATMENT OF FRACTURES.

To the Editor of THE LANCET.

SIR,—Not long ago I had the opportunity of seeing something of the work being done at No. 8 Stationary Hospital, Wimereux, under the surgical charge of Major M. Sinclair, R.A.M.C. I had already had the advantage of learning a little about the sound principles which govern his practice in the treatment of fractures, simple and compound, and of the ingenious methods and mechanical aids which he has elaborated for the management of the most difficult of such cases, for Major Sinclair visited the Queen Alexandra Military Hospital and at the Census Hospital, at which I was then surgical specialist, gave several admirable and instructive demonstrations of his particular technique and apparatus. These methods and their results may be seen on a large scale in No. 8 Hospital, and I can strongly advise anyone concerned with the management of bad fractures to go there, where he will be well repaid by what he can learn. I suppose one is not very far from strict accuracy if one admits that the Thomas splint has been the greatest mechanical non-operative advance in the treatment of fractures which any one man has added to our surgical equipment, and above all to military surgery, where bad cases have to be moved over long distances. But I think I may fairly add to this glorification of the Thomas splint that the clever and practical adaptations of it to the many varied forms of smashed limb in the hands of Major Sinclair, as well as his own particular uses of glue, suitably contrived foot-pieces, and his various methods of extension of limb and retention of fragments in position, make up a contribution to the surgery of the war which is unique and of distinguished excellence. The work of this officer has, in my judgment, diminished suffering, shortened treatment, saved money, and often life itself, and all this perhaps to a greater extent than has been attained by the labours of any one man in the more purely technical branch of our art. I confess myself deeply in his debt for what he has taught in these matters, and on the eve of my return to Australia I feel myself constrained to write this letter of appreciation in the hope that it may impel others to go and see for themselves how great have been the advances in a branch of difficult surgery which we owe largely to Major Sinclair's originality and patient industry.—I am, Sir, yours faithfully,

R. SCOT SKIRVING,
Honorary Major, Australian Army Medical Corps; late Surgical Specialist to the Census Division, Queen Alexandra Military Hospital, Millbank.

London, Dec. 7th, 1918.

DISPENSARY SUPERVISION IN PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—I agree with Dr. G. Jessel (THE LANCET, Oct. 26th) that dispensary treatment is the most economical and best method of treating early non-infective pulmonary tuberculosis. My contention, which Dr. Jessel criticises, was that once tubercle bacilli appear in the sputum dispensary and domiciliary treatment, as understood by the Tuberculosis Regulations, are a danger to the community, and very potent causes in maintaining the high incidence-rate of this disease. Dr. Jessel's first paragraph, in which he admits that close supervision is rarely exercised and that the discipline necessary is irksome, spoils his subsequent arguments. The figures he gives of the number of visits paid by his nurses are not impressive. An average of less than five visits a year per patient cannot be called close supervision. In Southampton during 1916 the tuberculosis nurses paid 4008 visits to 274 cases under treatment, whilst in 1917 5171 visits were paid to 315 cases under treatment. The majority of these cases also attended the dispensary twice a week for treatment. These figures improve upon those given by Dr. Jessel, and yet the results observed have totally failed to convince me that in advanced cases this mode of treatment is satisfactory.

Tuberculosis is essentially a house and factory disease, and is spread by unsatisfactory housing and factory conditions. The housing conditions in a town, particularly among the class of people reached by the Insurance Act, are eminently unsuitable for the treatment of an infectious disease. From Dr. Jessel's figures for 1917—his best year—it appears that 29 per cent. of 1615 patients had unsatisfactory bedroom facilities. I should like to know how many of these had tubercle bacilli in the sputum. He states: "In 1917 complete isolation was obtained in over 70 per cent. of 1615 cases of phthisis." Dr. Jessel's optimism is sublime. Did his 70 per cent. of cases stay rigidly in bed in one room without communication with the outside world? Surely, the period of sleep is the least infective time. Does he imagine that *complete* isolation is ever carried out in a private house, or that even fragmentary isolation is possible in 80 per cent. of the houses of the poorer working classes? Again, Dr. Jessel believes that a visit by the tuberculosis officer once in three months (I presume the patient is notified of the visit beforehand), and five times a year by tuberculosis nurses, will prevent infringements of the "discipline which is admittedly irksome." From past sanatorium experience I am unable to support this opinion.

The vast majority of private practitioners, I fear, think differently from Dr. Jessel. In Southampton this matter was brought before a meeting of medical practitioners

From their own observations and from my statements they were so impressed with the dangers of domiciliary treatment that they drew up a resolution to bring the matter before the health committee of the borough. The opinion of the patient "man-in-the-street" is also, I fancy, opposed to the keeping of foci of infection at large in the community. It is easier to limit opportunities for infection than to cure poverty. At a time when extra nourishment and help are most needed by these patients the State fails them. It is difficult to keep up an irksome discipline upon an empty stomach. The observations of Professor Bang upon the elimination of tuberculosis in herds of cattle by the simple expedient of keeping unaffected animals strictly separate from infected ones bear upon the subject under discussion. What is successful in cattle would, if carried out thoroughly, be equally successful in human beings. The segregation of the "open" cases of pulmonary tuberculosis is necessary if this disease is to be stamped out.

In the last report of the Medical Officer to the Local Government Board much support for this view can be found. The report says: "In pulmonary tuberculosis there may be a latent period stretching over years, and cause and effect may be difficult or impossible to connect." This I plead as justification for the present deficiencies in my figures to which Dr. Jessel takes exception.—I am, Sir, yours faithfully,

OSCAR HOLDEN,
Tuberculosis Medical Officer.

Southampton, Dec. 3rd, 1918.

THE LONDON UNIVERSITY ELECTION: A PROTEST.

To the Editor of THE LANCET.

SIR,—I find that Sir R. Douglas Powell, Dr. Sidney Phillips, and Mr. Eccles have circulated a post-card on which they state that "the chance of returning a medical candidate, who is not a graduate of our University, is very remote." As I am the only medical candidate the statement is that my chance is very remote.

That is not political manners. You may say of your opponent that he will ruin the country or that he has ruined his grandmother. But as regards the election itself you treat him with courtesy and suppose that you meet on equal terms. You don't adopt the boastful manners of Homeric heroes or Goliath of Gath before the fight begins. From that point of view it is an impertinence. From another it comes very near to being a lie, for they state as a fact what they cannot possibly know to be true, and the statement is, as far as I can tell, quite unwarranted. I am not relying on medical votes alone. All of us, I suppose, draw our support, at least I know I do, from all faculties. The medical vote alone is not large enough to return a candidate, but if I get a fair share of it I shall, as far as I can see, stand a very good chance. At any rate, I am quite sure they don't know the contrary, and they've no business to state it as if they did. Four days ago I was told by an elector, and an experienced elector too, that Sir Philip Magnus would be at the bottom of the poll, and, upon my word, when I see his committee reduced to such tricks I begin to believe they think so too. The statement has just as much foundation as their own. The truth is that in a constituency like this no one knows what anyone else's chances are. He only knows the cards he holds himself. If there is not a medical member for the University it will be due chiefly to these three medical men.

And why in the world should they single me out for an attack of this kind, who am of their own profession, and a colleague? Why don't they say that Mr. Somerville's or Mr. Nordon's chances are very remote? They know just as little about them as they know about mine and have just as much ground for the statement. But they have no right to say it of anyone, and they ought to be ashamed of themselves. That comes of party.—I am, Sir, yours faithfully,

W. P. HERRINGHAM.

Dec. 8th, 1918.

[ENCLOSURE.]

University of London.—Parliamentary Election.

It is most important at the present crisis not to divide the Coalition vote. The chance of returning a medical candidate, who is not a graduate of our University, is very remote.

It is certain that every vote not given to Sir Philip Magnus may have the effect of helping to secure the return of the Labour-Socialist candidate.

R. DOUGLAS POWELL, M.D.
SIDNEY P. PHILLIPS, M.D.
W. MCADAM ECCLES, M.B., M.S.

44, Lancaster Gate, W.2.
Dec. 3, 1918.

Printed and published by C. F. Hodgson & Son, Newton Street, Kingsway, W.C.2.

THE ELECTION FOR THE SCOTTISH UNIVERSITIES:

THE ACTION OF THE MEDICAL PARLIAMENTARY COMMITTEE.

To the Editor of THE LANCET.

SIR,—We understand that the supporters of Professor W. R. Smith's candidature for the Scottish Universities are stating that Professor Smith was adopted by this Committee as a suitable representative for the constituency.

This is an erroneous reading of the action of the Committee, which has adopted no candidate for any particular constituency. A list has been made of medical candidates for the election now upon us, and these medical men have been approved for Parliament by the Committee in discharge of the responsibility laid upon it by the general meeting of the medical profession at which the Committee was formed. Yours faithfully,

ARTHUR LATHAM,
CHAS. BUTTAR,
Honorary Secretaries, the Medical Parliamentary Committee.

Medical Parliamentary Committee, 20, Hanover-square, London, W. 1, Dec. 10th, 1918.

AGGLUTINATING PROPERTIES OF CERTAIN SERA: A CORRECTION.

To the Editor of THE LANCET.

SIR,—With reference to my paper on this subject which appeared in THE LANCET of Nov. 9th I stated that the strength of *B. paratyphosus A* and *B* were each only half that of *B. typhosus* in T.A.B. vaccine. Lieutenant-Colonel D. Harvey, Royal Army Medical College, has written to me pointing out that the strength of the Army vaccine has been increased since February, 1916, to the following—viz., 1000 million *B. typhosus* and 750 million of each *B. paratyphosus A* and *B*. I am, Sir, yours faithfully,

THOMAS T. O'FARRELL.

University College, Dublin, Dec. 9th, 1918.

THE PENAL POWERS OF THE GENERAL MEDICAL COUNCIL.

To the Editor of THE LANCET.

SIR,—From the peculiar source of its authority the General Medical Council is inclined to pay undue deference to charges brought before it by public bodies, and more especially by Government Departments. From my own long experience of the working of the General Medical Council I feel justified in making this serious statement. The recent case of Dr. Flament, in my opinion, condemns the General Medical Council as unsuited for the judicial functions it exercises. I am not going to say whether Dr. Flament is, or is not, guilty of the offence of which the Council found him guilty; I do not know, and neither does the General Medical Council. But surely he was entitled to be judged fairly according to the evidence laid before the Council. The Council found him guilty of either attempting criminal abortion or of obtaining money by false pretences; there was no other conceivable charge before the Council. I will not dwell on the nature of the evidence or the strange way in which it was got up, beyond mentioning that the witness, on whose statement the charge depended, admitted the criminal offence of inciting Dr. Flament to procure abortion, and that the only corroborating evidence—that of her sister—was not very consistent with the evidence she gave. I challenge contradiction when I say that no competent and honest judge could have found Dr. Flament guilty on the evidence laid before the Council in my presence, evidence on which the General Medical Council did, in fact, find him guilty. But, Sir, the Ministry of Munitions was the prosecutor, and consequently the regulations of the General Medical Council as to statutory declarations, and other safeguards properly required by a judicial body with no power to administer an oath, were not insisted on. An adjournment, to give Dr. Flament some chance to disprove the charge suddenly sprung upon him, could not be allowed. It would have inconvenienced a Government Department. Does the medical profession approve? I am, Sir, yours faithfully,

CUSTOS CUSTODUM.

Dec. 9th, 1918.

THE SERVICES.

Col. A. Webb, C.M.G., D.D.G., A.M.S., will succeed Sir John Collie, Director of Medical Services in the Ministry of Pensions, in view of the treatment by the Army Medical Service, for six months from Dec. 3rd, of pensioners and disabled soldiers.

ROYAL ARMY MEDICAL CORPS.

Temp. Lieut.-Col. Sir Hugh M. Rigby (Brevet Lieut.-Col., R.A.M.C., T.F.) to be temporary Colonel whilst specially employed.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Major J. T. McEntire, Capt. S. J. Higgins.

To be acting Lieutenant-Colonels: Temp. Capt. (acting Major) H. K. Wallace, Major and Brevet Lieut.-Col. D. S. Skelton (whilst specially employed), Major J. W. L. Scott and Major A. W. Sampey (whilst in command of a Medical Unit).

Major E. G. R. Lithgow is seconded for service with R.A.F.

Temp. Capt. H. M. Grey to be acting Major whilst specially employed.

P. S. Clark to be temporary Major.

To be acting Majors: Capt. W. P. Croker; Temp. Capts. D. O. Riddel, W. Mason, C. H Haddow, J. M. Moyes, A. Fullerton, T. L. Hardy, A. Leeming, F. K. Kerr, J. J. Gibb, H. L. Neil, C. E. Sundell, W. S. Stevenson, C. F. White.

Temporary Lieutenants to be temporary Captains: A. Leitch, J. Ramsbottom, R. J. Wilson, N. F. Sinclair.

To be temporary Captains: G. Muir, G. W. Thompson, E. D. Townroe (late temporary Captain, Vol. Bn., E. Surr. R.), S. Barron, W. D. Sammon, C. J. A. Woodside, H. G. P. Armitage, E. W. Diggett, A. R. Barlas, H. S. Campion, T. B. H. Tabuteau, J. L. Annan, F. Joyce, R. J. MacMillan, J. M. Taylor, A. W. M. Sutherland, J. Devine.

E. W. Lynch, late temporary Captain, is granted the honorary rank of Captain.

Temporary Captains G. D. Laing and R. S. Scott relinquish the acting rank of Major on re-posting.

To be temporary Lieutenants: C. H. C. Cosens, A. Bevan, C. A. Basker, J. N. Turnbull, W. G. Cook, J. B. Michie, T. M. Walker, W. L. Hogan, C. E. Pengelly, A. Bisset.

A. B. Pastel to be temporary honorary Lieutenant.

Officers relinquishing their commissions: Temp. Capts. E. A. Sanders, A. Leitch, M. J. Casserly, R. C. Smith, H. E. Bloxsome, W Dalgliesh, C. M. Stevenson, J. N. McTurk, G. L. Brunton, H. C. Halsted (on ceasing to be employed at the County of Middlesex War Hospital), R. L. Hutton, J. A. O'Regan, E. S. Hawthorne, H. Galloway, W. Ainslie, H. D. Pollard, G. E. Lockyer, M. Coghlan (on account of ill-health, and is granted the honorary rank of Captain), J. J. Sinclair (on account of ill-health, and is granted the honorary rank of Captain), A. A. Hall, Temp. Hon. Capt. J. Boyd (on ceasing to be employed with Welsh Hospital, Netley); Temp. Lieuts. A. G. Tolputt, N. C. Fischer, A. M. McCormick, B. F. Howlett, I. Clarke, J. J. Pickles, G. A. Valentine; Temp. Hon. Lieuts. L. W. Darrah, V. S. Laurin.

SPECIAL RESERVE OF OFFICERS.

Capt. H. R. Friedlander relinquishes the acting rank of Major on re-posting.

A. J. Clark, late Captain, is granted the honorary rank of Captain.

Lieut. B. W. F. Armitage, from Unattached List (T.F.), to be Lieutenant.

To be Lieutenants: E. S. Davies, P. G. Quinton, and C. G. Coombs (from University of London Contingent, O.T.C.), W. Young, H. Wands, J. P. Kilty, A. S. Strachan, J. S. McL. Gray, and R. P. Smith (from Glasgow University Contingent, O.T.C.), F. Lyth (from Manchester University Contingent, O.T.C.), A. P. McLeod.

TERRITORIAL FORCE.

1st Eastern General Hospital: Officers to be acting Majors whilst specially employed: Capts. J. C. W. Graham and G. S. Haynes.

2nd London Sanitary Section: Lieut A. W. Allison relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Lieutenant.

1st Scottish General Hospital: Capt. H. E. Smith to be acting Major whilst specially employed, and to remain seconded.

4th London General Hospital: Major (temp. Lieut.-Col.) G. N. Biggs relinquishes his temporary rank, and is now seconded for duty with R.A.F.

4th Northern General Hospital: Capt. (acting Major) H. J. Smith relinquishes his acting rank on ceasing to be specially employed, and remains seconded.

4th Scottish General Hospital: Capt. J. R. Riddell to be acting Major whilst specially employed.

General List.—Capts. (acting Majors) H. H. Robinson and D. H. Scott relinquish their acting rank on ceasing to be employed.

Capt. R. A. Stark to be acting Major while specially employed.

Lieut.-Col. F. E. Fremantle, from Sanitary Service, to be Lieutenant-Colonel.

Majors H. E. Corbin and A. H. Hogarth, from Sanitary Service, to be Majors.

Major (temp. Lieut.-Col.) A. Greenwood, from Sanitary Service, to be Major, and to relinquish his temporary rank.

Major W. E. Miles to be acting Lieutenant-Colonel while specially employed.

Lieut.-Col. C. E. Humphreys, from Sanitary Service, to be Lieutenant-Colonel.

Capt. R. Briercliffe, from Sanitary Service, to be Captain, with precedence.

Capt. (acting Major) J. Dale, from Sanitary Service, to be Captain, and to retain his acting rank.

Capt. (acting Major) S. R. Gibbs to be Major.

Capts. A. W. Hayward and H. J. A. Longmore to be acting Majors whilst specially employed.

TERRITORIAL FORCE RESERVE.

Major H. L. de Legh, from Attached to Units other than Medical Units, to be Major.

ROYAL AIR FORCE.

Medical Branch.—R. C. Fuller, C. Dickson (late temporary Captain, R.A.M.C.), and J. P. Doyle are granted temporary commissions as Captains.

D. C. Farquharson and P. J. Herlihy are granted temporary commissions as Lieutenants.

Dental Branch.—H. N. Hillier is granted a temporary commission as Lieutenant.

OVERSEA FORCES.

South African Medical Corps.—The undermentioned relinquish their commissions: Lieut.-Col. W. B. Skinner. Major W. H. Marwell, Temp. Major A. Liebaert, Capts. K. Bremer, W. Shanks, C. T. D. Urquhart, D. Melville, J. M Macdonald, Temp. Capts. P. A. Green, T. J. W. A. Johnston, J. B. K. Tough; Dental Surgeons: Lieut. W. S. Murdock, Major C. M. Brothers.

To be temporary Captains: A. J. McClymont, H. B. Maxwell, M. Schwartz, R. B. Woolff, L. G. Irvine, J. Harpur, R. Stevenson, W. M. Tough, W. H. Hunter, D. McCully; Dental Surgeons: C. E. Rice, J. Figdor.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—At a meeting of the Royal College of Physicians of Edinburgh, held within the Physicians' Hall on Dec. 5th, Sir Robert Philip was elected President of the College. The following Fellows were appointed to form, along with the President, the Council of the College for the ensuing year, viz.:—Dr. A. H. Freeland Barbour (Vice-President), Dr. T. J. Thyne, Dr. Francis D. Boyd, Dr. G. M. Robertson, Dr. Harry Rainy, Professor J. Lorrain Smith.

ROYAL STATISTICAL SOCIETY.—On Tuesday next, Dec. 17th, Dr. John Brownlee will read a paper on the Biology of a Life Table, 5.15 P.M., at 9, Adelphi-terrace, London, W.C.

LITERARY INTELLIGENCE.—William Heinemann (Medical Books), Limited, will shortly publish a work on "Pensions and the Principles of their Evaluation," by Dr. Ll. J. Llewellyn and Dr. A. Bassett Jones. Translations of the work into both French and Italian are being arranged.

ROYAL ALBERT HOSPITAL, DEVONPORT.—The annual meeting was recently held under the presidency of Vice-Admiral Sir C. F. Thursby. The medical report was satisfactory, and the financial statement showed a credit balance of £331. It is gratifying to see that the financial position of this institution has been greatly improved.

A SERVICE in memory of the authors, men and women, who have laid down their lives in the war will be held in All Saints' Church, Ennismore-gardens, S.W., on Saturday, Dec. 21st, at 3 P.M. The service will be conducted by Canon A. C. Deane, Vicar of All Saints', and chairman of the Incorporated Society of Authors, Playwrights, and Composers. In view of the arrangements for seating, it will be a kindness if those who intend to be present will notify Mr. G. Herbert Thring, Society of Authors, 1, Central Buildings, Tothill-street, S.W.1.

A SPECIALIST'S VISIT TO A MENTAL PATIENT IN AN ASYLUM.—A Divisional Court of the King's Bench has granted a rule against the Commissioners of Lunacy in these circumstances. The brother of a certified patient at a lunatic asylum having desired that the patient should be visited by Dr. Lionel Weatherly as a specialist, the superintendent of the asylum replied that such a visit would be unprecedented. The request, being repeated through the medium of a solicitor, was granted, but neither the superintendent nor the medical man in charge of the patient met Dr. Weatherly, and the case-book and certificate were not produced to him. The visit having proved fruitless, a request for a further visit was made to the Commissioners of Lunacy. This having been refused, an application in the King's Bench for a mandamus followed. A rule was granted against the Commissioners.

DEATH OF CHARLES MAUDE RICHARDS, L.R.C.P. & S.I.—The death is announced of Mr. C. M. Richards, which occurred suddenly on Dec. 4th, at his residence in Cookstown, co. Tyrone. The eldest son of the late Canon Lewis Richards, D.D., Dungannon, and nephew of the late General Maude, Mr. Richards (who obtained the L.R.C.P. & S. Irel. in 1892) was, after qualifying, for a time medical officer in the well-known Bibby Line, plying between Liverpool and Rangoon, and in the British India Steamship Company. Subsequently he began practice in Cookstown, where, as a most courteous and unassuming man, he was very popular with his patients. He was a well-known member of the Masonic Order. The greatest sympathy is felt for his widow, as Mr. Richards was married only in February last. He was buried on Dec. 7th in his native place.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

Tuesday, Dec. 17th.

GENERAL MEETING OF FELLOWS: at 5 P.M.

Ballot for Election to the Fellowship. (Names already circulated.)

MEETINGS OF SECTIONS.

Wednesday, Dec. 18th.

HISTORY OF MEDICINE (Hon. Secretaries—Charles Singer, Arnold Chaplin): at 5 P.M.

Papers:

Dr. Crookshank: Historical Traces of the Present Epidemic (Polio-encephalitis and Poliomyelitis).

Mr. Robert Steele: Egyptian Days, their Origin and their Medical Application.

Friday, Dec. 20th.

ELECTRO-THERAPEUTICS (Hon. Secretaries—Robert Knox, Walter J. Turrell): at 8.30 P.M., at the Actinotherapeutic Department of Guy's Hospital, when the following Short Papers will be read and discussed:—

(1) A Note on the Construction of the Diathermy Machine (with demonstration): by C. M. Dowse, B.Sc., and C. E. Iredell, M.D.

(2) Diathermy in Gynæcological Cases: by G. Bellingham Smith, F.R.C.S., C. E. Iredell, M.D., and A. E. Marsden, Surgeon, R.N.

(3) Personal Experiences of Burning due to Secondary Radiation: by James Metcalfe, M.D.

(4) Diathermy in Diseases of the Eye: by C. Meadows Ryley, Surgeon, R.N., and C. E. Iredell, M.D.

(5) The Diathermy of the Abdomen: by C. E. Iredell, M.D., with a Note by W. H. Barber, M.D., Captain, R.A.M.C.

(6) Diathermy and Fulguration in Malignant Disease: by Philip Turner, F.R.C.S., Lt.-Col., R.A.M.C., and C. E. Iredell, M.D.

CLINICAL

OBSTETRICS AND GYNÆCOLOGY

SURGERY: Members of these Sections are invited to attend the above meeting.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W.1.

The Society's Office will be closed the whole of Christmas week except to Military Medical Officers.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.

(Details of Post-Graduate Course were given in issue of Nov. 30th.)

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures on Public Health Problems under War and After-war Conditions (each Lecture will be followed by a Discussion):—

WEDNESDAY, Dec. 18th.—4 P.M., Lecture XI.:—Prof. W. R. Smith: The Proposed Ministry of Health.

LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.

A Course of Eight Lectures on Psychoneuroses in Peace and War:—

MONDAY, Dec. 16th.—5 P.M., Lecture V.:—Capt. M. Culpin, R.A.M.C.: Schools of treatment. Exorcism; drugs; electro-therapy; persuasion and suggestion (hypnosis); removal of repressions. Present views illustrated by reference to stammering, &c.

TUESDAY.—5 P.M., Lecture VI.:—Capt. M. Culpin, R.A.M.C.: How to avoid the Censor. Word association; direct hypnosis; association on the symptoms; dream analysis.

THURSDAY.—5 P.M., Lecture VII.:—Capt. M. Culpin, R.A.M.C.: Theory of dreams; symbolism, &c.; transference of emotion; latent and manifest content.

FRIDAY.—5 P.M., Lecture VIII.:—Capt. M. Culpin, R.A.M.C.: Revival of terrifying episodes the key to treatment of most War and many pre-War Psychoneuroses. Freud's views as to mechanism confirmed; his motive power (Sex) rarely found in the War cases. The relation of Epilepsy to the Psychoneuroses.

BOOKS, ETC., RECEIVED.

ALLEN (GEORGE) AND UNWIN, London.
Hospital Sketches. By Frances Lyndall. 2*s*.
Echo Personalities. By F. Watts, M.A. 4*s*. 6*d*.

BAILLIÈRE, TINDALL, AND COX, London.
The Organs of Internal Secretion: their Diseases and Therapeutic Application. A Book for General Practitioners. By I. G. Cobb, Temp. Capt., R.A.M.C. 2nd ed. 7*s*. 6*d*.
Physical and Occupational Re-education of the Maimed. By J. Camus and Others. Translation by W. F. Castle, Surgeon, R.N., with articles by Sir A. Pearson and Others. 5*s*.

BALE, JOHN, SONS, AND DANIELSSON, London.
Arthrometry. By W. W. Falconer. With Foreword by R. Fortescue Fox, M.D. 2*s*. 6*d*.

BUTTERWORTH AND CO., London, Winnipeg, and Sydney.
Kala-azar. By E. Muir, M.D. With Foreword by Sir L. Rogers, I.M.S. Rs. 2.
Modern Chemistry and Chemical Industry of Starch and Cellulose (with Reference to India). By Tarini Charan Chaudhuri, M.A. Rs. 3.12.

CASSELL AND CO., London, America, and Australia.
Materia Medica and Therapeutics. By J. Mitchell Bruce and W. J. Dilling. 11th ed., revised to correspond with the War Amendments of July, 1917, and March, 1918. 9*s*.

KIMPTON, HENRY, London.
Concerning Some Headaches and Eye Disorders of Nasal Origin. By G. Sluder. M.D. 35*s*.

LANE, JOHN, London and New York.
Casting Out Fear. By Flora B. Guest. 3*s*. 6*d*.

LIPPINCOTT (J. B.) COMPANY, London and Philadelphia.
Diseases of the Heart and Aorta. By A. D. Hirschfelder, M.D. With Introduction by L. F. Barker, M.D. 3rd ed., revised. 30*s*.
Hygiene of the Eye. By W. C. Posey, M.D. 18*s*.
Forced Movements, Tropisms, and Animal Conduct. By J. Loeb, M.D. $2.50.
Training and Rewards of the Physician. By R. C. Cabot, M.D. 5*s*.

MACDONALD, ERSKINE, London.
Musings of a Medico. By Kenneth Rogers, M.D. 3*s*. 6*d*.

OXFORD PRESS WAREHOUSE, London.
Operative Treatment of Chronic Intestinal Stasis. By Sir W. Arbuthnot Lane, Bt., C.B. 4th ed., revised and enlarged. 20*s*.

SANITARY PUBLISHING COMPANY, London.
Notes on Meat and Food Inspection for Sanitary Inspectors. By J. T. Cowderay. 2nd ed. 2*s*. 6*d*.

Vacancies.

For further information refer to the advertisement columns.

Alton, Hants, Lord Mayor Treloar Cripples' Hospital.—Asst. Res. M.O. £200.
Barnstaple, North Devon Infirmary.—H.S. £150.
Barrow-in-Furness, North Lonsdale Hospital.—Second H.S. £250.
Birmingham General Hospital.—Res. S.O. £180.
Cardiff, King Edward VII.'s Hospital.—H.S. £200. Also Student Dresser. 52 gs.
Dudley, Guest Hospital.—Hon. Surg. Staff.
Evelina Hospital for Children, Southwark, S.E.—H.P. and H.S. £160.
Folkestone, Royal Victoria Hospital.—H.S. £200.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—1st and 2nd H.S.s. £175 and £150 respectively.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. 30 guineas.
Leeds General Infirmary.—Res. Aural Officer. £100.
Liverpool, Brownlow Hill Poor-law Hospital.—Asst. M.O.s as Locum Tenens. £7 7*s*. per week.
Middleton-in-Wharfedale Sanatorium, nr. Ilkley.—Asst. Res. M.O. £325.
Oxford, Radcliffe Infirmary and County Hospital.—H.P. £200.
Paisley Corporation Infectious Diseases Hospital.—Res. M.O. £250.
Putney Hospital, Lower Common, S.W.—Res. M.O. £150.
Royal London Ophthalmic Hospital, City-road, E.C.—Refrac. Asst. £100.
St. Bartholomew's Hospital.—M.O. for X Ray Department.
St. Peter's Hospital for Stone, &c., Henrietta-st., W.C.—Jun. H.S. £75.
Salisbury General Infirmary.—Asst. H.S. £150.
Sheffield Royal Infirmary.—Two H.S.'s. £150.
Southampton Free Eye Hospital.—Asst. Oph. Surg. £100.
Southampton, Shirley Warren Infirmary.—Res. Asst. M.O. £250.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £150 to £180.
Winchester, Royal Hampshire County Hospital.—Jun. Res. M.O. £250.

Births, Marriages, and Deaths.

BIRTHS.

BLAXLAND.—On Dec. 7th, at Newmarket-road, Norwich, the wife of A. J. Blaxland (Major, R.A.M.C., T.F.), of a son.

BRADFORD.—On Dec. 2nd, at Churchfield, Acocks Green, the wife of Captain E. C. Bradford, R.A.M.C. (T.F.), of a son.

BROMLEY.—On Dec. 4th, at the Warden's House, Guy's Hospital, the wife of Captain Lancelot Bromley, R.A.M.C., of a son.

BROWN.—On Dec. 3rd, at Bruntsfield-place, Edinburgh, the wife of Major William Brown, R.A.M.C., of a son.

HODDER.—On Dec. 6th, at Harlyn Bay, Padstow, Cornwall, the wife of Major (temporary Lieutenant-Colonel) A. E. Hodder, D.S.O., R.A.M.C. (T.), of a son.

WOODS.—On Dec. 3rd, at Devonshire-street, W., the wife of Captain R. Salisbury Woods, R.A.M.C., of a son.

MARRIAGES.

CHAMBERS—ALDERSON.—On Nov. 30th, at St. Mary Abbots, Kensington, Lieutenant-Colonel Guy Oldham Chambers, R.A.M.C., to Adèle Maude, widow of Lieutenant A. R. Alderson, R.E., of Cirencester.

MACALISTER—STALKER.—On Dec. 7th, at St. Andrew's United Free Church, Edinburgh, Charles John Macalister, M.D., Rodney-street, Liverpool, to Mary Leslie, youngest daughter of the Rev. Professor Stalker, D.D., Aberdeen.

DEATHS.

COSTOBADIE.—On Dec. 3rd, at The Cedars, Midsomer Norton, Hugh P. Costobadie, F.R.C.S., aged 38.

DAVIS.—On Nov. 2nd, at Delft, Holland, of septic pneumonia, George Makins Davis, A.B., *Benbow* Battalion, R.N.D., in his 23rd year, beloved second son of Dr. G. W. Davis (temporary Captain, R.A.M.C.) and Mrs. G. W. Davis, Dunelm, Sidcup, Kent.

FOSTER.—On Dec. 2nd, on board Hospital Ship *Amara*, Captain Norman K. Foster, R.A.M.C.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

COLONIAL HEALTH REPORTS.

Falkland Islands.—In 1917 the total recorded number of births was 61, of deaths 16, and of marriages 17, as compared with 52, 23, and 29 respectively in the previous year. The birth-rate per 1000 in 1917 was 18·82, and the death-rate 4·93, as compared with rates of 16·14 and 7·14 respectively in 1916. The estimated population of the colony (including South Georgia) on Dec. 31st, 1917, was 3236—2264 males and 972 females. The general health was excellent—better than during the two previous years. Twenty-one cases were admitted to the King Edward VII. Memorial Hospital—12 males and 9 females, 5 of the latter being maternity cases. There were at the end of the year three inmates of the infirmary section (Victoria Cottage Home).

Seychelles.—The Blue-book for 1917 gives the estimated population as 24,528, an increase of 419 as compared with the previous year. The birth-rate was 29·31 per 1000, and the death-rate 20·63 per 1000. The total number of patients treated in the Victoria Hospital during the year was 684; and 3198 patients were treated in the different Government dispensaries. During the last month of 1917 an epidemic of measles of a mild type broke out and continued far into the present year. The principal event of medical interest in 1917 was the return of the Seychelles Labour Force from East Africa in May. The force originally consisted of 791 men; 250 died in East Africa, and it was decided to repatriate the force on account of ill-health. As most of the deaths have been due to dysentery of a bacillary type, which is very virulent and up to that time unknown in Seychelles, steps were taken to quarantine the force on arrival. The general health of the men was then found to be far from satisfactory; the principal diseases were dysentery, pneumonia, malaria, and beri-beri; 25 deaths took place in the quarantine station. At the end of 15 days the acute cases, 15 in number, were removed to hospital and the balance liberated from quarantine. Even afterwards bacillary dysentery broke out in South Mahé in the family of a returned porter, but the prompt measures taken stamped out the disease before it could spread further. Many of the men still continue to have attacks of malaria and several are suffering from septic ulcers which are very resistant to treatment. In all there were 327 deaths amongst the force, a mortality of 41 per cent. A campaign against ankylostomiasis was started by Dr. J. F. Kendrick under the auspices of the International Health Board, and by the end of the year treatment had been accorded to all residents in two-thirds of the Island of Mahé. The campaign is carried out by means of a house-to-house visitation, all who are infected being treated. 90 per cent. of the people have been found to be infected and all classes offered themselves for treatment with great keenness. A law was passed enforcing the provision of latrines on all buildings used for habitation, and this should mitigate the danger of re-infection.

ASCLEPIOS AND ESHMUN.

THE identity of the Phœnician deity Eshmun with Asclepios is assumed as proved in most recent works upon the early history of medicine, and is in agreement with the views of classical authors. There is in existence on a monument an epigraphical record earlier than any classical manuscript, though perhaps not pre-dating the era of the writers, which may be said to definitely decide the matter. This is a trilingual inscription dating from about 180 B.C., proving that, in the opinion of the man who had the text engraved, the deities were varied names for one god. This person was well educated, because he seems to have been conversant with the Punic, Greek, and Hebrew languages. Moreover, he resided in Sicily; therefore, in a country where the facts as to such an identity would be most correctly known.

The inscription referred to may be perused in Vol. I. of the Corpus of Semitic Inscriptions, No. 143, or seen in its present place in the Turin Museum. The Latin and Greek versions are as follows: "Cleon salari(us) soc(iorum) s(ervus) Aescolapio Merre, donun dedit lubens merito merente." "Ἀσκληπίῳ Μηρρὴ ἀνάθεμα βωμὸν ἔστησε Κλέων ὀὲπὶ τῶν ἁλῶν κατὰ πρόσταγμα."

For the translation of the Punic text we quote that of the Rev. G. A. Cooke, M.A. "The lord Eshmun Merre:—the altar of bronze in weight 100 pounds which Cleon of HSGM; who is over the salt mines; vowed; has heard his voice (and) healed him. In the year of the Suffetes Himilkath and Abdeshmun son of Himilk."

This monument was discovered near a thermal spring. In another inscription referring to Eshmun found at Sidon a prince, Eshmunazar, says "he erected a house for that deity near the well of Yidlal in the mountains."

THE "WELLCOME" PHOTOGRAPHIC EXPOSURE RECORD, 1919.

THIS popular and useful little book is at once a guide to photography and a pocket diary for photographers. Having the features of previous editions most things which the photographer requires to know will be found in its pages. The exposure metre on the inside of the back cover has been made more convenient, the correct exposure now appearing opposite each stop. The book should make a useful Christmas present, as the recent withdrawal of restrictions against photography will no doubt lead to a revival among amateurs of this popular art. The price is 1*s.* 6*d.*

WESTON-SUPER-MARE HOSPITAL.

AT a public meeting recently held at Weston-super-Mare it was decided that the war memorial should take the form of a suitable monument and the erection of a new wing to the Weston-super-Mare General Hospital.

AT the last meeting of the Devon education committee it was stated that 27 per cent. of the parents refused to allow their children's teeth to be treated by the dental surgeon. It was suggested that compulsion was necessary, and that the Prime Minister of the new Parliament should be petitioned on the matter.

EDITORIAL NOTICES.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

We cannot undertake to return MSS. not used.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. J. V. Arkle, Kalgoorlie; Surg.-Lieut. W. M. Ash, R.N.

B.—Mr. J. C. Brownbridge, Witton-le-Wear; Prof. P. Boveri, Milan; Mr. J. Best, Lond.; Dr. G. Blacker, Lond.; Messrs. Butterworth and Co. (India), Calcutta; Dr. E. F. Buzzard, Lond.; British Fire Prevention Committee, Lond.; Messrs. C. Barker and Sons, Lond.; Dr. C. Burland, Liverpool; Buxton and High Peak Medical Association, Hon. Sec. of.

C.—Lieut.-Col. A. Castellani, Lond.; Coal Mines Department, Lond.; Major F. W. Crew, R.A.M.C.

D.—Dr. V. Dickinson, Lond.; Mr. H. Dickinson, Lond.; Mr. H. C. Davidson, Tadley.

E.—Dr. H. A. Ellis, Middlesbrough.

F.—Miss M. Fitzgerald, Lond.; Dr. R. F. Fox, Lond.

H.—Mr. W. Heinemann, Lond.; Mr. F. P. Hardenstein, Washington; Capt. R. A. Hooper, R.A.M.C.(T.); Mr. E. Henderson, Hatch End; Sir W. P. Herringham, C.B., Lond.; Dr. J. Haddon, Denholm; Capt. D. T. Harris, R.A.M.C.; Messrs. C. J. Hewlett and Son, Lond.; Mrs. K. W. Hodgson, Treharris.

I.—*Indian Medical World*, Calcutta; Illuminating Engineering Society, Lond.

J.—Lt.-Col. A. L. Johnson, C.A.M.C.

K.—Mr. D. N. Kalyanvala, Lond.; Mr. W. H. Kesteven, Kingston Hill; King's College Hospital Medical School, Lond., Sec. of.

L.—Mr. E. Lee, Blackrock; Messrs. Longmans, Green, and Co., Lond.; Dr. C. Lillingston, Peppard Common.

M.—Dr. J. B. Mennell, Lond.; Mr. W. Miles, Lond.; Lieut.-Col. F. F. MacCabe; Bde.-Surg.-Lieut.-Col. A. B. R. Myers, Lond.; Mr. J. Y. W. MacAlister, Lond.; Mr. C. MacMahon, Lond.

N.—Mr. R. Nichol, Glasgow; Capt. H. P. Nottage, M.C., U.S.A.; Major W. E. Nickolls, R.A.M.C.

O.—Overseas Military Forces of Canada, Lond., D.G.M.S. of; Dr. T. T. O'Farrell, Dublin.

P.—Miss K. Pilkington, Lond.

R.—Royal Surgical Aid Society, Lond.; Royal Academy of Medicine in Ireland, Dublin; Dr. B. Robinson, New York; Dr. H. Rainy, Edinburgh; Dr. W. H. R. Rivers, Lond.; Royal Society, Lond.; Rt. Hon. Earl of Ranfurly, P.C., G.C.M.G.

S.—Dr. H. B. Shaw, Lond.; Society of Public Analysts, Lond., Joint Hon. Sec. of; Scientific Press, Ltd., Lond.; Major R. S. Skirving, A.A.M.C.; Dr. S. Samuel, Leeds; Dr. G. F. Still, Lond.; Mr. J. R. Skinner, Bishop's Teignton.

T.—Dr. C. J. Thomas, Lond.; Capt. A. J. Turner, R.A.M.C.; Médecin-Major Thomson; Mr. J. P. Toogood, Guildford.

U.—University of London Unionist Association, Lond.

V.—Dr. F. Villy, Keighley; Dr. C. W. Vining, Leeds.

W.—Dr. W. H. Wynn, Birmingham; Dr. H. Wilson, Lond.; Dr. C. Wood, Frimley; Mr. L. F. Wintle, Lond.; Mr. B. A. West, Lond.; Dr. L. A. Weatherly, Bournemouth; Dr. H. Woods, Lond.; West London Hospital Post-Graduate College, Lond.

The following journals, magazines, &c, have been received:—Archives de Médecine et Pharmacie Navales, American Journal of Surgery, St. Bartholomew's Hospital Journal, Annali d'Igiene, Dublin Journal of Medical Science, Indian Medical Gazette, Edinburgh Medical Journal, Revista Clinica, Lyon Chirurgical.

An Address ON LETHARGIC ENCEPHALITIS.

Delivered before the Medical Society of London on Dec. 9th, 1918,

BY E. FARQUHAR BUZZARD, M.D. OXON., F.R.C.P. LOND.,

TEMPORARY COLONEL, A.M.S.; PHYSICIAN TO OUT-PATIENTS, ST THOMAS'S HOSPITAL AND NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, ETC.

MR. PRESIDENT AND GENTLEMEN,—A great deal has already been written and said about the epidemic of encephalitis which prevailed in this country during the spring and summer of this year. As a result of your personal observation and of reading what has been written by others you are doubtless fully acquainted with the outstanding features of the disease as it presented itself in its characteristic form. I should probably be wasting both your time and my own by describing its ordinary clinical manifestations, or even by describing once again the pathological appearances which have been observed in fatal cases.

When an epidemic of this kind occurs, and when its immediate results and effects have been thoroughly studied, it is well worth while to collect the facts which have come to our knowledge and to see how far they are of practical importance and how far they may be able to throw light into corners of pathology which hitherto have been poorly illuminated. It appears to me that this epidemic has taught two lessons, both of which should be of value to the medical profession, and one of which is very instructive to those of us who are especially interested in neurological problems.

A MEDICO-LEGAL CASE.

In the course of my practice I have been struck on many occasions by the fact that the medical profession has never sufficiently realised that encephalitis, or inflammation of the brain, is a condition which is by no means uncommon, and, if you will allow me, I will tell you a story to support this contention.

Some years ago I was asked to examine a lad of 14 on behalf of an insurance company in regard to what was alleged to be the effect of an injury arising out of his employment. The facts, which were admitted on both sides, were briefly as follows. This lad was employed in doing odd jobs by a builder, and it so happened that on one occasion he was told to carry a hod of mortar up a few steps, which he did without difficulty and without immediate consequences. He was a big, strong lad of 14, and the hod of mortar only weighed a few pounds, but it happened that in the course of the next 24 hours the boy became ill, developed a temperature, suffered from severe headache and vomiting, became delirious and unconscious, and at the end of a few days' illness was found to be completely paralysed on the left side of his body. The acute symptoms rapidly passed off, the hemiplegia cleared up to a certain extent, but the arm was so badly paralysed that it was practically a useless limb. This occurred in the month of October, and some months later I was called upon to give evidence in a county court on the question of whether the boy's hemiplegia was the result of an injury or whether it was due to natural causes. The case was tried by a judge, with the assistance of a medical assessor, and I put forward the view that this was an ordinary case of encephalitis, occurring during the season when encephalitis is usually prevalent, and attacking a young subject, as it usually does. The medical assessor began by asking me what encephalitis was, and I told him that it was an inflammation of the brain. He then asked me what was the cause of the inflammation, and I explained that as far as our knowledge went the cause of this form of encephalitis was a microbe identical with that which causes poliomyelitis, and I gave him some of the facts known to us which supported this view. That my explanation did not convey very much to his mind was shown by his next question, which was: "How do you account, Dr. Buzzard, for the microbe being on the spot exactly at the right time?" It is needless to add that the verdict was against the insurance company, and that the paralysis was judged to be the result of an injury.

ENCEPHALITIS DUE TO THE VIRUS OF POLIOMYELITIS.

But there is another way in which one realises that the diagnosis of encephalitis, especially in regard to the diseases of early infancy and childhood, appears never, or very rarely, to be considered as a possibility. We are constantly hearing the story of patients who are brought to us on account of epilepsy, of mental deficiency, or of hemiplegia that their disabilities have dated from an illness occurring in the first few years of life, and on inquiry into the symptoms of that illness one generally finds that a healthy child has been suddenly taken ill with convulsions, fever, vomiting, &c., and that the diagnosis of meningitis, or gastritis, or teething has usually been made. I am quite convinced from my own experience that a large number of cases of epilepsy, of mental deficiency, of hemiplegia, and of diplegia are the permanent results of attacks of encephalitis occurring in early childhood, and that this large group of cases can be properly attributed to the virus of poliomyelitis. It is unnecessary to dwell upon the reasons which support this view, but they are based largely upon the observations which have been made during the epidemics of poliomyelitis occurring in this and other countries, and in which cases where the inflammation has affected the brain are intimately associated with cases in which the inflammation has affected the spinal marrow, and with still further cases in which the inflammation has affected the whole of the central nervous system, as proved by clinical observation and by post-mortem examination. After all, the brain is a large and important organ, and it would be surprising if inflammation of that structure was not of fairly common occurrence. For years I have urged the view that disease of the brain or spinal cord produced by the virus of poliomyelitis should be regarded in the minds of the profession as one of the acute specific fevers, and especially as one of those acute specific fevers which have a special incidence upon infants and children. It is well known that the susceptibility to this infection decreases as age advances, and, personally, I have met with only a few cases after 25 years of age and none after the age of 40 has been reached.

There are other forms of encephalitis which are met with at much rarer intervals. It is an occasional complication or sequela of typhoid fever. It may possibly be produced by the virus of influenza, and, as we have learnt only too well in recent years, it is a common and fatal complication in cases of head injury.

From the ordinary practice point of view, therefore, it is well to remember that there is a form of encephalitis which has the constitutional disturbances, the age-incidence, the seasonal exacerbations, the sporadic and epidemic types and the immunity from second attacks which are shared by measles, scarlatina, and other acute specific fevers, and that it presents an inflammatory lesion of a particular tissue in the same way as typhoid fever, diphtheria, and small-pox display inflammatory lesions of other tissues. This form of encephalitis has been shown to be due to the virus of poliomyelitis, and it should be noted that the disease is an acute one running its course in a few days, but often leaving permanent results in the form of paralyses, mental defects, and epilepsy.

THE RECENT EPIDEMIC.

We must now turn our attention to the consideration of that form of encephalitis which has attracted notice this year, and which undoubtedly is an entirely different disease from the encephalitis I have just referred to. It is true that there have been in the recent epidemic a few cases which have run a very malignant and rapidly fatal course of a few days, but the striking feature of the majority has been the fact that a careful history shows that symptoms have often been present over a period, not only of days, but even of weeks before the intensity of the process has reached its height. A study of the cases also shows that the age-incidence and the seasonal incidence are entirely different from those of poliomyelitis. Putting aside clinical and pathological differences, the epidemiological data collected by Colonel S. P. James are quite sufficient to prove that lethargic encephalitis is a distinct disease.

You will remember that the attention of the profession was drawn to this epidemic[1] by Dr. Wilfred Harris in London and by Professor A. J Hall in Sheffield, and that both these observers were struck by the number of cases brought to their notice suffering from asthenia, lethargy, and disorders of ocular movements such as strabismus, diplopia, nystagmus, and ophthalmoplegia. These were patients suffering

[1] THE LANCET, April 20th, 1918, p. 568.

from encephalitis with its chief incidence on the brain stem.

This important discovery was quickly followed by the realisation that there were other patients taken ill in the same way, presenting the same constitutional disturbances, the same asthenia and lethargy, but displaying no oculo-motor signs or symptoms. On the contrary, they gave us the clinical picture of acute paralysis agitans; the mask-like, expressionless face, the rigid but not really paralysed limbs, the tremor, the posture, and gait of that disease. I shall never forget my first experience in that direction, when I was asked to see a man lying in bed, looking exactly like a patient who had suffered from Parkinson's disease for 10 or 15 years, and was informed that he had been ill a week! Here we had examples of the encephalitis with its chief incidence on the basal ganglia, and in particular, perhaps, on the globus pallidus.

CASES IN WHICH THE CEREBRAL CORTEX IS CHIEFLY AFFECTED.

It is not my intention to dwell further upon these two groups of cases at present. They have been already sufficiently and adequately described. I propose to confine my attention to the consideration of a third group of patients in whom the force of the inflammation was spent upon the cerebral cortex, and who gave rise to considerable difficulty in diagnosis, especially in regard to the possible presence of cerebral tumour, cerebral abscess, or cerebral hæmorrhage. It is necessary to give you quite briefly an account of a few cases if I am to emphasise the lessons which can be drawn from them.

CASE 1.—On April 5th, 1918, I saw, with Dr. Granger Evans, a lady, aged 54, who, on Thursday, March 28th, noticed that her right hand was rather shaky. The next day she went away for the Easter holidays, but returned on the Sunday on account of the uncontrollable jerking of her right arm and hand, which gradually became worse and spread to the whole of the right side. When I saw her on April 5th there was a mixture of clonic and tonic spasm affecting the whole of the right side, with considerable impairment of voluntary movement and more or less complete aphasia. The reflexes on the affected side were of the usual hemiplegia type, whilst those on the left side were normal. There were a few movements noticed in the left arm, but there were no cranial nerve disorders beyond the weakness of the right side of the face. There was no optic neuritis, and nothing in the cardio-vascular condition of the patient to explain the symptoms.

I saw this patient again on April 22nd, and learnt that the movements had ceased soon after my last visit, but that she had become completely hemiplegic on the right side, completely aphasic and incontinent. She appeared to be perfectly conscious although unable to say a word or to make much response to orders. About a fortnight later she was admitted into the National Hospital, Queen-square, where she gradually became more comatose and died on May 9th, exactly six weeks from the onset of her illness. The early stages of this illness were afebrile and no abnormal condition was found in her heart, lungs, or kidneys. During the last few days of life her temperature varied between normal and 102° and at that time there was some albuminuria.

At the post-mortem examination the surface of the brain was noticeable for the presence of some dark reddish-brown staining in the subarachnoid space evidently due to slight hæmorrhage on the surface of the cortex. This was most marked over the parietal lobe on the left side, but there were small patches scattered here and there in other parts of both hemispheres. Sections of this brain presented all the characteristic appearances of a hæmorrhagic encephalitis without the occurrence of any large hæmorrhage.

The notes of the next case are as follows:—

CASE 2.—The case is that of a lady whom I saw on May 6th, 1918, with Dr. T. H. Brown. She was 44 years of age and complained that she had not been feeling well for some time, but had had nothing particular to complain of until Thursday, May 2nd, when she had some difficulty in doing her work owing, as she explained, to a deficiency in her mental grasp. On the following day she displayed some awkwardness and clumsiness in her right hand, and on the third day the whole of the right arm was weak. On this day she had an epileptic attack, involving and confined to the right side of the body, and this attack was repeated at intervals on the Sunday and Monday, with the result that she became more and more hemiplegic, more aphasic, and distinctly drowsy. She vomited on one occasion.

On the Monday evening when I saw her she lay in bed in a lethargic condition unable to speak, but evidently able to understand some commands, and able to indicate when she wanted to perform natural functions. She was taking her food well, and had little or no rise of temperature. On examination I found complete right hemiplegia with the usual reflexes, and I also satisfied myself that there was some right hemianæsthesia and complete right hemianopia. Her condition remained much the same during the next two days, and a lumbar puncture was performed, the fluid removed being at increased pressure but quite clear, and on microscopical examination normal in its cytology. The Wassermann reaction was negative. At this time she appeared to be suffering from severe headache, and on Thursday mid-day she was distinctly more stuporose, had become incontinent, was swallowing with difficulty, and showed some tendency to ptosis in both eyes. For the first time the optic discs showed slight swelling and blurring of the upper and inner edges.

She was obviously suffering from increased intracranial pressure, and it was decided to do a decompression. This was carried out by Colonel Sargent at 10 o'clock in the evening. She was trephined over the left post-central and temporal regions, and as soon as the bone was removed it was noticed that the dura was bulging, very thin, and easily torn. The brain surface presented a dark purple colour through the dura, and on opening the latter there was found great increase of tension. Shreds of recent clotted blood were scattered about, both beneath the dura and in the subarachnoid space. The cortex was hyperæmic and easily ruptured. The post-central vein was firm and thrombosed, and towards the vertex of the hemisphere the brain matter was deeply blood-stained and partly disintegrated. A sample of blood was taken up in a sterilised pipette for culture purposes, but nothing was grown from it. The patient died the following morning and the post-mortem examination was made the next day.

This brain on removal had on casual inspection the appearance of one from a case of cerebral hæmorrhage, but closer investigation revealed the presence of thrombosed veins on the surface of the left hemisphere and one or two patches of what looked like hæmorrhagic infarction on the opposite side. After hardening, sections through the organ showed the presence of widespread encephalitis confirmed by microscopical examination. When I say widespread I do not mean that all parts of the brain were equally affected, and it has been characteristic of most of these cases that the inflammation has been patchy in its distribution, although there has generally been one large focus where the process has been most intense and most hæmorrhagic.

The account I have just given you of this case is particularly interesting when compared with Case 3.

CASE 3.—I saw a gentleman at Reading with Sir Robert Fox-Symons and Dr. W. B. Secretan on July 24th. His age was 58, and he had always enjoyed good health until about three months before I saw him, when he began to show forgetfulness and to do odd things, such as leaving off an article of his usual clothing. About the same time he began to complain of headache. For about a month there must have been some difficulty of sight, as his attempts to play croquet—at which he had been quite good—had become laughably bad. On Thursday, July 18th, he had stayed away from business, not feeling well, and on Saturday he vomited incessantly and complained of severe headache and pains in his legs. His temperature was about 100° on Saturday and Sunday, and on Monday he became distinctly worse, more drowsy, and somewhat aphasic. On this day Dr. Secretan detected right hemianopia.

When I saw him on the Wednesday he was lethargic and obviously very ill. His pupils were active. Both discs were slightly swollen with engorged veins, but no marked neuritis. There was complete right hemianopia associated with object blindness. He was quite unable to name objects, although he seemed to appreciate what they were when he saw them. If a key was put into his right hand he used it in a normal fashion, but he could not name it. When I suggested "key" he appeared to assent. He had obvious difficulty in understanding what was said to him and made mistakes in carrying out orders. His temperature was then normal. There was no actual paralysis, the knee-jerks were rather sluggish, the right being more brisk than the left, and on the right side an extensor response could be elicited. The blood and cerebro-spinal fluid were examined. The blood-count was practically a normal one and there was certainly no marked degree of leucocytosis. The cerebro-spinal fluid contained a considerable quantity of blood and in addition there were some cells showing fatty degeneration which were not of blood origin.

The patient showed no signs of improvement and it was decided that an operation for the removal of pressure should be undertaken. This was carried out by Colonel Sargent on August 1st, when he exposed the brain in the left post-central and occipital regions. Intracranial tension was increased, and the dura before being opened looked plum-coloured and opaque. When incised it appeared that there had been slight patchy hæmorrhage between its layers, and the cerebral surface was stained yellow. Blood was present in small quantities between the dura and the pia mater, here and there as a thin film and clot, elsewhere as darkish fluid blood. The fluid part had evidently sunk down towards the base, for on retracting the lower part of the exposed brain dark blood welled up in considerable quantities. The convolutions were flattened and pale, and here and there there were lengths of thrombosed cortical veins. Just below the posterior end of the first temporal convolution was a spot which showed considerable softening, but there was no evidence of tumour or abscess anywhere.

The patient stood the operation well, but was very restless during the following night and later became almost maniacal. He began to refuse food and his bladder had to be emptied by catheter for a couple of days. The headache was much relieved by the operation, but the patient gradually become more comatose and died about ten days later. There was no post-mortem examination in this case, but I can hardly entertain any doubt as to the diagnosis of lethargic encephalitis in view of the clinical history and of what was seen at the operation.

The details of my fourth fatal case of encephalitis can be given very briefly.

CASE 4.—The patient was a man of about 50 years of age, whom I saw on Sept. 15th of this year with Dr. Harvey Norton. There was a history that early in August when working in a field in the country he had fallen down unconscious, had been delirious for a few hours, was seen by a doctor who diagnosed sunstroke, and that he continued to complain of headache and vertigo. He remained in a stationary condition until about Sept. 13th, when he was seized with very severe pain in the head, had several epileptiform convulsions, and on examination presented evidence of slight hemiplegia and some hemianopia. He was drowsy and difficult to examine, but he showed no signs of cardio-vascular disease and his optic discs presented no change. The urine was normal. He was moved into St. Thomas's Home on Sept. 16th and a lumbar puncture was performed on the same day. Very soon after this operation he had a general convulsion and died quite suddenly.

The post-mortem examination was made the next day, and the pathologist coming away from it told me that he had found a cerebral hæmorrhage. The brain had been cut up, but I was not satisfied that cerebral hæmorrhage was the whole diagnosis, and I removed portions from several parts for microscopical examination. It was noticeable that there were no signs of arterial degeneration from the naked-eye point of view.

DISCUSSION OF CASES.

The story of these four cases, coming so close together, appears to me to be one of unusual interest. You will notice that all four patients were over 40 years of age, but that none of them presented cardio-vascular changes suggesting the possibility of cerebral hæmorrhage as a diagnosis. In none of the four cases did the clinical history conform closely to that of cerebral hæmorrhage, but suggested some more subacute lesion, and naturally gave rise to the question of abscess or syphilitic thrombosis. In all four cases the Wassermann reaction of the cerebro-spinal fluid was negative. The lesson I have learnt from this experience is that patients over 40, and even over 50, years of age may be the victims of encephalitis, producing the general symptoms of hemiplegia, aphasia, hemianæsthesia, or hemianopia. In the second place, I have learnt that a naked-eye examination of a brain on a post-mortem table is not sufficient to discriminate between an ordinary cerebral hæmorrhage and a hæmorrhage which is only an accidental occurrence in the course of an encephalitis. It teaches us that when there are no obvious gross signs of disease in the cerebral arteries to account for a hæmorrhage it is essential that microscopical investigation should be carried out in order to determine the cause for the blood extravasation. Thirdly, we must look on the presence of thrombosed cortical veins associated with hæmorrhage in the neighbouring brain substance as strongly indicative of an inflammatory process.

There is no reason to suppose that lethargic encephalitis is a new disease, and we may justifiably assume that endemic cases occur from time to time. Most of us can recall patients suffering from symptoms of acute or subacute cerebral disease, in connexion with whom a hesitating diagnosis of cerebral hæmorrhage has been made, and others again of whom a diagnosis has never been properly established. This recent epidemic is of practical importance in that it ought to bring the possibility of encephalitis more prominently before our minds in cases of cerebral disease presenting difficulties in diagnosis. At the moment this realisation may not be of much practical importance, because we are not yet in a position to say what is the nature of the infection, or to point to any method of treatment likely to abort or cure the disease. The experience of these four cases, however, leads me to think that operative intervention in the way of decompression is really contra-indicated, in spite of the presence of increased intracranial tension. Three of these patients died partly, at any rate, from hæmorrhage, and it is hard to believe that decompression can be beneficial when this hæmorrhagic tendency exists.

Prognosis.—Further experience may teach us more about the prognosis in this disease. At present we can only say that some cases recover completely, others survive the acute stage, but carry with them in after life permanent defects due to the morbid process, while a certain number die either from toxæmia or hæmorrhage in the acute illness or from some complication following it.

Microscopical study of the pathological lesions which were found in the brains of the patients whose histories I have given shows the remarkable way in which the vessels of the brain react in this inflammatory process. The chief features are: (1) Perivascular infiltration mainly with small round cells; (2) small capillary hæmorrhages which suggest a gradual oozing of blood through the damaged walls of small veins and capillaries; (3) thrombosis of small and middle-sized vessels in different stages of organisation; (4) ischæmic softenings presenting the appearance of the hæmorrhagic infarction which one sees in other organs; (5) subarachnoid hæmorrhages and cellular infiltration of the lepto-meninges; (6) general neuroglial proliferation; (7) changes in nerve cells, in some places showing chromatolysis and in others a process resembling that of coagulation-necrosis.

A case of lethargic encephalitis which died in the National Hospital from the result of bedsores some months after the acute attack also illustrates the permanent changes in the blood-vessels which have resulted from the acute inflammatory process in the earlier stages of the disease.

Finally, I should like to express my indebtedness to Captain J. G. Greenfield, who has prepared many of the sections and taken all the photographs, and to Captain H. B. Weir, who also assisted me in some of the pathological investigations.

Some of the expenses connected with the pathological examinations have been defrayed by the Medical Research Funds.

LETHARGIC ENCEPHALITIS:*

NOTE ON ITS DISTRIBUTION IN ENGLAND.

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IN THE LANCET of Nov. 2nd, p. 590, is a report of the discussion at the Royal Society of Medicine on encephalitis lethargica. Among the contributions was a brief summary, which Sir Arthur Newsholme had authorised me to give, of the results of an inquiry on the disease recently carried out by the medical staff of the Local Government Board, in collaboration with the Medical Research Committee. For the epidemiological section of the investigation the material considered consisted of 107 cases in the London area and 121 cases in the provinces. In the accompanying maps the distribution of the disease is shown, as well as that of "poliomyelitis."

General Distribution.

Of the cases considered in this note one or more were reported from 51 sanitary districts in the following counties: Middlesex, Essex, Surrey, Kent, Oxford, Chester, Norfolk, Stafford, Leicester, Warwick, Wilts, Salop, Derby, Yorks, Lancs, Notts, Durham, Carnarvon, Monmouth. From one or two other counties there were reported a few cases which we did not consider sufficiently typical to be included for consideration here. Except in London, where 55 cases were distributed about evenly over 22 sanitary districts, the number of cases reached double figures in Birmingham, Sheffield, and Leicester only. These observations indicate the wide and sparse distribution of the malady in the country generally.

Local Distribution.

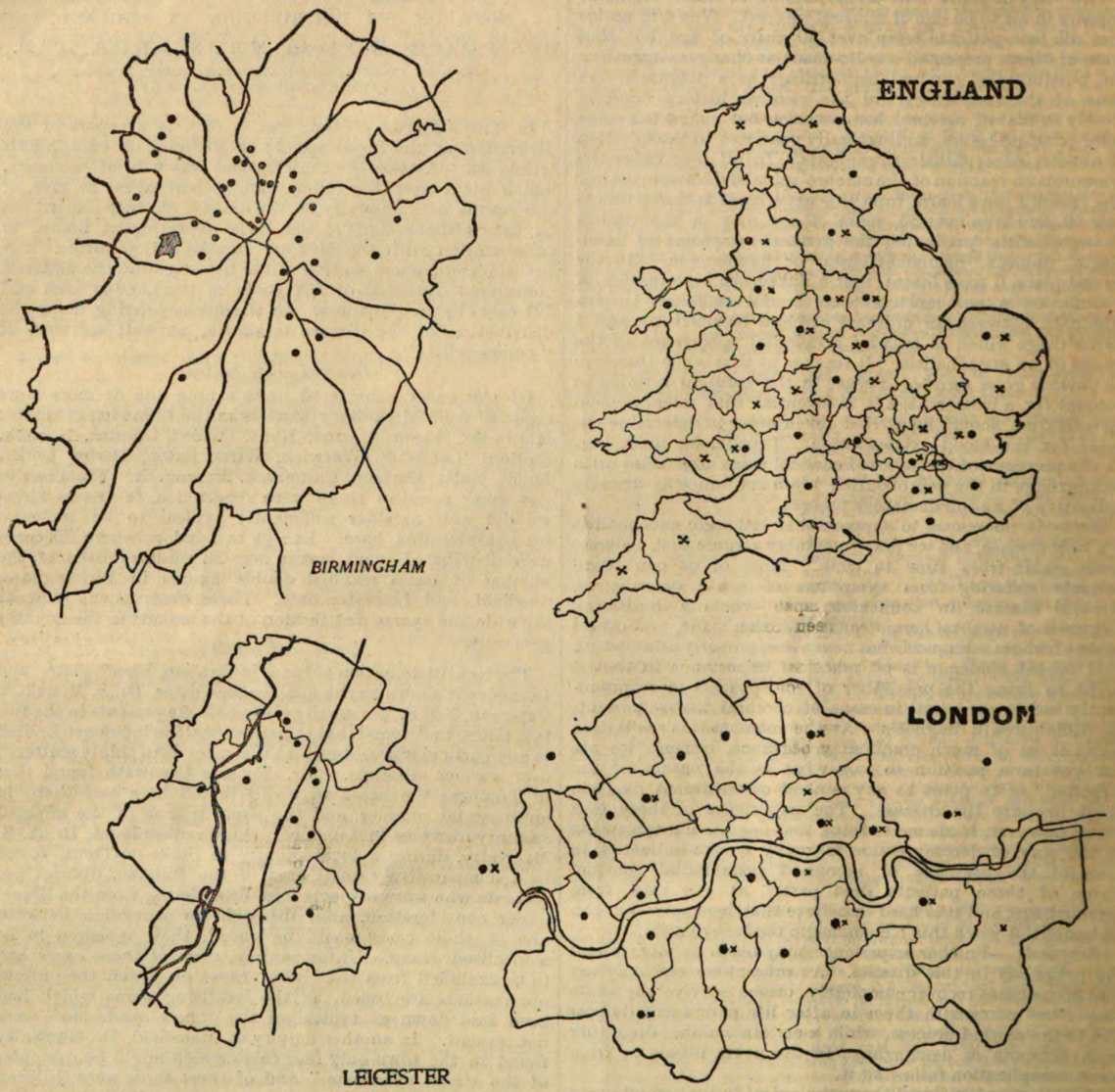
The local distribution of cases in London, Birmingham, and Leicester is shown on the small outline maps. Dr. S. Monckton Copeman, F.R.S., personally visited all the patients in the two last cities, and found that in neither was the incidence limited to any particular area, but that the cases were thinly scattered over various districts. Dr. Thomas Carnwath found that in Tredegar the cases were distributed here and there in an irregular manner, and the same is true in the affected sanitary districts in London. On the other hand, Dr. A. S. MacNalty, during a local inquiry in Stoke-on-Trent, found in a comparatively small area of the Burslem district five patients who were suspected to be suffering from the illness under consideration, and, although no connexion between any of these cases could be traced, they appeared to be a localised group. Unfortunately, three of these cases had to be excluded from the list of cases on which the present observations are based, as the localising signs which had been laid down as typical of the "new syndrome" were not present. In another inquiry at Mansfield, Dr. MacNalty found in the town only four cases which might be examples of the "new syndrome," and of these three were children in the same family. Two of these patients died without any localising signs; the third, who recovered, had slight ptosis, but no ophthalmoplegia. As the differential diagnosis between the "new syndrome" and "poliomyelitis" remained uncertain in all four cases, they were also excluded from the list.

Although careful local inquiries in a number of affected places were made, the observation at Mansfield, just noted, was the only instance in which there was a suspicion of more than one case of the "new syndrome" having occurred in any house or family.

Before comparing the general and local distribution of the illness under consideration with that of "poliomyelitis" for the same period, I may note a general conclusion which seems to be justifiable from the above summary. It is that, having in mind the number of inhabitants in the localities where instances of encephalitis lethargica have been found, it would appear that in all of them the occurrence of a case of the disease is a rare event which, in the absence of a reason for particular search, might pass unnoticed. The summary of distribution shows, however, that in the presence of such a stimulus a few isolated cases having no apparent connexion with one another were discovered almost simultaneously in widely separated parts of the country. This suggests, first, that we have to do with an illness of which

* Summary of a paper read at a meeting of the Royal Society of Medicine.

Outline Maps showing the Distribution of Encephalitis Lethargica and Acute Poliomyelitis.



The dots indicate encephalitis lethargica, and the crosses acute poliomyelitis. In England are shown the counties in which there were cases of the two diseases, while in London this information is given for the sanitary districts.

the sources of origin are indigenous rather than new or imported; secondly, that the outbreak may be one of an unusual number of "sporadic" cases, rather than one brought about by epidemic spread. If this is true it is not surprising that the intensive inquiries made in the affected localities quite failed to reveal the source of origin of any case, or to indicate even a remote connexion between the different cases.

Comparison of the Distribution with that of "Poliomyelitis."

Returning now to the solution of our problem whether the illness is or is not a form of acute poliomyelitis, a comparison of the distribution of cases in the selected groups of the "new syndrome" and of "poliomyelitis" should be of material assistance. The line of reasoning that is justifiable is somewhat as follows:—

(*a*) The illness under consideration has been found to be a severe and often fatal disease. Therefore, if it be a form of acute poliomyelitis it must be a severe and often fatal form such as would not be likely to occur except in places where acute poliomyelitis is prevalent and active.

(*b*) It follows that if we find the "new syndrome" to be prevalent in places where acute poliomyelitis is rare, and especially if it is prevalent in a place where by careful search cases of acute poliomyelitis cannot at the time be found, we may conclude, with a considerable degree of probability, that the "new syndrome" is not a form of acute poliomyelitis.

The following are some results in this connexion:—

1. Between January and June this year cases of the ordinary spinal form of poliomyelitis, with limb paralysis, were officially notified from some 47 sanitary districts. In those districts, therefore, the virus of acute poliomyelitis had not changed its usual pathological effects; and as it had not done so in those districts it is probable that it had not done so in the rest of England.

2. Of the 51 sanitary districts from which cases of the "new syndrome" were reported, there were 26 in which a case or cases of acute poliomyelitis also occurred between January and June this year, but there were 25 in regard to which there was no evidence of the occurrence of a case of that disease.

3. In Stoke-on-Trent, Mansfield, and some other places, special inquiries failed to bring to light that any case of the usual form of acute poliomyelitis had occurred during the six months of the present year; and even in such great cities as Birmingham and Manchester there were only two or three cases in each, and these not in association with the cases of illness under consideration. In London the distribution of the "new syndrome" and of "poliomyelitis" by sanitary districts is shown on the outline map.

On the evidence just presented it appears (1) that cases of the "new syndrome" have occurred in places in which cases of true poliomyelitis could not at the time be found; and (2) that they have occurred in places where the latter disease, though present, has been rare at the time of discovery of the "new syndrome" cases.

THE PRACTICAL SIGNIFICANCE OF THE MASS-REFLEX

IN THE TREATMENT OF INJURIES OF THE SPINAL CORD.

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IN 1917 a condition was described in certain cases of grave injury of the spinal cord which was called the "mass-reflex."[1] The presence of this widespread reaction introduces many difficulties in the nursing and treatment of the afflicted patients. These, however, can be met if the phenomenon and the principles underlying its production are understood.

I.—*The Phenomenon.*

For a period, varying in uncomplicated cases from a few days to three weeks after the incidence of the spinal injury, the spinal cord distal to the lesion is under the influence of "shock." There are flaccid paralysis of skeletal muscles and loss of sensation in the affected regions of the body. The limbs lie motionless on the bed. The functional activity of all reflex arcs of the isolated segments of the cord is almost completely abolished. There is retention of urine and fæces, due probably, in the main, to tonic contraction of the internal sphincters, which are innervated by the sympathetic nervous system. The skin is dry. This has been called the "stage of flaccidity."[2]

As the effects of spinal shock pass off reflex excitability returns; the paralysed muscles recover tone, the bladder expels its contents at intervals, the rectum becomes automatic in its action, and an area of skin, varying with the level of the spinal lesion, may begin to sweat. This is the "stage of reflex activity."

Now in a well-defined group of cases, especially where the spinal cord has been completely divided, a nocuous stimulus, such as a scratch or a prick, applied to any paralysed part evokes a flexor spasm. This consists of flexion at hip and knee, dorsiflexion at the ankle, and an upgoing movement of the toes, together with flexion of the trunk from contraction of the muscles of the abdominal wall, provided the lesion is high enough. With a stimulus of moderate strength it is, as a rule, bilateral, and if the stimulus is applied to a part in the middle line of the body, such as the penis, perineum, or bladder, both lower limbs flex simultaneously and the muscles of the anterior abdominal wall contract as a whole. Following the spasm the trunk and limbs resume their former posture, not from contraction of the extensor muscles, but from relaxation of the flexors and the action of gravity. So far as the trunk and limbs are concerned, it is a uniphasic movement of violent nature in which the flexor muscles only are actively involved. Moreover, the energy evoked by the stimulus overflows into channels with which the reflex manifestations are not associated normally. Stimulating the sole of the foot aids evacuation of the bladder, and may be followed by an outburst of sweating from the skin over an area corresponding to the level of the spinal lesion. Conversely, automatic evacuation of the bladder or rectum may evoke a flexor spasm. This is the "mass-reflex." Stimuli capable of eliciting it are generally of nocuous character, such as pricking or grasping the limbs; but if reflex excitability is high such gentle stimulation as that produced by light friction or by the removal of the bedclothes may be followed by a flexor movement so sudden and vigorous as almost to jerk the patient out of bed. The parts in which the threshold is lowest are the terminal regions, the soles of the feet, the external genitals, and the anal region.

II.—*The Principles Underlying it.*

One of the dicta of Hughlings Jackson was that in disease there are a negative and a positive aspect. Applied to the cases of injury to the spinal cord under consideration, loss of control of higher centres over the lower centres in the spinal cord corresponds to the negative effect, and the diffuse reflex response corresponds to the positive effect. The presence of this massive reaction indicates a low grade of neural control. A stereotyped set of movements can be evoked from a large receptive field comprising both somatic and visceral regions. There is little tendency to modification in form according to the locality of the stimulus. What Sherrington has called the "local sign" of a reflex is almost entirely absent. The anchored body has one reaction to a nocuous stimulus only, a violent withdrawal from harm. A primitive defensive reaction is all that remains.

Why does this overflow of reflex activity occur in some cases of gross injury to the spinal cord and not in others, although interference with the functions of the cord may appear, at first sight, to be equally severe? There may be complete loss of sensation and of voluntary power in the affected parts of the body in the two groups of cases, and yet in the one the mass-reflex is present and in the other it is absent. On the other hand, the patient may be able to move his limbs in some degree and may be conscious of alterations in the posture of his legs and of other sensory impulses, he may be able to tell with accuracy when his bladder is full, and yet this massive reaction may be evoked on one side and not on the other.

It has been shown[2] that when the muscles exhibit "postural tonus" (Sherrington[3]), and when certain reflex reactions can be elicited, indiscriminate activity in the spinal cord distal to the lesion disappears, and the massive reaction ceases to be obtained with stimuli of moderate intensity. In these reactions extension of the lower limbs, as a whole, can be evoked. When the sole of the foot is scratched there is no longer a violent flexor spasm of the lower limbs and trunk, with evacuation of urine and excessive sweating. The irritated limb withdraws from the nocuous stimulus, it is true, but in a more controlled way; the contra-lateral lower limb extends, and the abdominal wall takes no part in the motor effect. The flexed limb may then extend and the other flex, and so on for some time, the feet moving up and down rhythmically and in opposite phase. These movements resemble closely those of progression. Flexion occurs not only as a simple withdrawal movement, but takes part in a biphasic reaction, which may be the remnant of the ancient mechanism for escape from harm. Further, the amount of moisture on the skin is not altered by the reflex, and the bladder is unaffected. The spinal cord behaves in a more restrained and discriminative fashion. Stimulation of the thigh, or pressure on sole of the foot, is followed by extension of the limb, and not by a massive flexor response, and irritation of the penis elicits a reflex reaction which is adapted to an obvious end.

In a patient in whom these primary extension reflexes can be obtained the nervous mechanism of the bladder and sweating can no longer be influenced by somatic stimuli of ordinary intensity; and, on the other hand, evacuation of urine does not initiate movements in the limbs or trunk.

Control of spread of impulses within the spinal cord is thus associated with activity in the extensor reflex arcs, with biphasic movements of the limbs, and with the presence of "local sign" in the reflexes, by which is meant variation in the reflex manifestation with the locality of the spot stimulated. A higher grade of neural activity is manifest, and what can be interpreted as choice and discrimination becomes evident even at this low evolutionary level of the central nervous system.

In the frog the "centres" of the extensor reflex arcs lie in the spinal cord; in the dog they are situated partly in the spinal cord and partly in the medulla and pons (prespinal). In man the control is relegated in most cases almost entirely to "centres" in the brain-stem, belonging probably to the cerebello-pontine system. I hope, however, to give evidence in a future paper to show how even the isolated spinal cord in man may sometimes resume its ancient postural functions after a long period of freedom from higher control.

III.—*The Practical Significance of the Mass-reflex.*

It becomes a matter of great importance for the comfort and proper nursing of these patients to consider how the mass-reflex affects them.

(*a*) *The bladder.*—The ease with which impulses spread in the spinal cord, influencing all the reflex arcs, is in most ways the cause of great inconvenience to the patient and of innumerable difficulties in nursing. But in the treatment of the paralysed bladder it can be taken advantage of and sometimes a valuable aid.

It is of the utmost importance to stop catheterisation as early as possible, as it undoubtedly forms the greatest risk to infection of the bladder, and the bladder holds the key to life and death for the patient. Every possible precaution should be taken to avoid the dangers of urinary sepsis, and as soon as the bladder has begun to evacuate its contents automatically it follows that if catheterisation can be stopped a great advantage is gained. But at this time the automatic action of the reflex arcs is still imperfect and a residuum is left. This forms a favourable nidus for organismal growth and must be removed. In the mass-reflex we have a solution to the problem. It should be ascertained at what interval the bladder "fires off" in each particular patient. It may be every two hours or every four hours, the time varying considerably in different patients, but remaining fairly constant for each case provided no febrile complication arises. About the time when the bladder is due to evacuate the nurse or the orderly or the patient himself can evoke a flexor spasm by stimulating the abdominal wall or lower limbs. In this way the reflex activity of the bladder is facilitated and reinforced, with the result that all the contents will be voided. The bottle can then be emptied after each act, and the risk of wet beds is thereby greatly diminished. The patient can perform the whole process unaided. Knowing the approximate time at which his bladder is due to "fire off," by squeezing his thighs or pressing on his abdomen he can start off a strong reflex reaction which finally empties the bladder entirely. Thus, he can practically at any time empty his bladder by originating and reinforcing in this way the automatic action of the vesical nervous mechanism.

In bed a glass or enamel urinal is best, as it can be properly cleansed, and if these precautions are taken spilling of urine from the bottle caused by flexor spasms need never occur. This is of great importance, as the skin of the buttocks and limbs soon gets abraded if rubbed against wet sheets, and bedsores already existing are hindered from healing. Control of flexor spasms, which pull the patient about in bed, will be described later. When the patient is getting about in a spinal carriage, but more particularly in a ward wheel-chair or in a hand-propelled chair, a rubber bottle strapped round the waist and with a close fitting tube for the reception of the penis is most serviceable, but it has this disadvantage that it is more difficult to clean than is the bed urinal.

(*b*) *Gastro-intestinal conditions.*—To the uninitiated a group of symptoms frequently complained of by patients with dorsal lesions and due to the mass-reflex may be puzzling. After a day of vigorous flexor spasms or during the administration of an enema or catheterisation of the bladder the patient often complains that the abdomen feels distended and uncomfortable—that is, he is disturbed by feelings of nausea and that he cannot take his food. He begs for relief from what he thinks is flatulence, and the whole Pharmacopœia may be tried without avail. The cause of the abdominal discomfort is not gastro-intestinal irritation, but impulses originating from the flexor spasms spreading and exciting the visceral reflex arcs. Attention must be focussed, then, on the control of the spasms. The enema fluid must be injected slowly so as not to distend the rectum unduly. Cleansing of the penis prior to passing the catheter must be done gently and with a non-irritating antiseptic fluid, such as a very weak solution of eusol (1 in 6000 to 8000). The catheter must be inserted slowly and the penis held gently. Irritation of the external genitals is a potent stimulus for evoking the mass-reflex response. In the glans penis the threshold is almost as low as in the sole of the foot. Patients in whom flexor spasms are evoked with stimuli of low threshold value have to be very carefully handled in bed. The position of the limbs least favourable for involuntary movements must be ascertained by the nurse.

On the other hand, the earliest symptoms of an attack of pyelitis are flatulence with abdominal distension and feelings of discomfort referred to the abdomen; but these symptoms are constantly accompanied by more definite loss of appetite and a white furred tongue, and, if visceral sensibility is not abolished in the affected parts, by tenderness on one or both sides on deep palpation of the renal region. The rectus abdominis on the sensitive side is usually more tense than on the opposite side. These symptoms may be present before a rigor or a definite rise of temperature occurs. Impulses orginating from the irritation of the intestinal tract constantly pour into the spinal cord by way of the visceral afferents and evoke vigorous and frequent spasms of the lower limbs and abdominal wall. At such a time treatment must be directed towards the urinary condition primarily and to the gastro intestinal secondarily. Of course, indiscretions in diet lead to abdominal discomfort and to the initiation of violent flexor spasms, and in consequence have to be carefully avoided.

(*c*) *Sweating.*—Excessive sweating is a prominent and distressing feature of the mass-reflex response. The area of skin from which the sweat pours varies with the level of the spinal injury. For, as has been demonstrated,[1] it is the level at which the connector fibres, forming the communication between the spinal cord and the sympathetic nervous system proper, are shut off from the controlling influence of higher centres by the lesion that determines the sudorific area. The sweating surface, then, is also, physiologically speaking, below the level of the lesion, just as is the area in which sensation is lost. The different extent of corresponding areas is due to the fact that as regards the distribution of the peripheral fibres of the sympathetic system there is no segmental correspondence, whereas sensory and afferent fibres of the posterior roots of the central nervous system are segmentally arranged.

Since the excessive secretion of sweat is one of the trials to which paraplegics who show the mass-reflex are subjected, and since a continual moist condition of the skin greatly increases the liability to bedsores, it is a matter of great importance to find means by which this condition can be controlled. All stimuli which are capable of evoking the mass-reflex excite, with the other components, excessive sweating. The position of the paralysed limbs in bed may be a fruitful source of excitation and will be dealt with in the next section. Gastro-intestinal disturbances have been considered, as also have some aspects of vesical irritation. Rough handling of the genital parts during catheterisation, as when the glans is swabbed too roughly in cleansing or when the penis is grasped too firmly, is a productive source of stimulation. The catheter, too, should be passed gently, and in bladder lavage bland, non-irritating fluids (eusol 1 in 16,000) must be used. If these precautions are taken sweating will be less profuse during the daily bladder manipulation. But it will be found in many cases in which the spinal cord is very sensitive to stimulation that the act of reflex evacuation of the bladder may evoke excessive sweating. During lavage, after the bladder has voided its contents the first time, there may be no increase of the moisture of the skin, but when the reflex act has been evoked several times the patient usually pours with sweat. As a rule, however, it is unnecessary to wash out the bladder by evoking the reflex more than three times in succession.

Heightened intravesical tension, which causes stretching of the bladder musculature, may be the source of excitation of profuse sweating. When the spinal lesion is well above the lumbar enlargement, this cause of irritation is not, as a rule, prominent; for by the time the patient has begun to sweat below the level of the lesion the bladder is automatic, and it is only when there is abnormal spasm of the sphincter induced by cystitis that this complication arises. But when the lesion is situated near the lumbar enlargement the vesical reflex arcs recover their functional activity late, as a rule, so that retention of urine may co-exist with flexor spasms and excessive sweating. In such cases it is of extreme importance that the bladder should be emptied by catheter at regular intervals. Usually, if the catheter is passed every six hours during the period of retention the bladder will never be over-distended, but in many cases the bladder has a smaller capacity than normal, and it must be emptied at four- or five-hourly intervals.

As has been already said, the antiseptic fluid used in washing out the bladder must be as bland as possible. A strong solution of eusol, potassium permanganate, or any other antiseptic has a powerful irritating effect on the mucous membrane of the bladder, whereby its resistance is lowered against organismal infection. At the same time strong impulses, which the caustic fluid initiates, stream into the spinal cord, evoking excessive sweating, flexor spasms, and all the phenomena of powerful mass-reflex reactions.

To find out and to eliminate, as far as possible, the exciting causes of reflex sweating is the most important part

of the treatment of the condition. Drugs frequently have no effect in controlling a profuse sweating, but in some cases atropine will be found to be useful. So as not to dissipate its effect it is best to limit its administration to the evenings, in order to try to control the outpouring of sweat in the night, which so often disturbs the patient's rest. Liq. atropinæ, ♏ i.-ii., given in water about 8 or 9 P.M., will be helpful in many cases.

(*d*) *Flexor spasms.*—The defenceless patient, lying anchored in bed, is at the mercy of the strong involuntary flexor movements of the lower limbs and trunk which convulse him periodically. So violent may these spasms be that he is pulled hither and thither, and may even be thrown out of bed. If the paralysed parts are active and the spasms uncontrolled he gets no peace and life is a misery to him. It is as if he was in the clutch of a powerful enemy who is unrelenting in his tortures. It becomes, then, imperative that the physician and nurse find out how the flexor spasms can be controlled.

These movements form part of the mass-reflex, and impulses arising from stimuli of nocuous nature from any part of the paralysed region of the body can evoke them. Tension on the muscles of the limbs, an over-distended bladder or cystitis, gastro-intestinal irritation, irritating bedsores are all capable of evoking vigorous involuntary flexor movements. The posture in which the lower limbs and trunk are least excitable must be ascertained in each individual case. It will be found, as a rule, when the patient lies on his side with the abdominal muscles relaxed and the lower limbs drawn up that he can get freedom from spasms for a considerable time. Provided that the skin of the buttocks is healthy, and the soft tissues over bony parts are relieved from pressure, it is often advisable to place the patient in this position for the night. Another posture which will be found to give relief is one in which he is propped up in bed in a semi-sitting position, with the legs somewhat flexed and supported under the knees by pillows. The feet are kept up by a foot-rest. A combined adjustable foot-rest and support for bedclothes was devised for use at the Empire Hospital, and has been found of great value.

Nurses who are unaccustomed to deal with patients of this class must be taught how to handle them, for they can do much to alleviate their sufferings by adopting proper methods in turning the patients and moving them about in bed. The paralysed parts have to be manipulated gently and without jerking movements. With a pulley rigged over the top of the bed the patient can do much to help himself, and he soon becomes very proficient in moving his body about.

Urinary sepsis, dyspepsia, and intestinal disturbances are accompanied by frequent violent flexor movements, and with successful treatment of these conditions the spasms diminish in frequency again. Inflammation of the prepuce and of the skin of the scrotum caused by uncleanliness or faulty adjustment of the urinal may be the focus from which impulses pour into the spinal cord. The external genitals should be carefully washed at least twice a day, and the urinal cleansed each time it is emptied. It is often advisable to place a pad of cotton-wool between the urine bottle and scrotum.

The cause of unusual flexor activity in the limbs is sometimes traced to irritating bedsores, especially if they involve the tissues near the feet, where the threshold is low. Sores situated over the sacrum or buttocks are much less potent, for in this region the threshold is high. Superficial healing bedsores and even abrasions of the skin covering the malleoli or the heel are just as irritating as are sloughing, septic wounds; if clean, an ointment containing benzoin or zinc will be found to be soothing, and will at the same time promote healing. If the wounds are septic and sloughing fomentations applied four-hourly till the sloughs have separated is the best treatment. Then, so long as the sore is discharging pus it may be cleansed with eusol, 1 in 6000 or 8000, or liq. sodæ chlorinatæ (B.P.) or liq. aluminii acetatis, 2 per cent., and dressed with gauze wrung out of the solution, morning and evening. When the wound is becoming clean and healthy red granulations are forming, a simple dry gauze dressing can be used. The formation of unhealthy pale granulations indicates that fomentations or antiseptic wet dressings should be stopped. The healing process can then be aided by the application of stimulating solutions, such as red lotion, friar's balsam, or liq. argenti nitratis, 1 or 2 per cent.

It is a mistake to give up large dirty bedsores as hopeless. They will heal in the majority of cases, though the healing process is slower than in normal tissues. If carelessly dealt with they will kill the patient as surely as will a septic urinary tract; and the one condition allows the other to flourish.

The nursing and general treatment of paraplegic patients who exhibit the mass-reflex can be summarised shortly. The spinal cord below the lesion is exquisitely sensitive to impulses originating from the most diverse stimuli. The reaction evoked involves the whole paralysed region, somatic and visceral, and is so uncontrolled and violent in character that it dominates the life of the unfortunate patient. Our endeavour should therefore be directed to allaying the excitability of the spinal cord by removing as many nocuous influences as possible. The limbs and the viscera, such as the bladder and intestinal tract, must be treated with the greatest gentleness, and every care must be taken to avoid the generation of long-continued and violent mass-reflexes.

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BLOOD PRESSURE AND PHYSICAL FITNESS OF THE SOLDIER.

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IT has been suggested to the writer that a brief note on some blood pressure observations, which have been in the melting-pot for some years, may be of value at the present time.

Description of Test.

Because of the absence, up to the present time, of a satisfactory explanation of the significance of the tonal changes evident in making a blood pressure observation by the auditory method most clinicians have been led to ignore them, and but few in this country have even observed them. The technique is perfectly simple, being well within the capacity of a nurse; and in spite of all that has been written to the contrary, the writer is quite convinced that the subjective factor is no greater than that which enters into the other, more usual, physical tests. Indeed, it is less than in many.

The phenomena observed and the descriptive terms applied are as follows:—

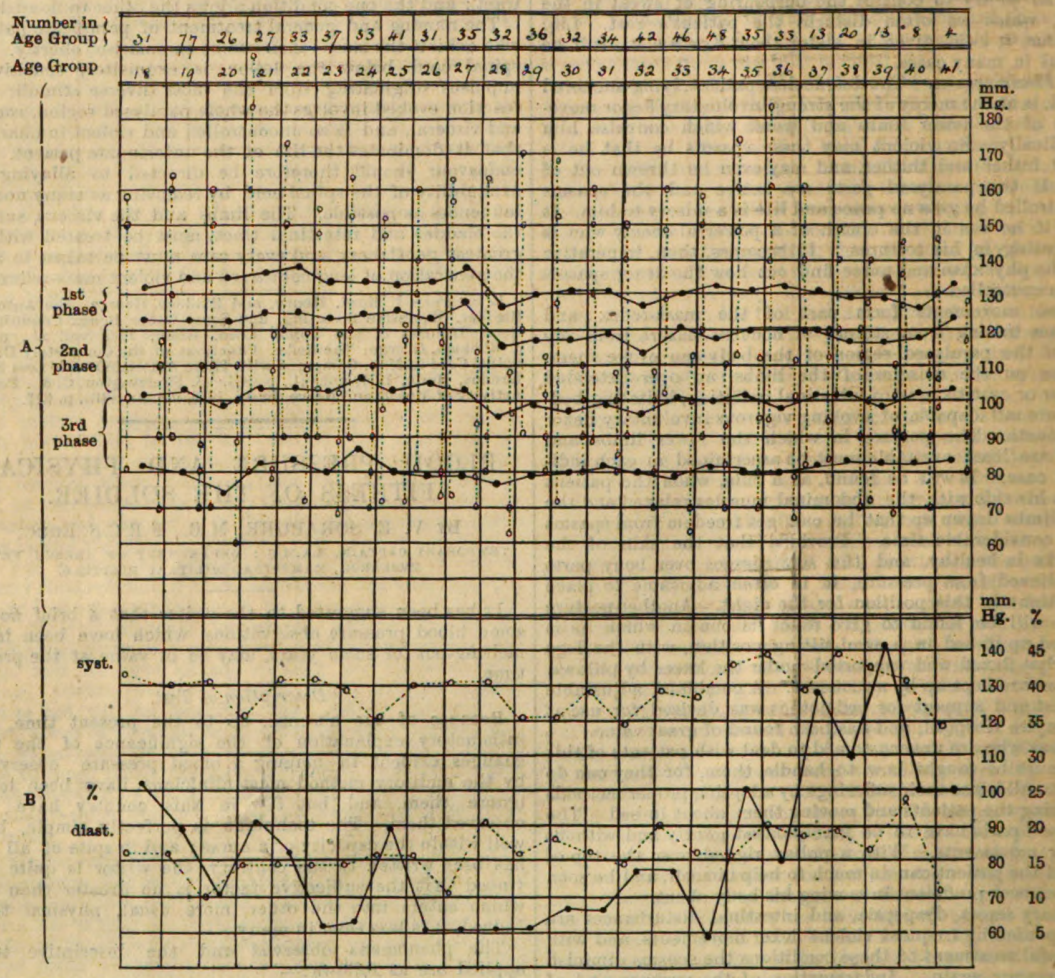
The brachial being compressed with the cuff and the chest-piece of the stethoscope applied over the artery at the lower border of the cuff in the usual way, it will be noted that as soon as the blood re-enters the artery a sharp tap is heard; this is quite generally recognised as indicating the systolic blood pressure. The first tap is followed by a succession of similar taps all in the same tone; this series of taps is regarded as being the *first*, or *first tonal, phase*. Normally this is followed by a series of short murmurs; these last for a variable period as the mercury column falls, and may encroach upon, or be encroached upon by, the preceding or succeeding phase. This murmur phase is usually termed the *second phase*. The *third phase* follows, this is also a tap or tonal phase; the taps follow the series of murmurs somewhat abruptly, and are clearer and more intense than those of the first tonal phase. At a certain point the sharp tap becomes suddenly and definitely muffled; this is the point most generally accepted as representing the diastolic pressure, and the whole series of muffled tones is termed the *fourth phase*. The point at which no sound is audible is the *fifth phase*.

Duration of each phase.—As will be seen later, the first should be 20 per cent. of the pulse pressure, the second 40 per cent., and the third 40 per cent. It may be well to recall that the term pulse pressure means the difference between the systolic and diastolic readings. A reading which showed 120 systolic and 80 diastolic would indicate a pulse pressure of 40, a first phase of about 8, a second phase of about 16, and a third phase of about 16 mm. Hg, and would read thus: 120, 112, 96, 80.

I now suggest that the presence and relative lengths of these phases is of wider clinical significance than the height

TABLE I.—*Giving an Analysis of 769 Blood Pressure Observations in a Group of Guardsmen during their Twelfth Week of Training.*

A, The upper part of the table indicates (dots and lines) the average pressure readings in each group *showing all phases*, and (circles and dashes) the highest and lowest reading in each group.



B, The lower part of the table gives (dots and lines) the percentage of men in each group *ailing to show all phases*, and (circles and dashes) the average systolic and diastolic pressure of those making up this percentage.

of the systolic pressure alone, or even that of the systolic and diastolic readings compared. It is quite a common experience to find an obviously inefficient heart giving what is accepted as a normal systolic and diastolic blood pressure reading. Yet I have not seen a case such as this which showed all the phases in anything like the suggested normal proportion.

Results in Soldiers under Training.

Table I. is an analysis of the blood pressure findings in a group of 769 soldiers (Guardsmen) during the twelfth week of training. The standard set as suitable for the test was that each man selected should be "up to his squad"—that is, he had not fallen back in his training because of any physical disability. The men were examined in small groups at 4 P.M. daily. This time was selected as the object of the test so as to determine the fitness of the men at the close of the day's work and to compare their relative endurance at different ages. Observations were also recorded after exercise; and pulse and respiratory conditions were noted, but these are not considered in this note.

1. Comparison of the age-groups shows that there is but little variation in the average readings, all being much on the same level.
2. The average systolic pressure is higher than that which one finds in the conditions of civil life. It will be remembered that these tests were made at the end of a hard day's work.
3. That the average diastolic pressure is more constant, not showing the same tendency to rise as the systolic.
4. That the average pulse pressure is approximately 60 per cent. of the diastolic pressure.
5. That the average period of the first phase is 20 per cent. of the pulse pressure.
6. That the average period of each of the second and third phases is about 40 per cent. of the pulse pressure.
7. That with the singular exception of age 25, ages 23 to 31 showed the highest percentage of men in whom all phases were present.
8. The extremes of pressure in each group are notable, indicating the wide range within which individuals may vary, yet the average of each group is strikingly constant.

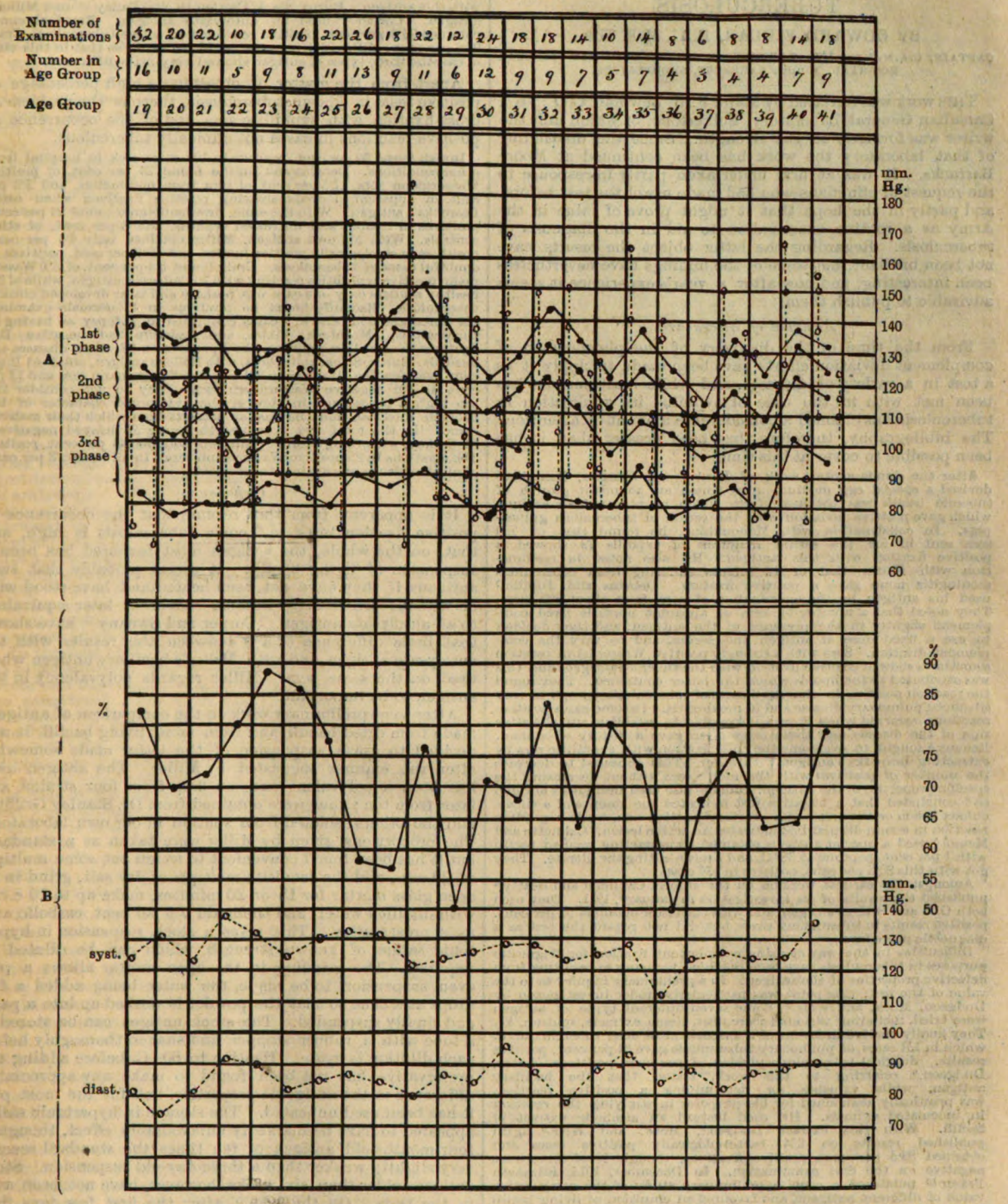
It may be stated here that a careful canvass of the drill instructors and company commanders showed, without exception, that their experience led them to expect more from the men between 21 and 31 than any age before or after. They all equally agreed that the men under 20 and over 35 required much more careful handling.

The conclusions suggested by these considerations are: That the most constant factor, the diastolic pressure, is for all ages somewhere between 70 and 90; that the systolic pressure should be about 50 or 60 per cent. higher than this; that the range of pressure between the two should be capable of differentiation into three different phases—the first, or first tonal, being 20 per cent. of the whole; the second, or murmur, phase 40 per cent.; and the third, or second tonal, 40 per cent. These findings are characteristic of the fit man.

Results in Invalided Men.

Table II. is the analysis of a group of 189 men, all of whom had been invalided home from abroad, but included none of organic heart trouble. Practically all showed, or had showed,

TABLE II.—*Giving a similar Analysis of a Group of 189 Men (not suffering from Organic Heart Trouble) Invalided Home from Abroad.*



evidence of autonomic disturbance of the cardio-vascular mechanism (D.A.H.).

Certain features in the group stand out clearly. The very high percentage of the men who do not show all the phases and the greater instability of the diastolic pressure. That even those who showed all phases show quite a remarkable variation in the relative proportion of these as compared with the first group. It will be noted that the best groups in this table—namely, ages 29 and 36—compare most unfavourably with the worst groups of the first table—namely, ages 37 and 39. These readings were all taken from hospital records, and were made soon after admission and again shortly before disposal.

The conclusions are: (*a*) that the men who are less efficient than normal do not show the characteristic phases which prevail in the group analysed in Table I.; (*b*) that those who are physically fit show these phases in the majority of readings; (*c*) that the result of this simple test is a factor worth considering in estimating the physical capacity of an individual.

The practical application of this test, in addition to its simplicity, takes but little time; two minutes at most.

In selecting and examining the large number of fit men the writer is deeply indebted to Surgeon Lieutenant-Colonel P. H. Whiston, Irish Guards, for many facilities and much encouragement. He was also placed under an equal obligation to Lieutenant-Colonel W. H. Ingilby, Scots Guards, for without his sympathetic coöperation and active help it would have been impossible to carry out the tests.

THE COMPLEMENT-FIXATION TEST IN TUBERCULOSIS.

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THIS work was initiated by Major F. B. Bowman, C.O., No. 1 Canadian General Laboratory, Folkestone, of which unit the writer was formerly on the strength. Since the disbanding of that laboratory the work has been continued at Moore Barracks. It was at first undertaken partly in response to the request of clinicians who had made use of the test before, and partly in the hope that it might prove of value in the Army as a routine examination to aid in the diagnosis of tuberculosis. Regarding the latter object the results have not been brilliant, but some of the findings have nevertheless been interesting, and now after a year's experience it seems advisable to publish them.

Abstract of Literature.

From the time of the discovery of the phenomenon of complement deviation efforts have been made to apply it as a test in a variety of diseases, and while most success has been met with in the case of syphilis, its application in tuberculosis has claimed a considerable amount of attention. The bibliography, therefore, has been greater than it has been possible to cover at this time.

After the fundamental work of Bordet and Gengou, Besredka[1] devised a special egg medium upon which an abundant growth of tubercle bacilli was obtained, from which he prepared an antigen which gave positive deviation with the serum of tuberculous guinea-pigs. In collaboration with Manoukhine, he found that of 750 sera sent in for the serum diagnosis of syphilis 79 showed a positive fixation with this antigen. He also noted in conjunction with Netter that of 12 infants suffering from tuberculous meningitis none gave a positive fixation. Debains and Jupille[2] used his antigen in the examination of sera from about 600 cases. They noted that a number of sera of apparent normals fixed complement slightly in the presence of the antigen, and they decided to use a fixed dose of antigen and serum, and to vary the complement dilution. Sera with a strongly positive Wassermann reaction sometimes showed positive fixation with the tubercle antigen, and this was attributed to the lipoids which the latter contained. They found the reaction positive in almost all cases of tuberculosis except in very advanced pulmonary disease and in meningitis. In some cases positive reactions occurred when it was impossible to establish any objective sign of the disease, and these cases often gave a history of contact. Renaux[3] sought to overcome the cross fixation with syphilitic sera by extracting Besredka's antigen with ether. This appeared to decrease the number of positives with the luetic sera without decreasing the specific properties of the antigen. Inman[4] also used Besredka's antigen and concluded that a negative test indicated the absence of a tuberculous lesion or the arrest of a previously active one, while a positive reaction in serum diluted 1/32 indicated an active lesion. Calmette and Massol[5] used a special antigen obtained by extracting washed bacilli with 1 per cent. peptone at 65° C. and concentrating the filtrate. They got with this 92·5 per cent. positive in 134 cases.

Amongst the earliest workers on the subject Caulfeild and Beatty[6] published the results of an investigation in January, 1911. They used both O.T. and B.E. as antigen, and with the latter obtained 56 per cent. positive results in tuberculous cases, but did not regard the test as a diagnostic procedure.

Difficulties in the way of using complement fixation for diagnostic purposes in tuberculosis have been regarded by many as resulting from defective properties of the antigen. In a preliminary inquiry as to the value of the test, this point was particularly under investigation by Dudgeon, Meek, and Weir.[7] Some seven different types of antigen were tried, including various tuberculins, tissue extracts, sputum, &c. They finally decided in favour of a suspension of dead tubercle bacilli, which in 131 cases of pulmonary tuberculosis gave 84 per cent. positive results. Surgical tuberculosis yielded 57 per cent. positives. Later, Dudgeon,[8] referring to this work, stated that the bacillary antigen, while valuable for determining a positive reaction, was practically abandoned for his purposes in studying the reaction in inoculated animals. He used instead an alcoholic extract of bacilli. With this extract Dudgeon, Meek, and Weir[9] again published results on 234 bacteriologically positive cases and obtained 89·3 per cent. positive fixations, though 15 of these were negative on the first examination. In December, 1913, Elizabeth Fraser[10] published a concise preliminary study of the comparative value of different antigens, and favoured an emulsion of living bacilli from glycerine potato. She found 68 per cent. positive reactions in tuberculous sera. Again, McIntosh, Fildes, and Radcliffe,[11] used moist living bacilli in saline and in 43 pathologically certain cases of phthisis obtained 76·7 per cent. positive fixations, and in 26 surgical tuberculous conditions, excluding adenitis, obtained 80·7 per cent. positive. In another article on the subject Radcliffe,[12] who refers to the earlier work of Bordet and Gengou, Wassermann and Brück, Citron, Lüdke, Morgenroth and Rabinowitsch, Hammer, Bang and Anderson, and others, was led by his own work to favour also a fresh suspension of bacilli as antigen. His results showed about 90 per cent. of 568 cases of pulmonary tuberculosis to give a positive reaction.

The more recent work in the United States has shown some very favourable results. Bronfenbrenner[13] made a study of Besredka's antigen and concluded that the lipins should all be extracted, and though a certain number of clinically non-tuberculous cases react positively the reaction nevertheless appeared to be specific. Craig[14] and McCaskey[15] used an alcoholic extract of several strains of T.B. grown upon Vedder's starch medium. Miller[16] and Zinsser prepared their antigen by grinding 20 mg. of moist T.B. mass with 90 mg. of dry salt in a sterile tube, and then adding 10 c.cm. of distilled water to make an isotonic suspension. Heating to 60° C. for half an hour appeared to have no deteriorating effect. Miller[17] published very good results with this antigen. Burns, Slack, Castleman, and Bailey[18] used Miller's antigen. Corper[19] used an autolysate antigen. Bronfenbrenner obtained 98·3 per cent. positive reactions in active tuberculosis, Craig 96·6 per cent., Miller 96·8 per cent. to 93 per cent., so that in this class of case the three types of antigen showed very little difference.

Apart from the matter of obtaining a high percentage of positive tests in known tuberculosis, there is the problem of cross-fixation with syphilitic sera and of the occurrence of positive reactions in cases not clinically tuberculous.

Inman found 24 per cent. positive in 100 cases sick in hospital from other conditions. Debains and Jupille found 24 per cent. of positive Wassermann sera, 17·3 per cent. of sera from non-luetics, and 3·2 per cent. of apparent normals showing positive fixations when using Besredka's antigen. With the same, Bronfenbrenner found 24 per cent. positives in treated and untreated syphilis, and 8 per cent. of other controls. With his own antigen, Miller obtained only 4·4 per cent. positives in serologically positive luetics, and 22·8 per cent. positives in doubtful cases of tuberculosis. Craig found 5·4 per cent. of 350 Wassermann positive syphilitics reacting with his tubercle antigen, while of 200 healthy soldiers only one case was positive and later developed clinical tuberculosis. Radcliffe found no positives in 45 normals examined 204 times, and none also in 9 cases confirmed at autopsy as having no tuberculosis. McIntosh, Fildes, and Radcliffe had negative Tbc. fixations in all of 18 syphilitics, and 3 positive in 87 other diseases and normals. Burns, Slack, and others, with Miller's antigen, obtained 15 per cent. positive Tbc. fixations in 221 positive Wassermann sera and 13 per cent. in 691 negative Wassermann sera. They do not consider this too high a percentage in view of the widespread character of the tubercle infection and the class of patients from which their material came. (In the total sera examined they note 37 delayed negatives.) McCaskey, with Craig's form of antigen, obtained 44 per cent. positive Tbc. fixations in 25 positive Wassermann sera. In all except 8 per cent. clinical evidence was against tuberculosis.

Technique.

It is apparent from this résumé that the occurrence of positive fixation tests in known tuberculosis is high, and that, on the whole, the antigen most favoured has been a suspension of living bacilli. It seems probable that such antigens if they have not been heated and have stood with or without preservative become sooner or later equivalent to an autolysate antigen. Corper and Sweany[20] have shown that little difference occurs between the results with the autolysate antigen and with Miller's bacillary antigen when used on the same sera. Miller regards polyvalency in the antigen to be important.

After some preliminary work on the comparison of antigens made from dried bacilli and from moist living bacilli, it was decided to use a suspension of the latter made somewhat after the manner suggested by Miller. The antigen used has been a polyvalent one—at first from four strains, and later from ten; four were obtained from Dr. Stanley Griffiths and the others isolated from sputum in our own laboratory. The proportions given by Miller were taken as a standard, but it has been found convenient to weigh out some multiple of 20 mg., add the requisite multiple of dry salt, grind in an open glass mortar for 15 or 20 minutes, make up to 10 c.cm. with distilled water, and then add 0·5 per cent. carbolic acid as a preservative. This gives a stock suspension in hypertonic saline of known strength which can be diluted as required. The grinding in the open mortar allows a very even suspension to be made, the water being added a few drops at a time so that the powder is worked up into a paste and finally suspended. The stock antigen can be stored in a tube with a rubber stopper and shaken thoroughly before each dilution is made. Heating to 60° C. before adding the preservative has not been found to make any appreciable difference in the antigenic properties, but for the most part it has been used unheated. The storage in hypertonic saline appeared to have no markedly unfavourable effect, though a four-months-old antigen of ten times the standard seemed very slightly weaker than a three-day-old suspension. Stock antigens older than six weeks, however, have not been used in the tests. On the whole, after the first few days they have been found to remain comparatively uniform for more than six weeks. The anti-sheep-cell system has been used throughout with amboceptor supplied from Burroughs, Wellcome, and Co. Complement has been obtained, as a rule, from three or more guinea-pigs. This point seems to be of some importance, for differences in action towards the same antigen have been found in comparative titrations of the sera of individual animals. Radcliffe also noted differences in his work.

The patient's serum has been inactivated at 55° C. for 15 minutes in some cases, in others for 30 minutes. This point did not seem to be of great importance, and most of the sera had the longer inactivation. It is important, however, that the sera be fresh, for there seems to be a

distinct tendency for some sera, stored several days in the ice-chest, to develop substances of such quality and quantity as to produce a positive reaction without being detected as anticomplementary bodies in the serum control. Such reactions are undoubtedly false.

The actual test made at first was similar to that described by Kolmer[21] for the Wassermann reaction as Method I., except that one-quarter the amounts of the hæmolytic system were used. The patient's serum was tested in 0·05 c.cm. and 0·1 c.cm. amounts, with a serum control of each quantity, making a four-tube test in all. An antigen dilution containing the quantities given by Miller was used, its anticomplementary value obtained, and at most one-third of this used in the test. Titration of the amboceptor was always made for each day's tests in the usual manner and the cells employed were sensitised with two units of amboceptor. In the following paragraphs this method will be referred to as Method I.

Later, and for the greater part of the work, another method was employed, similar to that described as Method IV. for the Wassermann test recommended in the report of the Special Committee upon the Standardisation of Pathological Methods of the Medical Research Committee. Three slight modifications were introduced; first, the use of 2 m.h.d. of complement in the serum control instead of 3 m.h.d. as being more accurate for detecting anticomplementary substances; second, the use of 0·1 c.cm. of patient's serum in the place of 0·25 c.cm. of a 1 in 5 dilution—i.e., just twice the quantity of actual serum; third, the use of a 2·5 per cent. suspension of sheep cells instead of 3 per cent. In this method, hereafter referred to as Method IV., the m.h.d. of complement is first determined by titration with cells sensitised with 5 m.h.d. of amboceptor. 0·1 c.cm. of serum to be tested is placed in each of three tubes; in the first is placed 3 m.h.d. of complement, in the second, 5 m.h.d., and in the third (serum control) 2 m.h.d. The dose of antigen which is placed in the first and second tubes binds by itself not more than 1 m.h.d. of complement as determined by titration before each day's tests. The 5 m.h.d. cells are used throughout. The total volume in each tube is 1 c.cm. Both in the titrations and in the actual tests incubation takes place for 1/2 hour at room temperature and 1/2 hour at 37°C. before the addition of cells.

In the case of Method I. readings were taken at the end of 15 minutes and 30 minutes of the final incubation, as some observers have stated that small amounts of fixation must be considered. The 30 minutes was concluded to be best. Provided the controls were clear, complete inhibition in both the 0·05 and 0·1 tubes was called +++; partial inhibition in the 0·05 tube and complete in the 0·1 tube was called ++; slight or no inhibition with 0·05 c.cm. of serum, but complete or almost complete with 0·1 c.cm. of serum, was called +. In the case of Method IV. complete inhibition in both 3.m.h.d. and 5 m.h.d. tubes is called +++; complete inhibition in the 3 m.h.d. tube and partial in the 5 m.h.d. tube ++; complete inhibition in the 3 m.h.d. with slight or none in the 5 m.h.d. tube +. The serum control must of course show complete hæmolysis. Lesser degrees of inhibition in the 3 m.h.d. tube can be indicated by ± and ±.

The work began with the testing by Method I. of sera from known cases of tuberculosis and of sera sent in for the Wassermann test. In over a consecutive 100 of the latter this method yielded 21·6 per cent. positives. While I was only able to obtain further history in about one-third of the positive cases, none of these gave definite clinical evidence of active tuberculosis. This percentage was rather higher than expected at that time, and it was concluded that Method I. was perhaps too sensitive, although in sera from active tuberculosis it gave only about 80 per cent. positive results. Method IV., in comparison, showed in the same routine sera only 6·8 per cent., with a trace or more of Tbc. fixation, so that this fact rather favoured the choice of this method for further work. Certain other features recommended the adoption of Method IV. First, it was preferred as being more nearly a quantitative test, since the number of plus signs used in the readings corresponded rather closely to the number of units of complement specifically fixed. Secondly, the use of cells sensitised with five units of amboceptor appeared to be the most practical way to overcome the difficulty arising from natural sheep amboceptor in human serum, for at this high dosage the reciprocal relations between complement and amboceptor are unaffected. This has been indicated in the work of Kaup and Kretschmer.[22] Thirdly, this method for making the fixation tests for tuberculosis was more convenient owing to the adoption about this time of a similar method of performing the Wassermann test, because the same complement titration was applicable to both. In the fourth place, if it were found necessary, it would be a very simple matter to increase the sensitiveness of the test by reducing the amount of complement allowed for specific fixation.

As bearing on this last point it is surprising how much complement can sometimes be bound by tuberculous sera in the presence of the tubercle suspension. On one occasion, in 2 out of 6 strongly positive sera (0·1 c.cm. amounts), over 10 m.h.d. of complement were fixed. True, these are exceptional, but they are a good indication of the specificity of the reaction, and suggested at the time that to allow for the specific binding of 1 m.h.d. of complement (i.e., 1 unit over and above the total amount which is absorbed by the serum and antigen alone) would make the test sufficiently sensitive for practical purposes. Method IV. therefore was adopted for the greater part of the work.

Results.

The results here recorded are based on a total of 570 different cases. A great many more tests than this have of course been carried out, for sera have been repeated and comparisons made between the two methods of performing the test. Comparisons have also been made between antigens, between different quantities of the same antigen, between different quantities of the same serum, to determine the suitable amount for testing, and so forth, the outcome of which has been the employment of Method IV.

The accompanying table presents the more important part of the results in brief form.

Table of Results.

Description of cases.	Method used.	No. of cases.	Classification of cases.	Readings.				
				Neg	±	+	++	+++
110 Tbc. cases all path'y or clin'y certain.	I.	15	Unclassified.	2	0	4	2	7
		24	Quies't, pul.	19	0	3	2	0
		71	Active, pul'y.	16	0	15	16	24
134 routine sera for Wass. Tbc. not susp'd. 9 of the pos. clin'y negative.	I.	134	Unclassified.	105	0	22	6	1
Comparison Meth. I. & IV.; routine sera; same specimen in all cases.	I.	110	Unclassified.	88	0	19	2	1
	IV.	110	,,	103	1	4	2	0
Comparison Meth. I. and IV.; Tbc. sera; same specimen in all cases.	I.	56	Active, pul'y.	13	0	11	13	19
	IV.	56	,, ,,	13	7	11	8	17
176 Tbc. cases, all pulmonary, all classified. From Can. Spec. Hosp., Lenham.	I.	17	Active, incip.	4	0	4	3	6
		39	,, mod. ad.	10	0	8	10	11
		15	,, advan'd.	2	0	3	3	7
		10	Quies't, incip.	9	0	1	0	0
		13	,, mod. ad.	12	0	1	0	0
		1	,, advan'd.	0	0	1	0	0
		71	Total, active.	16	0	15	16	24
		24	,, quies't.	19	0	3	2	0
		27	,, incip.	11	0	5	5	6
		52	,, mod. ad.	22	0	9	10	11
		16	,, advan'd.	2	0	4	3	7
	IV.	17	Active, incip.	4	2	3	2	6
		73	,, mod. ad.	17	2	15	12	27
		31	,, advan'd.	3	3	3	7	15
		15	Quies't, incip.	11	1	1	2	0
		24	,, mod. ad.	17	1	1	3	2
		1	,, advan'd.	0	1	0	0	0
		121	Total, active.	24	7	21	21	48
		40	,, quies't.	28	3	2	5	2
		32	,, incip.	15	3	4	4	6
		97	,, mod. ad.	34	3	16	15	29
		32	,, advan'd.	3	4	3	7	15
8 cases unclassified tuberculosis.	IV.	8	Unclassified.	5	0	1	1	1
216 cases, mostly G.U. history in all, clinically negative for Tbc.	IV.	215	,,	154	14	26	17	4
22 cases in doubt or final board "Tbc. susp."	I.	5	—	4	0	1	0	0
	IV.	17	—	11	0	5	0	1
41 pos. Wass. sera, no Tbc.	I.	23	—	13	0	7	3	0
	IV.	32	—	25	2	4	1	0
96 cases not clin. Tbc., spec. note re contact.	IV.	84	No contact.	67	2	7	7	1
	IV.	12	Definite contact	3	4	3	2	0

199 cases tuberculosis, all kinds, showed 16 positive Wass. tests.

Discussion and Conclusions.

1. *The diagnostic value of the test.*—The percentage of positive reactions in active pulmonary tuberculosis—77 per cent. (Method I.), 74 per cent. (Method IV.)—is not as high as that published by the American workers, but approximates the earlier results of Dudgeon, Meek, and Weir, and of McIntosh, Fildes, and Radcliffe. If the ± reactions of

Method IV. are included the percentage by this method rises to 80. Certainly this method could be made much more sensitive and to give a higher proportion of positives, but from the figures in the cases not clinically tuberculous it appears probable that the test would then be robbed of its practicality. In fact, even with these present results the practical value is in considerable doubt. Captain G. S. Gordon, O.i/c G.U. surgery at this hospital, to whom I am indebted for the histories in the majority of the cases not clinically tuberculous, found the test of no definite assistance, chiefly because in genito-urinary disease if the Tbc. fixation be positive it does not localise the lesion in the genito-urinary tract, and usually in active tuberculosis the disease can be diagnosed by other methods. On the other hand, it has been reported by Captain Farquharson, O, i/c Laboratory, 15 C.G.H., that the test has in some cases been an aid to the clinician in reaching a diagnosis.

The best results published have been those of Miller and of Craig. They obtained the highest percentage of positives in the known tuberculous (about 98 per cent.), with the lowest percentage in the non-tuberculous (between 4 and 5 per cent.), although each used a different antigen. From the experience of others one cannot help thinking that these two observers have been particularly fortunate in the class of their cases. McCaskey, with Craig's antigen, and Burns, Slack, and others, with Miller's antigen, have not had such striking results. In this present work the effort has been, not to make the test more sensitive, but, if anything, less so, in order that a strong reaction may be a reliable fact with a definite significance to the clinician. It is disappointing when a case is clinically tuberculous and gives a negative test; but if one tries to push it to the 100 per cent. limit, then the test seems to lose the slight value it may have in the doubtful cases. Method IV. is conservative, and in spite of two or three cases met with, it would appear that the +++ reaction can be relied upon under the proper conditions as a definite aid in diagnosis, but the number of cases in which it will clinch a diagnosis that could not be made by other methods will be few. In view of this and the widespread character of the infection, therefore, one is led to agree with McIntosh, Fildes, and Radcliffe, that "however perfected, it can never attain to the great practical value of the Wassermann reaction."

2. *The significance of a strong reaction.*—The strong reactions, +++ of Method IV., occurred most frequently, as would be expected, in active tuberculosis, 35 per cent. in incipients, 37 per cent. in the moderately advanced, 48 per cent. in the advanced. The last figures are higher than one would be led to expect from the work of some, but differences may depend upon whether the cases were gaining, holding, or losing, a classification which was not made in this list. This +++ reading indicates that 0·1 c.cm. of the patient's serum binds specifically three or more free units of complement. The large amount which can sometimes be fixed has already been noted. Comparisons cannot be made with others on this point, except that fixation was obtained by Inman in some sera diluted up to 1/256, and by Dudgeon, Meek, and Weir up to 1/1000 in a few cases. Meek[23] adopted as a standard of a strong reaction fixation in a serum diluted 1/10. On this basis he found the highest proportion of strong reactions (65 in 102 = 63·7 per cent.) in cases with the physical signs of extensive pulmonary disease—copious sputum, impaired general health, and apparently bad prognosis. Caulfeild[24] also made the observation that the patients whose sera maintain the complement-fixation result seem to go rapidly backwards. This reading therefore would seem to have some value in prognosis, though it also seems to be generally accepted that very far advanced cases are very often negative. Meyer,[25] in noting this, divides the third stage cases into late and early. The diagnostic value of the +++ reaction has been referred to. If it should occur in a clinically doubtful case it would appear to be fairly reliable, for it has been noted in only 1·8 per cent. of the clinically non-tuberculous.

3. *The significance of a negative reaction.*—This result means more to those who use a more sensitive method of testing, perhaps; but in this present work it appeared to be of no importance except in the very advanced stages. While the positive reaction occurs most frequently in active disease, it does not serve as an absolute indication of it, a view in agreement with the conclusions of Corper and Sweany. Neither is a negative reaction a certain sign of absence of activity. In this test we may be dealing with a peculiarity of the individual rather than a type of case. If the serological reaction of every patient to the same quantity of tubercle toxin were equal, then the amount of complement deviation would be a precise measure of the balance between the walling-off process and the absorption of toxin. This supposition is untenable in a mathematical sense, and seems unlikely even in a general way, judging from animal experiments. The irregularity of serological response to humanisation of individual animals is well known, and Dudgeon makes a note of it, in particular with rabbits inoculated with tubercle bacilli under exactly similar conditions. The interesting idea expressed by Miller concerning arrested, sputum-positive cases, with a negative fixation test, that they are really not suffering from the tuberculous condition, but are simple carriers, may be giving too much significance to a negative reaction.

4. *The significance of the test in the clinically non-tuberculous.*—Of the 215 cases coming under this class, the fixation test was positive in 21·8 per cent., or in 28·3 per cent. if the ± result be included. These figures are not unworthy of comment. They appear high as compared with those published by others from civilian patients. They may be taken to suggest that the wear and tear of war has reawakened dormant lesions sufficiently to produce antibody without sign or symptom, or that the more intimate contact of the soldier's life has seeded down more individuals than in peace times. This question must be left to others to discuss, but as bearing out the suggestion the following may be noted. In the Medical Supplement for August 1st, 1918, a reference is made to several writers having stated that tuberculosis has increased in the German Army considerably during the war. Ronzoni[26] is quoted as stating that 75 per cent. of soldiers (Italian) are infected with tuberculosis, judging by the cutaneous reaction, and that 20 per cent. have clinically active lesions. Brugnatelli[27] found tuberculous changes in 72 out of 304 autopsies (23·6 per cent.). Judging from the latter figures, therefore, the results in our 215 soldiers are not so much out of the way. That contact is of importance in the fixation test is noted in the special group of 96 cases, and family history, without definite contact being established, seems to have no significance. The percentage of those with history of contact which show positive reactions is as high as 75 if the ± readings are included.

5. *Non-specific fixation.*—Most of those who have worked with the test recognise that the reaction is definitely specific in the majority of cases, but that the probability of cross fixation exists in strongly positive syphilitic sera. This probability is also indicated in the results here published, even though a bacillary suspension was used as antigen. Of the 23 sera showing a positive Wassermann and tested by Method I., 43·5 per cent. showed Tbc. fixation, which is practically the same as the findings of McCaskey, who used Craig's antigen. Method IV., however, appears to reduce the percentage, as only 21·8 per cent. showed a trace or more of Tbc. fixation in the 32 syphilitic sera tested by this method. One interesting case seemed to have a direct bearing on the subject. The man had a bronchitis and was a Tbc. suspect with syphilis; at the first examination both the Wassermann and the Tbc. fixation tests were +++. His serum was sent in again several weeks later after finishing his course of antisyphilitic treatment because of a persistence of some suspicious features and his bronchitis. The reactions on this occasion were both negative, and later, on clinical grounds, he was concluded to be non-tuberculous. A Wassermann test has been made on every case here reported, and it still seems advisable that no interpretation of a Tbc. fixation test should be made without knowing this other test as well. There has been a suggestion of some non-specific fixation in cases of nephritis, but the number has been too small to warrant a definite statement.

6. *Positive Wassermann reactions in the tuberculous.*—Incidentally it has been shown that 8 per cent. of cases of tuberculosis have a positive Wassermann reaction. Von Adelung,[28] in California, found 8·7 per cent. of 195 bacteriologically proven cases of Tbc. to give this, while in Illinois, Corper and Sweany found it in 7·1 per cent. of 1290 sanatorium patients. Taken as an indication of syphilis, it seems worth noting, therefore, that the proportion amongst our tuberculous soldiers is practically not greater than occurs in the civilian population.

Acknowledgments.

As has been mentioned, this work was begun at No. 1 Canadian General Laboratory, then under the command of Major F. B. Bowman, in collaboration with whom some of the preliminary experiments were made. It was continued under the régime of Captain F. Adams at the same place, and later carried on at Moore Barracks after the disbandment of the laboratory in Folkestone.

I am especially indebted to Major F. H. Pratten, of the Canadian Special Hospital, Lenham, for sympathetic assistance in the arrangements for collecting material, and in the classification of the tuberculous cases. My thanks are also due to Captain H. R. McIntyre and Captain A. McKay, of this hospital and to Captain C. D. Farquharson and Captain D. H. Paterson, of No. 15 Canadian General Hospital, and to Captain G. H. J. Pearson, of the Canadian Special Hospital, Etching Hill, who all furnished me with histories of cases. I have already mentioned my indebtedness to Captain G. S. Gordon for many histories.

The privilege afforded by the Royal Society of Medicine to make use of their library has been greatly appreciated.

I desire to record the faithful work carried on by Sergeant E. D. Brown, Corporal F. E. Townsend, and Corporal M. J. Coomer during the whole course of this study, both at No. 1 Canadian General Laboratory, and afterwards at Moore Barracks.

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

ACUTE POLIOMYELITIS IN AN INFANT 12 DAYS OLD, WITH EXTENSIVE PARALYSES AND RECOVERY.

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THERE seems to be no case on record of acute poliomyelitis (infantile paralysis) with characteristic signs and symptoms in so young an infant. Cases of intra-uterine poliomyelitis have been spoken of, but without pathological and only little clinical evidence. There is every possibility that some deaths of the new-born with convulsions may be due to the virus of acute poliomyelitis, but the proof is yet to come. In the Monograph of the Rockefeller Institute for Medical Research (June 24th, 1912) reference is made by Peabody, Draper, and Dochez to a case two weeks old as the youngest recorded in the New York epidemics up to the time. The notes given below describe a typical text-book case as to mode of onset, pathological findings (except for the leucopenia), and after-results.

Notes of the Case.

The patient (Edward C——) was born on Sept. 1st at full term; normal labour of three hours' duration; no cyanosis at birth. He was the eleventh child; three miscarriages in early part of married life; one child died when 14 days old; other children and parents healthy.

The infant was admitted on Sept. 18th with complaint that the mother on the 13th, while washing him, noticed all limbs "limp"; he had not been crying since the 14th; last quite well on the 12th. No gastro-intestinal complaint; "takes very well"; fed on Nestlé's milk.

On admission baby was well nourished. There was slight cyanosis; breathing shallow. The neck and muscles of trunk were quite flaccid; facial muscles unaffected; no strabismus. Attempts at crying were unsuccessful. All limbs were quite flaccid except for voluntary movements of right hand and fingers; abdominal muscles and intercostals paralysed, *diaphragm alone working.* Knee-jerks not obtained. Sensations apparently not affected.

Five days after admission movements of the right forearm, left hand, and fingers were noticed; on the sixth day successful but feeble cry and movements of the left toes. Steady and gradual recovery of movements of the extremities and neck continued, the only permanent paralyses left at the end of ten weeks being those of the anterior group of muscles of the right leg, those of the left upper arm (except the biceps), and intercostals and abdominal muscles with their respective deformities of right foot-drop, flexion of left elbow, and an elongated, funnel-shaped chest with wasted muscles, and a flaccid protuberant abdomen. Electrical reactions were not made. No rise of temperature was recorded all the time. Patient was discharged on Dec. 5th.

Pathological findings.—I am much indebted to Dr. E. A. Ross for these investigations:—

Sept. 19th: Lumbar puncture fluid, 100 cells per c.mm., 91 per cent lymphocytes, 9 per cent. polymorphs, sugar present, globulin increased, cultures sterile.
Sept. 19th: White cell count, 4600 per c.mm.
Sept. 24th. White cell count, 5000 per c.mm.
Sept. 27th: Lumbar puncture fluid, 40 cells per c.mm., 99 per cent lymphocytes, 1 per cent. polymorphs, sugar present, globulin increased, cultures sterile.
Oct. 9th: Wassermann reaction on the mother, negative result.
No tubercle bacilli were found in the cerebro-spinal fluid.

As to treatment, urotropine in 2-gr. doses by the mouth and small doses of atropine and strychnine subcutaneously were given during the earlier weeks.

This case was kindly seen by Dr. Farquhar Buzzard in consultation, who agreed with our diagnosis. I must thank Dr. Clive Riviere, under whom the patient was admitted, for allowing me to publish the case.

PRIMARY NOCARDIASIS OF THE LACRYMAL GLAND.

BY J. B. CHRISTOPHERSON, M.A., M.D. CANTAB., F.R.C.P. LOND., F.R.C.S. ENG.,
DIRECTOR OF THE CIVIL HOSPITALS, KHARTOUM AND OMDURMAN;
AND
R. G. ARCHIBALD, M.B., CH.B. EDIN.,
MAJOR, ROYAL ARMY MEDICAL CORPS.

THE following is a note of a case of primary nocardiasis of the lacrymal gland, caused by a species of nocardia hitherto undescribed. The lacrymal gland appears to be one of the most remarkable glands in the body. Having few disorders of its own, it fulfils its destiny undisturbed by the disorders of the outside world, content to be left alone to administer its secretion to the great master-tissue the eye. The disease here recorded represents nocardiasis or actinomycosis, in which the causal agent is a germ or fungus, which grows readily aerobically and produces arthrospores.

The patient, a male aged 22, was admitted to hospital suffering from a swelling of the right eye, and inability to open it. The duration of the case was three and a half years. There was neither scar nor wound visible. The eyelids could not be everted, but when raised a thick yellow discharge poured out, and the whole conjunctival surface of the upper lid appeared to be rough and granular, with deeper ulceration in parts. The swelling was painless, and was of doughy consistency, though without œdema. There was a bulging forwards of the fornix of the conjunctiva. No lymphatic glands were enlarged, and the sight was unaffected. The eyeball itself was not invaded, nor were its movements involved, neither was photophobia or lacrymation present.

Under chloroform, the growth was dissected away; it appeared to have commenced in the lacrymal gland, and to have spread into the upper lid, invading the tarsal cartilage. It extended also somewhat between the eyeball and the bony orbit, along the ducts of the lacrymal gland.

Sections showed the morbid histology commonly associated with a fungal infection. A portion of a grain flattened between a slide and cover-glass showed that it was composed of the typical nocardial bacilliform hyphæ, with rounded bodies or spores, the whole being held together in a dense matrix. The reactions in various culture-media were investigated. The animal experimentation has not been concluded, but the condition does not seem to be pathogenic to the grey monkey.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

A MEETING of this section was held on Dec. 5th, Mr. J. D. MALCOLM, the President, being in the chair.

Foreign Body in the Gravid Uterus.

Dr. G. DRUMMOND ROBINSON showed a Skiagram of a Foreign Body in the Gravid Uterus. The patient, an unmarried woman, was admitted to hospital with a history that, thinking she was pregnant, she had tried to pass a crochet needle, the hook end of which was covered by a metal cap, into her uterus per vaginam. On withdrawing the crochet needle she was alarmed to find that the cap had not come away with it. She had hæmorrhage from the vagina, and on becoming frightened came to the hospital. The uterus was found to be bulky and the os was slightly patulous; no part of the metal needle-cap could be felt. The metal cap was clearly seen in several X ray photographs. Shortly after the skiagrams were taken the patient passed an ovum of about two months, together with the metal cap, spontaneously during an action of the bowels. The metal cap measured 2 1/10 in. in length.

A Uterus in which Changes had taken place as the Result of Procidentia.

Dr. DRUMMOND ROBINSON also read a paper on the above subject. The patient, aged 46, had complete procidentia of the uterus in 1900 (18 years ago) after the birth of her second child. In 1901 (17 years ago) hysteropexy was performed. In 1902 (16 years ago) the patient was confined of her third child. Shortly after this confinement the prolapse reappeared. In 1903 (15 years ago) Dr. Robinson first saw her. The vagina was completely prolapsed; the sound passed 8 inches; the supravaginal portion of the cervix could be felt through the vaginal walls, much elongated and very thin; the fundus uteri appeared to be attached to the anterior abdominal wall. An extensive perineal operation was performed, which enabled the patient to retain a pessary. Within a year the uterine canal had become so shortened that the sound only passed 3½ inches. There had been no further pregnancy. Lately the patient had had hæmorrhage from the vagina, and a year ago Dr. Robinson removed the uterus by Wertheim's method for carcinoma of the cervix. The fundus uteri was found firmly attached to the anterior abdominal wall. Immediately after the operation the sound passed through the external os 4½ inches into the uterus. The body of the uterus appeared to be enlarged. The patient made an uneventful recovery. The specimen was shown. Whatever the nature of the elongation of the supravaginal cervix in cases of procidentia might be (whether stretching of that structure alone, or new growth of its tissues, or both), this case proved that it might disappear to the extent of 4½ inches after the uterus had been replaced, even when the procidentia had lasted for as long as three years. He thought that such elongations might be, and probably at first always were, entirely due to mechanical stretching of the cervical tissues. Ventrofixation without support of the vagina by some means from below was insufficient for the relief of a really bad case of prolapse.

Dr. A. LAPTHORN SMITH said that at first he used to leave about 2½ inches of cervix, but found there was always some involution. He now left 3½ inches and found that the cervix later became 2½ inches.

Dr. HERBERT WILLIAMSON said that elongation of the supravaginal cervix might frequently be due to stretching, but in later stages structural changes might produce permanent elongation.

Dr. AMAND ROUTH agreed that stretching might occur at first, but if the cervix was allowed to remain down it became thickened and permanently elongated.

Dr. W. S. A. GRIFFITH asked what held up the body of the uterus and yet allowed the cervix to stretch like this.

Lady BARRETT gave an account of a case of a much elongated cervix, certainly due to stretching.

Labour in a Paraplegic Woman.

Dr. DRUMMOND ROBINSON gave an account of a case of labour in a paraplegic woman. The patient, aged 31 years, who had had seven children, was admitted to hospital in August, 1909, suffering from paraplegia of recent origin, probably due to transverse myelitis in the dorsal region of the cord. In October she was found to be three months pregnant and was transferred to the obstetric ward. During the time which preceded her confinement she suffered from bedsores, many rises of temperature, two attacks of congestion of the lungs, and offensive urine. The gravid uterus increased in size abnormally slowly after the fifth month and at full term was only as large as an ordinary seven months uterus. Labour took place 281 days from the cessation of the last menstrual period, and was painless, but otherwise entirely normal. Involution and lactation were normal. In 1897 Dr. Amand Routh read a paper before the Obstetrical Society of London in which he gave notes of seven similar cases, together with notes of a case of his own. Since then there had been no other similar case recorded. The fact that parturition and lactation occurred normally in these cases and in animals in which the lumbar part of the spinal cord had been removed suggested that these fnnctions were carried on without the aid of the higher nerve centres, and the physiological stimulus to both these functions appeared to be the result of some chemical substance or substances, probably produced in some part of the reproductive system and conveyed direct to the uterine muscle and mammary gland by the blood stream. The most recent experimental research confirmed this view.

Dr. AMAND ROUTH said that in his case post-mortem examination showed that there was no communication in the spinal cord above the third and below the sixth dorsal vertebræ. At the confinement there was no proper intermission between the pains, which suggested that some control was missing. He thought that the explanation was that onset of labour was almost certainly due to biochemical action, the chemical substance starting the process probably being derived from the junction of the maternal and fœtal circulations, and acting on the lumbar plexus rather than directly on the uterus. Experiments showed that if the lumbar plexus were separated from the pregnant uterus the uterus was left very inert, whereas stimulation of the lumbar enlargement caused the uterus to expel its contents very violently. At the time of his observations lactation was supposed to be the result of nervous influence due to the uterus being empty, but in this case it must have been due to a chemical substance.

Dr. LAPTHORN SMITH drew attention to the fact that painless labour had occurred under spinal anæsthesia.

Dr. DRUMMOND ROBINSON said that he had performed Cæsarean section on a patient under spinal anæsthesia. The operation was perfectly painless and the uterus acted strongly. Experiments had been carried out by Professor Starling and Dr. Janet Lane-Claypon on virgin rabbits, changes such as occur in nature as the result of pregnancy being produced as the result of injection with various parts of a fœtus. It was thus evident that there was something in the fœtus which was capable of stimulating the mammary gland.

Puerperal Anuria.

Mr. CLIFFORD WHITE showed microscopic sections and small portions of kidney removed during nephrotomy on two patients suffering from puerperal anuria. In both the partial suppression of urine had lasted about ten days, and in both cases immediate recovery followed incision of the fibrous capsule of the kidney. The chief change shown microscopically was marked dilatation of the tubules. Thrombosis of the vessels was absent. It was suggested that in cases of puerperal suppression of urine inflammatory swelling producing increased tension within the fibrous capsule of the kidney caused pressure on the collecting tubules and so prevented the urine from reaching the ureter. This hypothesis was supported by the fact that (*a*) in some eclamptic patients passing little water the kidney is hard on direct palpation during Cæsarean section; (*b*) the dilatation of the tubules was present in portions of the kidney removed during operation while the suppression still continued; and (*c*) casts were present immediately after incision of the capsule although they had been absent previously.

Dr. LAPTHORN SMITH said that there were, no doubt, cases like this where suppression was due to pressure on the tubules. In eclampsia, he thought, the suppression was due to pressure on the large veins, and as soon as this was removed the blood could circulate.

Dr. J. S. FAIRBAIRN said that many cases of suppression had no eclampsia at all, and often no symptoms except coma. He disagreed with the previous speaker. In eclampsia it was

a toxin which caused the damage, and opening the capsule would do little good.

Dr. H. RUSSELL ANDREWS said that anuria was only part of eclampsia; the most remarkable part was the profound toxæmia.

MEDICAL SOCIETY OF LONDON.

Epidemic Encephalitis.

A MEETING of this society was held on Dec. 9th, Dr. A. F. VOELCKER, the President, being in the chair, when Dr. E. FARQUHAR BUZZARD read a paper on Lethargic Encephalitis, which appears in full on page 835 of our present issue.

Discussion.

In the course of the discussion Mr. PERCY SARGENT spoke of the appearance of the brain, &c., during life, as seen at the time of operation. The dura mater was friable or thickened, and there was blood on the surface; the cortex was friable. Operation had been of no use in either of these cases, but might prolong life. A better method might be repeated lumbar puncture.

Dr. F. G. CROOKSHANK, speaking from the epidemiological point of view, said they had no right to distinguish between epidemic prevalences and to say that they were due to a different disease because of difference in seasonal and in age incidence.

Dr. J. G. GREENFIELD agreed that this was not a new disease. There was negative evidence from the clinical, bacteriological, pathological and epidemiological points of view that it was not the same disease as poliomyelitis. Positive evidence showed that poliomyelitis was a lymphogenous infection—was carried by the lymph stream—whereas this was a hæmatogenous infection, the blood-vessels bearing the brunt of the disease.

Dr. EDMUND CAUTLEY also spoke.

Dr. BUZZARD, in reply, agreed that if one could recognise these cases for certain one would not decompress. With regard to Dr. Crookshank's contention, he said that encephalitis was a prevalent disease. From the clinical standpoint there was a form of encephalitis like poliomyelitis and due to the same virus. From the pathological side he had examined numerous cases of encephalitis of the poliomyelitis type, and in these it was difficult to say where the infection began or ended; the whole nervous system was affected. In lethargic encephalitis, on the contrary, the condition was patchy. Poliomyelitis was an inflammation of the nervous matter; lethargic encephalitis was an inflammation of blood-vessels with *consequent* effect on nervous tissues.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY.

Military Surgery of the Lung.

A MEETING of this society was held under the chairmanship of Sir JOHN W. MOORE.

Colonel WILLIAM TAYLOR read a paper in which he briefly reviewed the surgery of the lung as carried out at the "front." He showed that the change was simply that of harmonising or adapting the principles of surgery as they are now applied to other wounds to those of the lung and chest. It was estimated that the mortality due to chest wounds at the regimental aid posts varied from 25 to 30 per cent. At the casualty clearing stations the mortality averaged about 18 to 20 per cent., while at the base hospitals it was about 10 to 12 per cent. The average general mortality of chest wounds was about 18 to 20 per cent.—a state of things unsuspected at the beginning of the war. This high mortality, Colonel Taylor said, is due to the fact that shell wounds preponderate over bullet wounds to the extent of 3 to 1. The mortality of shell wounds as compared with bullet wounds is as 14 to 1. It is the septic dangers in connexion with shell wounds that render them so dangerous. The mortality is highest during the first 48 hours, during which time it is calculated that 60 per cent. of the deaths occur. Open wounds of the chest are grave as compared with closed wounds. They are at least twice as dangerous. Lung wounds are like other wounds. They are contaminated by the mere entrance of the foreign body, whether it is retained or not. Like any other wound, there is an area of necrotic tissue which forms a culture medium for the growth of organisms. As with any other wound, in a few hours it will become infected, and the infection will follow the same course. Twenty-five per cent. of wounds of the lung are fatal from hæmorrhage and asphyxia. Surgeons now endeavour to arrest the bleeding by direct surgical intervention at many casualty clearing stations. It has been shown that the operation of thoracotomy has little or no effect upon external blood pressure. Operations can be performed successfully upon the chest and lung in patients with a blood pressure as low as 50 mm. Hg, a point of great practical importance. The gravity of the prognosis of lung wounds is increased considerably by the frequency with which pleuro-pulmonary lesions of the opposite side occur. Infection of the hæmothorax in bullet wounds is exceptional. When there is an opening in the thoracic wall an aerobic infection from without is added to the anaerobic infection arising from the pleuro-pulmonary wound. It is partly on account of this wound infection that open wounds of the thorax are so dangerous. The gravity of chest wounds from the fifth day onwards is due to pleural suppuration much more than to infection of the lung itself. The treatment of penetrating wounds of the lung depends upon whether the wound is superficial, whether the foreign body is retained, or whether the case is one of the through-and-through type. The foreign body is removed where possible together with fragments of bone and pieces of clothing. The track is cleansed and the opening into the lung is carefully closed. This closure tends to arrest hæmorrhage, and will diminish the likelihood of infection of the pleura from the lung. Primary extraction of all foreign bodies from the lung must be considered the rational treatment for preventing infection. Access can be gained to the lung most satisfactorily by an incision from the mid-axillary line to the parasternal region over the fifth rib. Several inches of the rib are incised, and the ribs above and below widely retracted. Openings in the diaphragm must be closed. The entire pleural surfaces are wiped clean and the opening closed by careful adjustment of the tissues in layers. Drainage is not desirable and is not employed; in fact, it is positively dangerous. Gas and oxygen or chloroform with oxygen is the general anæsthesia used, but local anæsthesia may be employed satisfactorily. Ether must never be given. Blood transfusion is frequently given before or after the operation. Morphine is always freely given and camphor injected if necessary. Great care is taken to see that the patient never gets the opportunity of breathing cool air. Watch is kept subsequently to operation for the accumulation of fluid in the pleura, and puncture is performed daily to obtain the fluid for bacteriological examination. Increasing infection of the fluid is generally treated by the removal of one or two stitches and the insertion of a drainage-tube, but repeated aspiration has been successful in many cases. Duval has shown that the lung can be delivered on to the chest wall as intestine may be brought out of the abdomen.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—An ordinary meeting was held on Dec. 6th at the West London Hospital, when a paper was read by Dr. F. J. McCann entitled "Treatment of Some Common Ailments of Women." Dr. McCann first dealt with menstrual disorders, pointing out that frequently such are associated with abnormalities in secretion of one or more of the ductless glands. For amenorrhœa he often found small doses of thyroid extract, at times combined with ovarian extract, productive of quicker results than the usual treatment with iron and arsenic alone. For dysmenorrhœa he advised that everything should be done during the intervals to increase the patient's power of resistance. Brief reference was made to menorrhagia, climacteric disorders, hæmorrhages and discharges from uterus and vagina, together with the treatment of displacement for the latter, of which the best treatment was said to be prevention, the lecturer advocating routine examination six weeks after confinement.—The paper was discussed by the President, Dr. Drummond Robinson, Dr. F. G. Lloyd, Dr. Rickard Lloyd, Dr. Herbert Chambers, Dr. H. H. Sanguinetti, and Dr. J. F. Halls Dally.—Dr. Robinson held the opinion that amenorrhœa was in itself of but little consequence, the cause being far more important. In excessive menstruation he advocated calcium lactate in 30 gr. doses every other night with or without pituitary extract, as recommended by Dr. Blair Bell. For "erosion" of the cervix, in many cases surgical treatment was regarded by him as unnecessary, but if called for he found the old-fashioned cautery best.

Reviews and Notices of Books.

Details of Military Medical Administration. By JOSEPH H. FORD, B.S, A.M., M.D., Colonel, U.S.M.C. Second revised edition. Philadelphia: P. Blakiston's Son and Co. 1918. Pp. 816.

THIS book is fortunate in being introduced by a letter of Surgeon-General Gorgas, who hopes that every medical officer in the U.S. Service will furnish himself with a copy. It has been written to help the newly-joined medical officer to observe official technicalities. The keynote of the book is contained in the following sentence:—

"If a physician, however eminent in his profession but without preliminary training, is suddenly called upon to discharge highly technical administrative duties, the sick and wounded under his care will inevitably suffer because of his inability to secure the supplies necessary for their welfare, to utilise them to the best advantage, and to properly organise and discipline his personnel."

Although this statement contains a considerable amount of truth, it does not credit medical officers with the powers of initiative and adaptability which many have undoubtedly displayed during the War; nor does it take into account the existence of a trained body of men accustomed to deal with these matters. Colonel Ford displays considerable care throughout the book to acknowledge any assistance he has received, and to point out the source of his information. The chapter on the Regimental Surgeon, he states, was written almost entirely by Major Heflebower; on the Ambulance Company by Major McCornack; on the Field Hospital by Lieutenant-Colonel Reno; on the Camp Hospital by Lieutenant Simmons; on Hospital Trains by Major Hart; on the Base Hospital by Captain Kramer and Major Metcalfe; on the Department Surgeon's Office by Mr. Cleave; on Medical Supply Depots by Colonel Raymond and Major Wolfe. Even with this assistance the amount of work entailed by the preparation of the remaining 11 chapters must have been very considerable. The most interesting chapter of the book, that on the Evacuation of Sick and Wounded, is evidently written from Colonel Ford's actual observations of events in the field. Perhaps this chapter is the only one which contains much that is new to the average medical man who has served in the British Army. The chapter on Malingering is apparently a compendium of bulky quotations from the works of Allied and enemy writers; although useful, it cannot be read with the same satisfaction as the production of a capable writer with an all-round knowledge of the subject. A considerable amount of repetition occurs throughout the book; many of the regulations for a smaller hospital are much the same as those for a larger hospital, and yet both sets are given. Much of the book is taken up with details of office work. The book is undoubtedly of use to American medical men concerned with military administrative work; although much of the information contained in it is given in our small official publications, such as R.A.M.C. Training, and Field Service Regulations. But it will be well worth the while of the British medical officer to study those parts of the book dealing with active service in the field.

Syphilis, Paludisme, Amibiase: Traitement Initial et Cure de Blanchiment. Par PAUL RAVAUT. Paris: Masson et Cie. 1918. Pp. 88. 4 fr.

THE three protozoal diseases, syphilis, malaria, and dysentery, the treatment of which is considered in this little book, resemble one another, not only in some aspects of their pathology, but more especially in their stubborn resistance to eradicative treatment. That syphilis is not easily eradicated—i.e., cured—has long been recognised, but that malaria is incurable by quinine we have only learned during the war; in fact, too much in the past has been claimed for quinine. We now know that novarsenobenzol will do for simple tertian malaria all that quinine does, but certainly quinine and probably also novarsenobenzol alone will not cure simple tertian malaria. Again, emetine—excellent, apparently, in the initial treatment of amœbiasis—of itself fails to cure even by prolonged administration, though in the form of emetine bismuth biniodide in a large percentage of cases apparent cure is effected. The author is an advocate of combined treatment; for syphilis, mercury and novarsenobenzol for five years; for malaria, quinine and cacodylate of soda for two months; for dysentery, emetine and novarsenobenzol for 40 days, to be followed by 12-day courses monthly or bimonthly. How far two drugs similar in their action—e.g., quinine and novarsenobenzol in simple tertian malaria, emetine and novarsenobenzol in dysentery—are more effective than when either of the two is used singly carefully controlled experimental work alone can show. At present there is evidence in the diseases we are considering that this is so, but it will be some time before proof is furnished. It is fortunate that in malaria and dysentery direct proof is possible, and in syphilis we have the indirect evidence of the Wassermann reaction. For most diseases such proof is from the nature of the case not forthcoming and we are left in doubt whether an "elegant combination" of two drugs with similar action is any better than either of itself. The puzzling fact about the parasites of these three diseases is, How do some survive the drenching with the drugs which kill the others? Pathology or biochemistry is still silent as to this.

Dr. Ravaut's little book is clearly written, and the descriptions of the treatments are brief and practical.

James Hinton. By Mrs. HAVELOCK ELLIS. London: Stanley Paul and Co. 1918. Pp. 283. 10*s.* 6*d* net.

IN his dialogue "Symposium" Plato makes Aristophanes give his version of the primæval nature and state of man. The sexes were originally three, men, women, and the union of the two, having a name corresponding to this double nature, which once had a real existence, but is now lost, and the name is only preserved as a term of reproach.[1]

James Hinton, the subject of Mrs. Havelock Ellis's essay, would seem to have belonged to Aristophanes's third sex, for he was apparently compounded of man and woman, and we would add of a child. He was obsessed with the difficulties of sexual relations, and with the many undoubted hardships which women suffer in their sexual life, whether they are married or unmarried. Prostitution was to him a thing to be made impossible, but we doubt whether the remedy which we gather he proposed—namely polygamy—would be any real remedy. Polygamy existed side by side with prostitution among various ancient races, such as the Hebrews of the Bible, and the ancient Babylonians, just as it does to day among polygamous Mohammedans and Hindoos. But though Hinton was wayward, visionary, and, to our mind, hopelessly unpractical, yet he had in him at least a particle of that divine discontent which has always been a characteristic of reformers.

Lessons on Massage. By MARGARET D. PALMER, formerly Masseuse and Manager of the Massage Department of the London Hospital, and Instructor of Massage to the Nursing Staff; a Founder of, and Examiner to, the Incorporated Society of Trained Masseuses. Fifth edition. Illustrated. London: Baillière, Tindall, and Cox. 1918. Pp. x.–340. 10*s.* 6*d.* net.

SEVEN years ago we reviewed the fourth edition of this handbook, which is characterised by a clear and simple style, making it agreeable reading. The book being written for the student, the scheme followed is that of describing the anatomy of a part and then its treatment. But the medical man who reads its pages will not find this arrangement equally advantageous. He will also have to look elsewhere for help and guidance when directing the treatment of recent injury. The almost complete absence of reference to electrical and hydrological methods, and to the use of gymnastic and mechanical apparatus should be remedied in future editions. We must warn the student against allowing the schematic arrangement of the text to stereotype treatment unduly. A chapter on Swedish remedial gymnastics, which has been added to this edition, is one of the best epitomes of the subject in short space which we have seen.

Treballs de la Societat de Biologia. Any V., 1917. Barcelona: Institut d'Estudis Catalans, Barcelona.

THIS attractive volume of 365 pages records eight sessions of the Barcelona Biological Society—six held at the physiological laboratories of the Faculty of Medicine and one each at the gynæcological lecture theatre and the Institute of Sciences. The papers reach a high standard of interest, and a notable feature is an excellent series of coloured microphotographs illustrating histological points in various articles. A portrait of the society's founder, Dr. Enric Prat de la Riba, who died last year, appears as frontispiece.

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[1] Jowett's Dialogues of Plato, vol. ii., p. 41.

THE LANCET.

LONDON: SATURDAY, DECEMBER 21, 1918.

The Practice and Teaching of Midwifery.

AN interesting series of articles appeared in the November number of the *Edinburgh Medical Journal* on the Teaching of Obstetrics and Gynæcology to Medical Students. They were contributed by teachers from Edinburgh, London, and Dublin, and on reading them we are driven to the conclusion that the present method of teaching these two important subjects is far from being satisfactory. The majority of the writers are agreed that it is a mistake to attempt to divorce midwifery from gynæcology, they are too interdependent; and while the present method of teaching gynæcology is perhaps sufficient for its purpose, the same is certainly not true of the teaching of midwifery. It is not possible, nor is it necessary, that the student on entering private practice should have any very extended knowledge of the diseases of women; he should be able to recognise the normal, and should be familiar with the commoner abnormalities, but beyond this his knowledge cannot extend. Experience will follow, and in the meantime counsel is readily available. In midwifery, however, the requirements of the young practitioner are quite different: at any moment he may be called upon to treat a grave complication of labour, and upon his ability to do so properly and skilfully may depend the lives of both mother and child. Acute gynæcological cases calling for immediate treatment or operation are rare; acute complications in labour threatening the life of the mother are not uncommon, and require for their recognition and treatment a complete and well-grounded knowledge of the subject.

If the time-tried methods adopted for teaching midwifery in Edinburgh are faulty it cannot be maintained that the methods in vogue in most of the medical schools in London are any better. A medical student immediately after attending a course of systematic lectures on midwifery may have to take duty in the extern maternity department, and while theoretically he is supposed to conduct his first case under the supervision and with the help of the extern maternity assistant, it happens not infrequently that he does so with the assistance only of another student knowing little more than himself; and, indeed, in some instances he has to attend entirely alone. At some hospitals he is required to act as clerk in the lying-in wards for a certain time before taking up duty in the extern department; but as in the case of most hospitals accommodation for their students is not available in the immediate neighbourhood, and as labour cases occur at any hour of the day or night, the student may never actually have been present even at a normal labour before taking charge of his first case in the district. If he is accompanied by the extern assistant, the latter is usually a recently qualified man with perhaps no aptitude for teaching, even if he has the necessary knowledge and experience, which usually he has not. By the time the student has finished his month's term of duty in the extern department he may have been present at a varying number—possibly 20, 30, or even 40 labours. If they have all been normal he may have had no teaching from anyone, and generally is not in a position to learn much for himself; he will have been unlucky, though the ease with which he has completed an important section of his education may betray him into thinking the reverse. If he has been really lucky he has had one or more abnormal cases, and has seen these delivered by the assistant in their own homes, or possibly after admission to the lying-in ward. It is extremely unlikely that he will have seen a single case conducted by anyone senior to an obstetric registrar, and only in very rare instances will he have had the advantage of a demonstration on a patient in labour by one of the obstetric physicians to his hospital. It is true that in recent years an attempt has been made to improve the teaching of midwifery by certain examining bodies insisting upon the attendance of students on a certain number of cases in the wards of a lying-in or general hospital. Here again, however, the main part, if not all, of the teaching at the actual confinements is done by junior assistants or registrars, and very seldom indeed by any member of the visiting staff. No one could pretend that this state of affairs is satisfactory; and, indeed, no one wishes to do so. It is certainly most unsatisfactory and requires prompt remedy. But what can be suggested to ensure that the student shall receive teaching of the same standard and by the same class of teacher in midwifery that he is accustomed to receive in medicine and surgery? With a continuance of the present conditions this, frankly, is impossible. Clinical teaching in medicine, clinical teaching in surgery, and surgical operations can all be arranged at a fixed time to suit the convenience of the teacher and the student. This is not so with a case of labour; only too often this occurs at a time when it is physically impossible, under the conditions obtaining at present, for any member of the visiting staff to attend, and when any teaching that is done must devolve upon some junior resident officer or a registrar. The teaching of midwifery in London, and indeed in most of the cities of this country, requires complete reorganisation. The fact must be recognised that while attendance in an external maternity department is well calculated to give the student confidence, the surroundings of the patient are entirely unsuited for proper teaching. Clinical instruction in midwifery can only be carried out in the well-appointed wards and theatres of a lying-in hospital, and to be done efficiently must be done by senior members of the staff with the knowledge and experience necessary to give such important teaching.

There is only one solution of the problem—the provision of lying-in hospitals in this country in

sufficient numbers on the model of the Rotunda Hospital in Dublin, officered by whole-time senior and properly qualified teachers resident in the hospital, whose services therefore can be obtained at any time. These whole-time teachers must be paid a salary sufficient to attract really good men, who must be supplied with all that they require for their teaching—whole-time paid assistants, properly equipped clinical laboratories in which they may be able to carry out research work, and in which all the pathological work essential to proper clinical teaching can be conducted. Every student must be required to go into residence so that he may take duty in the lying-in wards for at least one month, and his attendance on his cases must be under proper supervision and with the assistance of as good clinical teaching as at the present time he can obtain in medicine and surgery. Under the same roof he should be able to carry out his clinical work, not only in midwifery, but also in gynæcology, and no attempts should be made to separate these two subjects. Until properly equipped and officered hospitals for lying-in cases, with provision for the carrying on of a maternity and child-welfare department in close association, are provided in London, the teaching of midwifery will never be upon a proper basis, and the reproach that the science of midwifery has been woefully neglected, and that no research work of any value has been carried out in this subject by the London school for many years past, will continue to hold good.

Primitive Agents in Treatment.

FIRE, air, earth, and water have always been the chief agents of mischief, and HAHNEMANN might have claimed their influence in support of his homœopathic principle, for the same quartette, artfully applied, are the most generally useful remedial agents, and as such have largely come into their own during the past four years. Fire has superseded other methods of disinfection and disinfestation on a large scale in many war areas, and in the form of radiant heat has relieved the disabilities of wounds. Air has been the universal remedy of trench life, and has transformed vast numbers of anæmic men, rendered anæmic by a stuffy indoor habit of life, into the fit and sunburnt warrior. The rôle of earth, sinister in providing the source of horrible wound infections, has been to provide also the vaccines by which the same infections have been prevented. Water has played the leading part in the continuous irrigation of wounds, doubt existing in regard to many chemical agents whether they do more than add a therapeutic aroma. It is noteworthy that on these four primeval things the teaching of public health is built up, or at all events the arrangement of hygienic text-books. For in the near future, in which preventive and remedial treatment are to be more closely combined, physical agents are likely to reassert their place in therapeutics challenged by the fine chemicals industry. From the relief of symptoms medicine is steadily working back to the removal of the cause of the malady in the individual subject, and from this to the larger causes in groups, in communities, and in nations. Water especially has too long been despised as a therapeutic agent. NAAMAN found, as many others after him have found, that it looks too simple. But within our own time water has been vindicated again and again over against chemical agents in the reduction of fever, for which it has the inestimable advantage of being safe. Any patient may have an antifebrin idiosyncrasy, but tepid sponging offers no risks. The compulsory diversion of chemical agents to war-like purposes has led many medical men to fall back upon physical agents in treatment, we doubt not with permanent advantage.

It is in this sense that we construe the plea for the increased recognition of physical treatment raised by Dr. FRANK RADCLIFFE in our correspondence columns this week. He enumerates a portentous list of conditions which can be successfully dealt with by physical methods, and which, as a matter of actual experience, have been thus successfully dealt with during the war. Army discipline, applying physical methods, has done wonders in training men in speed, alertness, and agility, in raising muscular tone, and in giving confidence and that conscious sense of well-being attendant on robust health. Physical treatment can, Dr. RADCLIFFE contends, be of equal service in restoring the unfit to a state of fitness or, failing that, to the maximum point of utility. But Dr. RADCLIFFE adds, and we endorse, a grave warning against physical treatment falling into unqualified hands. Whether Government can prevent the public being gulled by quacks and charlatans we do not know, but undoubtedly the glowing career of the unqualified physical specialist would soon pale if the medical profession itself were to give the guiding hand in physical treatment of all kinds. The practitioner has, largely of his own free will, surrendered any say in these matters to those without scientific training, and the first requisite is to set our own house in order and to make sure that physical treatment is placed on a satisfactory scientific basis. This cannot be done without accurate knowledge and research, and a chair of hydrology at one of our leading universities would be the fitting commencement of such a reform.

The treatment of the disabled man gives an excellent opportunity of putting these principles into practice. France and Italy have already been to the fore in making physical treatment available on a large scale under medical supervision. The agricultural colonies at Port Villez, Juvisy, Martillac, Milan, Poscia, and Palermo have already proved the value of what Professor SILVIO ROLANDO, of Genoa, calls the veritable resurrection of the soldier doing the agricultural cure. In agricultural work a great variety of exercises is possible all day long, whereas mechanical devices are more limited in kind and duration. Great numbers can be treated in field work without requiring a little army of skilled operators, and the interest is kept up by nature and not killed by machines. Ordinary physical treatment is often carelessly carried out, motions without aim are repeated without energy, and soon forsaken as being without interest, or at all events leaving a sense of boredom and insincerity. A memorandum issued by the Village Centres Council[1] for the

[1] See Village Settlements for Disabled Men. A scheme to combine restorative treatment with industrial and social reconstruction. THE LANCET, 1917, ii., 692. The present address of the Village Centres Council is 5, Little College-street, London, S.W. 1.

Curative Treatment and Training of Disabled Ex-Service Men gives the following summary of the experience in France:—

Agricultural work as a method of cure requires close supervision by medical men who have made themselves experts. Experience in France has shown that the agriculture cure centre should be residential and in the country. The convalescent soldier cannot be trusted to take his farming at home; he works either too little, too much, or in the wrong way. Wounded men can be sent at an early stage from the hospital to supervised work in the fields. Many go to work with open wounds. It has been proved that suppurating wounds heal more quickly under open-air work than in hospital. Long-continued muscular contractions give the "deep massage" needed to force out waste and poisonous products. French surgeons, convinced by an examination of men cured by agricultural work, are now asking that men should be sent at once from the hospitals to the fields. Splinters of bone and foreign bodies in suppurating wounds are soon discharged when daily work is commenced. It has taken four years to find this out. Many men with small and superficial wounds of recent origin should go at once to the fields.

The centre which the Village Centres Council hopes shortly to open at Enham in Hampshire, whilst officially recognised by all relevant Government Departments, is yet largely based upon experience gained abroad in the agricultural cure. The treatment will be chiefly on physical lines, and combined with training also carried on under medical supervision. Room will be found for village trades and handicrafts, and for intellectual and artistic training for those who need them, but the chief feature of the Centre will consist in curative agricultural work in the open air. The Centre is obviously one adapted to assist in the most practical way the demobilisation of men for industries on the land. All those who value physical treatment will earnestly wish the Centre success.

Christmas.

THE public are rejoicing at the release of a moderate store of good things by Government Order through the festive season of Christmastide. The great Christian festival is rightly one of good cheer, and the present occasion particularly invites rejoicing at home, when the end of the vast struggle has come, though leaving the heavy burden of readjustment and the stimulating tasks of reconstruction. Sensible people will need no warning as to excesses, and the material falling away from old standards of plenty should remind all of the indecency of luxury at this period. Its danger must also be recalled. After a period of restraint indulgence is unusually dangerous to health. The food limitations of the war have taught many valuable lessons, which have brought home the evil of excess. The nation has behaved splendidly over these restrictions, and its health has been well maintained; surely it is not now to be jeopardised by lust. During the festive season we are promised a release of flesh foods, such as turkey and beef, the former requiring no coupon and the latter to be supplied on double ration allowances. The public will welcome these concessions, but will hardly need reminding that it would be folly to give way to indulgence after a course of compulsory training in abstinence. Let Christmas be a merry season but a wisely spent one. Let those whose lot has been more happy remember the countless homes where the prevailing spirit must be, at the great season of family gathering, one of irremediable loss.

Annotations.

"Ne quid nimis."

GERMAN CIVILIAN HEALTH.

DURING the war it has been difficult to gather unbiased information regarding the health of the civilian population of enemy countries. But some exact, if scanty, evidence is now forthcoming. At the instigation of the editor of the *Deutsche medizinische Wochenschrift*, Dr. Behla, director of the medical department in the Prussian Registrar-General's Office, has analysed the deaths attributed to heart disease and apoplexy during the years 1912 to 1917. Cardiac deaths rose from a total of 63,400 in 1912 to 76,000 in 1917, the increase being about 20 per cent. in the towns and 10 per cent. in the country. 1914 already showed a surprising increase on 1913 in the urban districts, where the stress of mobilisation was evidently very great. During the same six-year period deaths from apoplexy remained much more constant, a slight urban increase being balanced by a slight rural decrease. The maximum in both town and country occurred in 1915, and the following year showed a drop to below the normal. Dr. J. Schwalbe, in commenting on the figures, claims the great increase in heart failure as a war sacrifice, brought on by a combination of psychical stress, bodily fatigue, and lowered nutrition. In the same number of the journal he adverts to the grave risk of epidemic disease from the demobilising army, especially in the East, the danger being greatest in regard to venereal diseases. The situation in this respect has, he states, been rendered more acute by the partial relaxation of discipline after the revolution among the troops, who, largely under the influence of alcohol, gave way to sexual indulgence in greater degree than under normal military restraint. An Army Order has been issued instructing the examination of soldiers of all grades for transmissible disease before demobilisation. In the case of cholera, typhus, yellow fever, plague, or small-pox the discovery naturally precludes demobilisation altogether. The same is the case in regard to the usual notifiable exanthems. In the case of other infectious diseases, including suspects and carriers—and in this category come syphilis, gonorrhœa, and scabies—the men are isolated for treatment on their own express wish, but detention is not enforced. The ex-soldier's attention is then called to the risk of spreading disease among his family circle and to the need of keeping under medical supervision. These measures seem to us, as to Dr. Schwalbe, sadly inefficient, and a large dispersal of venereal infection among the civil population is to be expected.

THE COMPLEMENT-FIXATION TEST IN TUBERCULOSIS.

THE Wassermann test for syphilis was recently on trial in our columns; the similar test for tubercle needs no less a critical examination, and the exhaustive article by Dr. Edward Fidlar, Captain, C.A.M.C., on the Complement-fixation Test in Tuberculosis in our present issue raises many questions which deserve an answer, if answer can be given. Dr. Fidlar has carried out the test on 570 Canadian soldiers, and in so doing has investigated a number of bacteriological problems which have hitherto made this particular serological test

one of the most difficult to interpret, both pathologically and clinically. The earliest research on the subject largely centred round the difficulty of finding a sensitive antigen and one which at the same time would not confuse the issue with cross-fixation of complement in syphilis. Dr. Fidlar is in agreement with most recent workers in considering a suspension of living tubercle bacilli the most satisfactory antigen. With two slightly different methods he obtained 74 and 77 per cent. of positive reactions in active pulmonary tuberculosis. By means of slight modifications in technique he was able to increase this percentage, but the fact that the method gave 21·8 per cent. of positives in cases clinically not considered tuberculous suggested that increased sensitiveness was not altogether an advantage. Dr. Fidlar's careful work once more raises the question: Is the complement-fixation test of practical value in the diagnosis of tuberculosis? Up to the present it must be regretfully acknowledged that the earlier hopes of the bacteriologist in this direction have not been fulfilled. It is not sufficient to obtain a positive reaction in cases of active tuberculosis which are already obvious to simpler clinical tests. A serological test, if it is to be really useful, must help the physician in the diagnosis of incipient pulmonary tuberculosis, of bone and glandular tuberculosis; it must also differentiate between active disease and arrested and quiescent lesions; whilst finally it must be free from technical laboratory difficulties, such as cross fixation of complement. Perhaps this is too high a standard to demand of any serological test at present, but, unfortunately, the exigencies of the situation demand it. Judged by this standard, the opsonic index, the various tuberculin reactions, and a host of less common tests have been found wanting. It is therefore no depreciation of Dr. Fidlar's admirable piece of work—which has effectively consolidated the present position—to say that complement fixation has not yet given us, what we need, a reliable serological test in tuberculosis.

THE HYGIENE OF THE NOSE.

MORBID conditions of the upper respiratory tract play a large part—some authorities believe a predominant part—in the catarrhal diseases of urban life. Among school children, indeed, nine-tenths of prevalent illness has been credited to catarrhs. In spite of this, little is really known regarding the root causes of adenoids, atrophic and hypertrophic rhinitis, sinusitis, and hoc genus omne. All sorts of theories and explanations have been advanced, none of which has been found satisfying. It may well be that each of these conditions, as well as many others, is due to a specific infection. This is almost certainly the case with the common "cold in the head" where the virus is ultramicroscopic, and with atrophic rhinitis where the agent is the cocco-bacillus of Perez. In these and other similar inflammations nature attempts a cure by increasing the flow of mucus-carrying lymphagogues, which destroy the infecting organisms and neutralise their toxins. It is not very generally recognised that to a large extent these catarrhal infections are due to organisms which grow in the mucus on the surface of the membranes lining the air passages, and that it is their toxins which irritate the mucosa and cause it to inflame. The resulting swelling gives rise to obstruction, in which back-waters are formed wherein the microbes breed undisturbed by currents of fresh air, like the flies in the stuffy corner of a warm living room. To obtain a cure the first essential is to improve nasal ventilation and to make sure that all the recesses and pockets of the naso-pharynx are aerated. Nearly all the lower organisms are worried by currents of air. Secondly, an attempt should be made to improve the quantity and quality of the lymphagogues, this being presumably the way in which most antiseptics, vaccines, and the like, produce their effect. A nasal lotion or spray acts in both ways, partly by clearing the passages and partly by exciting the flow of mucus. In THE LANCET of Nov. 9th Dr. F. J. Woollacott suggested menthol inhalation as a form of nasal toilet combining both these factors. The nasal drill advocated by Mrs. Hancock is efficient in so far as it clears the passages, an important factor in young children, although not the whole story. Her especial merit rests on the emphasis laid on the direction of the clearing: "blowing down, not sniffing up" is her motto, and if she had her way children would be trained to the downward sniff from the tender age at which reflexes are still plastic.

A SMALL-POX OUTBREAK IN TEXAS.

THERE are two types of small-pox met with in the United States, the first, which is the most prevalent, being of a mild kind, with a case-mortality rate of about 1 per cent.; the second is of a more virulent form and commonly arises from imported infection, mainly from Mexico, where the disease is endemic, its fatality rate ranging from 20 to 30 per cent. The States on the Mexican border are much exposed to this imported infection, and Texas is one of the most frequent sufferers from it. A recent illustration of this is given in the *United States Public Health Reports* for Sept. 20th by Assistant Surgeon C. R. Eskey, of the U.S. Public Health Service. Eagle Pass, in Texas, is a small town with 6500 inhabitants, situated on the banks of the Rio Grande, which here forms the boundary between Mexico and the United States. Opposite, on the Mexican side of the river, is another small town, Piedras Negras, the two being connected by a bridge, guarded on the northern side by the U.S. Customs and other officials who examine all travellers entering Texas. But it is easy to ford the river unobserved at other points, and often infection is conveyed across the borders in this way. During 1917 small-pox was prevalent in Piedras Negras and its vicinity, about 1000 cases with 200 deaths coming under notice. Towards the end of 1917 the disease began to spread in Eagle Pass, where during the first three months of 1918 there occurred at least 150 cases, of which 33, or 22 per cent., died. There is a large Mexican population living in Eagle Pass, amounting to about two-thirds of the total inhabitants, living under conditions of considerable overcrowding. For instance, in a one-roomed hut there lived 15 persons, 9 of whom contracted small-pox. It was found very difficult to persuade the Mexican part of the population to be vaccinated, there being a strong belief among them that vaccination during an epidemic caused an outbreak of small-pox. The main incidence of the disease was upon persons under 15 years of age, among whom 103 attacks and 16 deaths were reported, while above the age of 15 there were 47 cases and 17 deaths. Thus the fatality rate among the first group was 15·5 per cent., and among the second 36 per cent. Concealment of cases was very frequent. Small-pox being comparatively common among the Mexicans, they regard it lightly notwithstanding its fatality.

and they therefore seldom seek medical assistance, contenting themselves with taking herbal remedies or patent medicines. They regard fresh air as detrimental to the patient, and consequently keep doors and windows closed during the illness. The neighbours consider it a duty to make frequent visits to the sufferers. Under these conditions it was not surprising that small-pox spread. Dr. Eskey mentions that at Eagle Pass dogs were blamed for conveying small-pox infection from one house to another. Most Mexican families keep one or more dogs, and these are the pets and playfellows of the children, frequenting the sick-room when any members of the family are attacked by small-pox or other diseases. The usual gravity of variola when it attacks a pregnant woman was noted, abortion resulting, usually with a fatal result. Dr. Eskey mentions several instances where second attacks of small-pox occurred. The circumstances of this outbreak are instructive and not without a lesson to ourselves in view of the possible occurrence of a small-pox epidemic when our soldiers return and the pent-up traffic of the past four years is liberated and begins to arrive at our ports from foreign countries.

A NEW SIGN OF SCIATICA.

AT a meeting of the Société Médicale des Hôpitaux of Paris on Nov. 11th Professor M. L. Rimbaud described a new sign of sciatica—effacement of the retro-malleolar fossæ. He referred to the importance of the region of the tendo Achillis in the diagnosis of sciatica. In addition to the reflex of this tendon, its sensibility to pressure and the lowered tone of the note obtained by percussing it are points to which attention has been drawn. In examining cases of sciatica and surgical lesions of the sciatic nerve at a military neurological centre, Professor Rimbaud has been struck with the peculiar appearance of the region of the tendo Achillis on the affected side. Instead of its normal appearance of a tense cord up to the point of insertion, the tendon was often less apparent and the two fossæ which separate it from the malleoli were effaced; the tendon appeared broadened, and the part œdematous. In the most typical cases the salient of the tendon disappeared, the retro-malleolar fossæ were no longer apparent, and the posterior part of the ankle took on a flattened characteristic appearance. This sign was especially observed in wounds of the whole sciatic nerve or of the internal popliteal. In medical cases of sciatica it was observed frequently; the more severe the disease the longer its duration. This sign was found in 70 per cent. of surgical lesions of the sciatic nerve and in 25 per cent. of medical cases of sciatica. Professor Rimbaud proposed for it the name "signe de l'effacement des gouttières rétromalléolaires," or, more simply, "effacement rétromalléolaire." He thought that it was simply due to loss of tone of the muscles of the calf, just as diminution of the gluteo-femoral fold is due to loss of tone of the muscles of the buttock. Such loss of tone, producing relaxation and depressibility of the tendon and, in certain cases, lowering of the heel, has been previously described. This relaxation effaces the retro-malleolar fossæ. Indeed, if the muscles of the calf be seized with the fingers and drawn upwards the effacement disappears. To observe this sign the patient should kneel on the edge of the bed or on a chair, as in examining the tendo Achillis reflex, or he should stand on a chair or table, so that the region of the tendo Achillis is well exposed.

THE ANNUAL REPORT FOR 1917 OF THE CHIEF MEDICAL OFFICER OF THE BOARD OF EDUCATION.

I.

IT is just ten years since the School Medical Service was established by law as a universal system in England and Wales. Sir George Newman's latest annual report, coming at the end of a decade of more or less experimental work and synchronising, as it does, with the cessation of hostilities in the great world war and with the passing into law of a new Education Act for England and Wales, which boldly enlarges the health activities of local authorities, is of necessity of more than ordinary interest and importance. It more than marks a milestone on the long road towards national health and efficiency. It at once closes a chapter of chequered experiment and heralds an era of more assured advance.

Retrospect.

Very properly, therefore, a section of the report is devoted to a review of the work of ten years, 1908–1917. The causes and conditions are recounted which led up to the legislation which brought the School Medical Service into being. It came at the end of a century of growing revulsion against the tragedy in respect of child-life which accompanied the industrial revolution in England. Already in 1908 the general problem was less one of rescuing the child from shocking and desperate conditions of hardship, cruelty, disease, and death, and more one of protection against disease, of building up the child's physique, and of providing such medical care and education as would lay the foundation of healthy childhood and adolescence. Two Acts had already been passed providing for the care and education of defective children, two official reports of investigations into the physicial condition of children of school age and their premature employment had been issued, and there were the reports of the Interdepartmental Committees on Physical Deterioration (1904) and on Medical Inspection and Feeding of Children attending the Public Elementary Schools (1905), the former of which first revealed the now obvious fact that the foundation of the public health rests upon the health of the child population. It is strange that Sir George Newman in his enumeration of the causes and events which led up to the passing of the Education (Administrative Provisions) Act does not include the Boer War and the amount of unfitness in the population which recruiting at that time revealed. This, to those of us who were then stirred by the necessity of improving the national physique, stands out as the one compelling factor. It was on a smaller scale a foreshadowing of the awakening to the need for reconstruction and effort which the great war now happily ended has brought about.

In the course of the review the machinery organised during the 10 years for the carrying on of the School Medical Service is described. A national system "as complete of its kind and more universal than elsewhere in the world" is at work in all the 318 educational areas of England and Wales. In 1915 (before the temporary depletion on account of the war) there were 1300 medical men engaged in the service. In 1917 a School Dental Service employing 200 school dentists had been established by 151 local education authorities out of a total of 318. In 1915 there were 1500 school nurses employed in 291 areas. Fifty-five authorities had made some arrangements for medical treatment in 1908, 279 in 1917. It is estimated that about 60 per cent. of the children found to be defective on medical inspection are receiving treatment. Taking London alone, the medical and dental provision in the 1910 scheme was for 2500 children; in the present scheme (1918–19) provision is made for 164,500 children.

The practice of physical training and the teaching of hygiene has since 1909 become universal in all training colleges and every educational area in England and Wales. In 1908 there were 304 special schools for blind, deaf, physically and mentally defective, epileptic, and tuberculous children, accommodating 17,610 children; in 1917 there were 413 similar schools, accommodating 31,470 children.

The maladies and disabling defects of many children are being put right which were formerly being neglected. Other substantial gains include the raising of the standard of cleanliness—beyond question the most paramount of hygienic needs, while profound educational results have brought

about a new understanding of the scope and opportunity of preventive medicine. Amongst these results are the influence upon the parent, the fuller appreciation of the individuality of the child, and the effect upon the methods and practice of education.

The experience of the ten years has shown that there has been an increase in the sense of responsibility of the mother, with the result that the child is better fed and receives more, rather than less, maternal care than formerly; the education authorities have found that, whatever may be attempted in the class-teaching of children in the mass, it is impossible to inspect, follow up, treat and care for the child except as an individual, and this discovery is exerting a deep influence upon the whole orientation of education. The far-reaching lesson has been learnt that it is primarily upon the child's physical and mental health that his welfare and upbringing depend.

Lest the reader should be too carried away by noting these advances the report hastens to add that the organisation is as yet incomplete in operation, inadequate in working and even in scope, insufficiently coördinated, and not yet yielding anything like its full measure of benefit. Particularly weak is the machinery in relation to anthropometry, a subject of national value and importance, and even such elementary auxiliaries as school baths, open-air schools, and adequate physical training are still, in most educational areas, lacking.

Sir George Newman in grave words states that it is incumbent upon him to say that the experience of a decennium has shown that the physical impairment of school children is wide in distribution, serious in degree, and grave in its effect upon adolescence and adult life. We profess to be astonished and depressed by the magnitude of the sickness claims upon the National Health Insurance, as well as by the large rejection of recruits; but we have been sowing the seeds of this harvest during long years of neglected maternity, neglected infancy, and neglected childhood, and long years of failure to organise or to understand adequately preventive medicine.

Medical Inspection.

The Code requirements are that provision must be made in every elementary school for the medical inspection of all children admitted to the school in the year, of all children between the ages of 8 and 9 years, of all children between 12 and 13 years of age, together with children over 13 years of age who have not already been examined after the age of 12. Normally on these requirements upwards of 2,000,000 children should be examined in the year; in 1917, however, the number was only 1,362,063. These figures suggest a decrease in the examinations of 31 9 per cent., due to curtailments consequent on the war.

In about 100 areas medical inspection was undertaken on the basis of "ailing children." The view of the London authority which experimented during 1916 with the examination of entrant children on an ailing basis was that the arrangement was unsatisfactory, because it failed to detect existing ailments. The Board endorses this view. "The School Medical Service is not a dispensary system; it is an educational system of preventive medicine."

The effects of the war in relation to the School Medical Service have been twofold. First, there has been serious disturbance of the machinery of the service, and, secondly, there has been anxiety regarding the depressing influences of war conditions upon the health of the children. Under the first heading there has been the depletion of the medical and nursing personnel on the staffs of the local authorities and constant changes militating against efficiency; many care committees are dissolved or in abeyance, and home conditions have been profoundly modified in some ways with a deleterious effect. Under the second head there have been apprehensions with regard to the suffering of the children from food rationing, high prices, lessening of parental control, daylight saving, and air-raids. It is satisfactory to learn from the report that there is a consensus of opinion that none of these has produced any ill results upon the children, with the reservation that parental preoccupation has led to an increase in uncleanliness and its associate conditions. Sir George Newman it is true, appears to accept the view that the Daylight Saving Act has, in some areas, deprived the children of an hour of sleep daily. Having given the impression that the effects of the Act in so far as they influence the health of the children are wholly bad, it would have been satisfactory if he had given more evidence in the support of this belief and discussed at least whether there were not countervailing advantages.

No doubt, resulting from the dislocation of the machinery of the service, there is no section of the report devoted this year to the findings of medical inspection throughout the country. Instead there is given the findings of a "control experiment" designed to check the results of previous examinations and eliminate as far as possible the disturbing factors inherent in a national system of medical inspection. Two sets of 300 unselected elder children, each in typical London and country schools, were inspected by one competent and experienced medical officer examining all 600 children on one schedule and by one standard. It was a "surprise" examination without notice or warning, including absent children as well as those in attendance at school, and had regard to the effect of the physical condition of the child on its education. The inquiry is reported in detail, and in order that the standards adopted should be better appreciated the report contains a brief description of the condition of a number of normal and defective boy and girl scholars.

The conclusions to be drawn from this control inspection are driven home by Sir George Newman with considerable force.

1. In the London group 7 per cent., and in the country group 10 per cent., of the elder children on the roll were absent from school on grounds of more or less chronic ill-health.

2. After deduction of the blind, deaf, mentally and physically defective and invalid children of this age-group, there were of the children present at school 21 per cent. found to be suffering from various defects "which interfere with their profiting to a due and reasonable extent from the educational facilities provided, and which will prevent them from playing their fair and proper part as citizens."

3. Of these elder children present at school 12 per cent. were ill-nourished; 19 per cent. were unclean in body; of the London children 40 per cent., and of the country children 65 per cent., had some carious teeth; 11 per cent. suffered from disease of nose and throat; 10 per cent. had "very serious" defects of vision, whilst another 13 per cent. had defective eyesight of slightly less severity; 6 per cent. suffered from defective hearing; of middle-ear disease there were 4 per cent. of sufferers.

4. Upwards of one-third of all these elder children are in London at least two or more years behind their normal school standard; there was a very definite accumulation of defective children of the higher ages in the lower standards, and physical defect appears to be one of the chief causes of backwardness in school.

5. The London children with sound dentition formed 60 per cent., the country children 35 per cent. The London children suffering from disease of nose and throat were 5 per cent., the country children 21 per cent. The London children furnished 2 per cent. of verminous heads, the country children 8 per cent. These differences would appear to be due, in the main, to the facilities of treatment, cleansing and supervision provided by the London County Council, which are not similarly available for the country children.

The number of children comprised in this model inquiry is not large, but the broad results are sufficiently close to those found on a large scale throughout the country to justify Sir George Newman in his comment that it seems futile to attempt to reform education apart from the physical condition of the child; that it seems unreasonable to expect healthy adolescence and healthy citizenship if we continue to neglect the remedy of the physical disabilities of childhood and the prevention of their cause.

Medical Treatment.

Speaking generally, the arrangements of the local education authorities for medical treatment have been maintained. In a few areas there has been a considerable extension of activities in 1917. 279 authorities made some arrangements for medical treatment, 231 provided school clinics, 95 contributed to hospitals, 223 made provision for supplying spectacles. On the contrary side, 87 authorities made no provision for treatment of minor ailments, 167 none for dental defects, 92 none for errors of refraction, 95 none for supply of spectacles, 208 none for treatment of enlarged tonsils and adenoids, and 234 none for treatment of ringworm (X rays). It is unsatisfactory to learn that there are still one-third of the children known to be in need of treatment who do not receive it.

Under the heading "Partially Blind Children" many interesting facts are given in relation to the establishment

of special schools for myopic children. It appears that more than 20 such schools now exist and that during the past year eight new schools of this character have been certified by the Board in London alone. At Bradford a scheme is in operation whereby it is considered that the myopia will, by special methods of instruction, be rendered stationary, and that after two years the affected children may return to the ordinary methods of instruction with safety.

Special prominence is given in the report to the arrangements for treatment of defective vision, of enlarged tonsils and adenoids, and of ringworm, but it is strange to find that otorrhœa is dismissed as a minor ailment unworthy of special note. Otologists, as well as school hygienists, are more and more recognising that in this condition we have one of the gravest dangers to the life of school children, one of the chief causes of educational incapacity in deprivation of hearing, and a frequent cause of chronic ill-health. Children with this disease are the despair of out-patient departments and school clinics alike, and it would be a welcome step if the Board of Education would take the lead towards the establishment of adequate provision for dealing with this disabling complaint, for which, in many cases, conservative operation involving in-patient treatment is the only means of cure.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary meeting of the Council was held on Dec. 12th, Sir GEORGE H. MAKINS, the President, being in the chair.

The SECRETARY reported the death, on Nov. 21st, of Mr. Nottidge Charles Macnamara, past Vice-president and past member of the Council. The following resolution of condolence was carried:—

"That the Council hereby express their deep regret at the death of Mr. Nottidge Charles Macnamara, and their sincere sympathy with the members of his family in their bereavement. The Council do also record their appreciation of the many services rendered to the College by Mr. Macnamara as a Vice-president and member of the Council, and of the active part he took in professional and educational matters during a long and distinguished career in India and in this country."

A report was read from the Board of Examiners in Anatomy and Physiology for the First Fellowship stating that at the recent examination there were 36 candidates, and of these 15 were approved and 21 were rejected. A report was also read from the Court of Examiners stating that at the recent examination for the Final Fellowship held on Nov. 15th, 18th, 19th, and 20th there were 22 candidates; of these 3 passed, and it was resolved to grant diplomas of Fellowship to those qualified to receive it. The diploma of Fellow was conferred on:—

William Bashall Gabriel, M.B., B.S. Lond., M.R.C.S., L.R.C.P., Middlesex Hospital, and William Edward Gallie, M.B. Toronto, Toronto University.

Captain John Isaie Keen, M.B. Lond., M.R.C.S., L.R.C.P., although successful in the examination, will not receive the diploma of Fellow until he has attained the age of 25 years.

Mr. V. Warren Low, surgeon to St. Mary's Hospital and lecturer on surgery to St. Mary's Hospital Medical School, was elected a member of the Court of Examiners.

The PRESIDENT reported the delivery by Mr. D'Arcy Power on Nov. 14th last of the Bradshaw Lecture on Cancer of the Tongue. The best thanks of the Council were given to Mr. Power for his lecture and he was requested to publish it.

A letter was read from Mr. S. H. Coplans asking, on behalf of himself and 14 other students of Guy's Hospital, the Royal Dental Hospital, and the National Dental Hospital (including six ex-Service men), that the following proposal be placed before the Council and Board of Examiners in Dental Surgery:—

"In view of the military situation and other circumstances that at present obtain that the February examination in the final subjects for the Licence in Dental Surgery of the Royal College of Surgeons be re-instituted."

The Council decided not to alter their decision to hold First and Second Professional Examinations for the L.D.S. only twice a year—viz., in May and December.

The Council proceeded to the consideration of a letter from the Board of Scientific Societies asking for the comments of the College in reference to the draft report of the Metric Committee of the Board. The Council decided to reply that they approved generally of the recommendations in the report of the committee.

The PRESIDENT reminded the Council that the Hunterian Oration was to be delivered by Sir Anthony Bowlby on Feb. 14th next.

THE Royal Dental Hospital, Leicester-square, has received a grant of £50 from the Corporation of the City of London.

The War and After.

THE CASUALTY LIST.

THE names of the following medical officers appear among the casualties announced since our last issue:—

Died.

Col. H. G. Melville, C.I.E., I.M.S., was educated at Edinburgh, and qualified in 1890. He held an appointment for some two years at the Edinburgh Royal Infirmary, and then entered the Indian Medical Service. Later he was attached to Lahore Medical College, where he was professor of materia medica. He saw service in 1894 in the Waziristan campaign and in 1897 in the Punjab and in the Tirah campaigns. In 1916 he was appointed consulting physician to the Mesopotamian Expeditionary Force, in connexion with which he was mentioned in despatches and awarded the C.I.E. He died at Baghdad.

Capt. J. M. Gage, R.A.M.C., qualified at Dublin in 1910, and held appointments at Mercer's Hospital, Dublin, and at Noble's Hospital, Douglas. At the time of joining the R.A.M.C. he was senior assistant medical officer at the Royal Earlswood Institution, Redhill, Surrey.

Capt. D. P. Lindsay, R.A.M.C., qualified at Edinburgh in 1912, and prior to joining up was in practice at Gateshead-on-Tyne.

Capt. G. E. Keith, R.A.M.C., qualified at Edinburgh in 1887, and was at one time assistant to the professor of clinical surgery at the Royal Infirmary, Edinburgh. Prior to going on active service he was in practice in Manchester-square, London, and was the author of several articles in the medical press, and of a text-book of abdominal surgery. He died in Italy of influenza.

Capt. D. Cotterill, R.A.M.C., was educated at Cambridge and at Edinburgh, and qualified in 1906. Prior to joining up he was in practice at Edinburgh, where he was assistant surgeon at the Royal Infirmary. He died in France of pneumonia.

Surg. Lieut. M. E. Jones, R.N., was a student at St. Thomas's Hospital, London, and qualified this year.

Capt. R. S. Armour, R.A.M.C.

Capt. J. Donaldson, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Capt. G. E. Keith, R.A.M.C., died in Italy of influenza, youngest son of the late Dr. T. Keith.

Capt. D. Cotterill, R.A.M.C., died in France of pneumonia, eldest son of Lieut.-Col. J. M. Cotterill, C.M.G., R.A.M.C.

Capt. H. J. P. Creagh, Suffolk Regiment, died of wounds at Le Tréport, only child of Major S. H. Creagh, late R.A.M.C., of Haughley, Suffolk.

THE HONOURS LIST.

The following awards to medical officers are announced:—

The Victoria Cross.

Capt. BELLENDEN SEYMOUR HUTCHESON, Canadian A.M.C., attd. 75th Bn., 1st Central Ontario R.—For most conspicuous bravery and devotion to duty on Sept. 2nd, when under most intense shell, machine-gun, and rifle fire, he went through the Quéant Drocourt Support Line with the battalion. Without hesitation and with utter disregard of personal safety he remained on the field until every wounded man had been attended to. He dressed the wounds of a seriously wounded officer under terrific machine-gun and shell fire, and, with the assistance of prisoners and of his own men, succeeded in evacuating him to safety, despite the fact that the bearer party suffered heavy casualties. Immediately afterwards he rushed forward, in full view of the enemy, under heavy machine-gun and rifle fire, to tend a wounded sergeant, and, having placed him in a shell-hole, dressed his wounds. Captain Hutcheson performed many similar gallant acts, and by his coolness and devotion to duty many lives were saved.

Distinguished Service Order.

Capt. DAVID WILLIAM MCKECHNIE, 6th Fd. Amb. Can. A.M.C.—For conspicuous gallantry and devotion to duty. While preparing an advanced dressing station in a village, it was subjected to an intense bombardment, but he remained at his post dressing the wounded, and refused to take underground cover.

Major STANLEY GRAHAM ROSS, M.C., 6th Fd. Amb., Can. A.M.C.—For conspicuous gallantry and devotion to duty. On three successive days this officer was in charge of collecting posts and advanced dressing stations. He accompanied the stretcher-bearers in the advance, to see that proper touch was maintained. His coolness and disregard of danger under heavy fire had an excellent effect on the work of the bearer parties.

Col. ROBERT MILLS SIMPSON, Can. A.M.C., A.D.M.S., 2nd. Can. Division.—For conspicuous gallantry and devotion to duty in establishing, often under heavy fire, his advanced dressing stations and collecting posts, and personally superintending the evacuation of the wounded. When a sudden attack resulted in the capture of a village, he went up under fire and personally dressed the wounds of his men on the field, evacuating all by the evening. His tireless work undoubtedly saved many lives.

Second Bar to Military Cross.

Temp. Capt. (acting Major) ROBERT MASSON GREIG, M.C., 63rd Fd. Amb., R.A.M.C.—He displayed conspicuous gallantry and great devotion to duty in attending to the wounded and superintending their evacuation from advanced positions. To his admirable organisation and self-sacrificing endurance, working without rest or sleep, many wounded men owe their lives, and his coolness and courage when leading his stretcher-bearers forward under heavy fire were admirable.

Bar to Military Cross.

Capt. (acting Major) CHARLES STUART PEDDIE BLACK, M.C., 1/2nd (Low.) Fd. Amb., R.A.M.C., T.F.—For conspicuous gallantry and devotion to duty during an advance. Under heavy shell and machine-gun fire he reconnoitred the forward roads and brought up a tent subdivision and set up an advanced dressing station. By his energy and courage he was enabled to clear all wounded from the aid-posts and evacuate them to the main dressing station.

Capt. CHRISTOPHER MATHESON FINLAYSON, M.C., Can. A.M.C., attd. 20th Can. Bn., 1st C. Ontario R.—For conspicuous gallantry and devotion to duty. As medical officer of the battalion during an attack he did excellent work in attending to several wounded men under shell and machine-gun fire. His coolness and attention to duty, regardless of personal safety, were an inspiration to all.

Capt. (acting Major) WILLIAM MURDOCH, M.C., R.A.M.C., S.R., attd. 52nd Fd. Amb.—During three days' severe fighting he was untiring in his efforts, working night and day with his stretcher-bearers, attending to wounded in forward positions and evacuating them rapidly through difficult country. He was severely wounded in the arm by direct machine-gun fire, but insisted on carrying on his duties until he received a direct order from the commanding officer to report to a dressing station. His courage under fire and great endurance were splendid examples to everyone.

Temp. Capt. PATRICK JOSEPH O'REILLY, M.C., R.A.M.C., attd. 7th Bn., E. York R.—For conspicuous gallantry and devotion to duty in attending to the wounded under heavy fire during several days' operations. He advanced with the leading troops in an attack and brought in many wounded men from in front of the lines. He set an inspiring example of coolness and skill.

Temp. Capt. (acting Major) JOHN McLEAN PINKERTON, M.C., 13th Fd. Amb., R.A.M.C.—For conspicuous gallantry in charge of stretcher-bearers. He went forward with some bearer squads to bring in wounded which bearers had been prevented from getting to by machine-gun fire. He ultimately succeeded in bringing in some of the wounded, though fired on every time he was observed. Throughout the operations he showed the greatest zeal and devotion to duty. He was finally severely wounded.

Temp. Capt. (acting Major) WILLIAM KENNETH ARMSTRONG RICHARDS, M.C., R.A.M.C., attd. 55th Fd. Amb.—For conspicuous gallantry and devotion to duty. He followed up an attack under very heavy fire and organised and carried out the evacuation of the wounded during several days' operations with the greatest courage and skill.

The Military Cross.

Temp. Capt. PATRICK AUGUSTINE ARDAGH, N.Z. Med. Corps, attd. 1st Bn., Auckland R.—For conspicuous gallantry and devotion to duty. He worked in the open all day under very trying conditions, and at times under heavy fire. Hearing that the personnel of another battalion's aid-post had been blown out, he at once went to the place and worked for several hours under shell fire until he had cleared the wounded. By his energy and disregard for danger many lives were saved.

Capt. CHARLES FRANCIS ATKINSON, Can. A.M.C., attd. 44th Bn., Manitoba R.—For conspicuous gallantry and devotion to duty during an attack. Finding that heavy enemy machine-gun fire prevented any carrying back of casualties, he went forward and personally dressed a large number of casualties. Later, under heavy fire, he organised special parties and cleared all wounded effectually. He saved a number of lives.

Capt. GEORGE RAYMOND BABY, 4th Fd. Amb., Can. A.M.C.—For conspicuous gallantry and devotion to duty in charge of a stretcher-bearer section which he brought up immediately behind the infantry advance and collected the wounded. He was continuously exposed to every kind of hostile fire. His energy in searching for wounded resulted in his area of the battlefield being thoroughly and quickly cleared.

Capt. JAMES EVERETT BARRY, Can. A.M.C., attd. 2nd Bn., Eastern Ontario R.—For conspicuous gallantry and devotion to duty during a successful attack. This officer tended the wounded among the attacking companies under intense fire, dressing their wounds and directing them to the aid-post. He searched the field for wounded under full observation, and frequently under heavy fire of enemy. He must have saved the lives of many men who were lying in exposed positions.

Temp. Capt. ELLIS CAMPBELL BOWDEN, R.A.M.C., attd. 2nd Bn., Lond. R.—He attended to wounded men under a very intense fire from machine guns in daylight, and helped to carry many wounded into safety in full view of the enemy. His unceasing efforts and his self-sacrificing disregard of danger saved many lives, and were the admiration of all who saw him.

Temp. Capt. (acting Major) JOHN BURKE, 130th Fd. Amb., R.A.M.C.—During ten days' severe fighting he was unremitting in his devotion to duty, tending the wounded and selecting, often in the middle of the night, suitable places for his dressing stations. He displayed conspicuous courage and coolness under fire, and his initiative and endurance evoked the admiration of all who were with him.

Lieut. FINLAY CAMERON, R.A.M.C., Spec. Res., attd. 14th Bn., Welsh R.—During many days' hard fighting his courage and devotion to duty were conspicuous. He was continually at work under heavy shell and machine-gun fire attending to the wounded and organising their evacuation. He was wounded himself on one occasion, but remained on duty. His behaviour throughout was admirable.

Capt. ALEXANDER RAE CAMPBELL, Can. A.M.C., attd. 5th Bde., Can. Fd. Arty.—For conspicuous gallantry and coolness. When the battery came into action under heavy machine-gun fire a number of men were wounded. This officer collected and carried them to trenches, where he dressed their wounds, constantly under heavy fire. He set a fine example to the men round him at the time.

Lieut. HENRY ALEXIS CHODAK, R.A.M.C., Spec. Res., attd. 1/5th Bn., Lond. R.—For conspicuous gallantry and devotion to duty. He was wounded during an attack but refused to withdraw, and remained with the battalion for three more days attending to the wounded, often under heavy fire. He set a splendid example of determination.

Temp. Capt. ALFRED MACKENZIE CLARK, R.A.M.C., attd. 1st Bn., North'd. Fus.—For conspicuous gallantry and devotion to duty. Hearing that there were several wounded men lying out that could not be collected until nightfall, owing to snipers and machine-gun fire, he went himself and dressed them in the shell-holes where they lay. On this, as on other occasions, he showed a total disregard for his personal safety when the welfare of the wounded was at stake.

Capt. (acting Major) FREDERICK CLARENCE CLARKE, 12th Fd Amb., Can. A.M.C.—For conspicuous gallantry and devotion to duty. Under heavy shelling he collected four severely wounded men, dressed them, placed them under cover, and remained with them until help arrived, when he got all four away safely. For three days of heavy fighting his cheerfulness and devotion to duty inspired all under him.

Capt. WILLIAM JAMES DOWLING, R.A.M.C., Spec Res., attd. 3rd Bn., M.G. Corps.—For conspicuous gallantry and devotion to duty. He tended and evacuated wounded of his own and other units under very heavy shell and machine-gun fire. Later, he did excellent work in charge of the bearer section of a field ambulance. By his zeal and fearless conduct he saved many lives.

Capt. HARRY DUNLOP, Can. A.M.C., attd. 102nd Bn., 2nd Central Ontario R.—For conspicuous gallantry and devotion to duty. This officer followed close behind the attack and attended to the wounded under heavy machine-gun fire. He was untiring in his efforts to care for and evacuate the wounded, and undoubtedly saved many lives.

Capt. JOSEPH CULLODEN EAGAR, Can. A.M.C., attd. 78th Bn., Manitoba R.—For conspicuous gallantry and devotion to duty. Throughout the fighting this officer worked unceasingly, ministering to the wounded, frequently under heavy shelling and machine-gun fire. He went without food or sleep, and when wounded refused to leave until his station was cleared.

Temp. Capt. ORIE ELGIN FINCH, R.A.M.C., attd. 2nd Bn., K.O. Sco. Bord.—For conspicuous gallantry and devotion to duty. He moved his aid-post forward to close behind the front line under very heavy machine-gun fire. Here he worked unceasingly in a trench for thirty-six hours bandaging and attending to wounded; and it was due to his fearless conduct and splendid energy that all the wounded were attended to in a short time.

Capt. (acting Major) STANLEY RIDER GIBBS, 2/2nd (Wessex) Fd. Amb., R.A.M.C. (T.F.).—For conspicuous gallantry and devotion to duty. He organised the finding and evacuation of one officer and four other ranks lying wounded in an advanced machine-gun post in front of our lines, and although the operation, which took several hours, was conducted under almost continuous machine-gun fire, he recovered them all.

Temp. Capt. BASIL GRAVES, R.A.M.C., attd. 13th Bn., R. Fus.—For conspicuous gallantry during an attack. He dressed wounded in the open under difficult conditions, and frequently under machine-gun fire. Throughout the operation he encouraged the wounded by his cheerfulness and disregard of danger, and by his devotion to duty saved many lives.

Temp. Capt. WILLIAM HAMILTON, R.A.M.C., attd. 223rd Bde., R.F.A.—For conspicuous gallantry during an advance. He remained at the gun positions throughout the operations. Under heavy shelling he attended to wounded in exposed positions, and was always cheerful under most trying circumstances. His courage and devotion to duty won him the admiration of all ranks.

Capt. (acting Major) WILLIAM JAMES HIRST, 1st, attd. 2/1st, S. Mid. Fd. Amb., R.A.M.C. (T.F.).—For conspicuous gallantry and devotion to duty in organising the evacuation of wounded from a village during an enemy attack. He remained behind when the enemy advanced into the village and assisted in removing all the wounded, refusing to leave the village until the last man had been brought in. He has at all times shown great coolness and disregard of danger under heavy fire.

Tempt. Capt. JEREMIAH HOLLAND, R.A.M.C., attd. 1st Bn., Ches. R.—For conspicuous gallantry and devotion to duty. Under very heavy machine-gun and rifle fire he collected and evacuated wounded from a ridge. He showed utter disregard for personal safety, and by his zeal and energy set a splendid example to those under him, and saved many lives.

Capt. LANCELOT JOHN HUNTER, Austr. A.M.C., attd. 15th Bn., Aust. Infy.—For conspicuous gallantry and devotion to duty. When the battalion was heavily shelled in a bivouac for two hours he attended to the wounded with utter disregard of danger. During an attack he followed closely behind the attacking troops and attended to the wounded under heavy fire. He set a splendid example of self-sacrifice.

Capt. BELLENDEN SEYMOUR HUTCHESON, Can. A.M.C., attd. 75th Can. Bn., 1st Central Ontario R.—For conspicuous gallantry and devotion to duty. Before the battalion reached its jumping off position the enemy put down a heavy barrage and many casualties were sustained. This officer worked unceasingly in attending to and dressing the wounded under heavy fire in open ground. During the mopping up of a village he passed through the streets several times attending to the wounded. He also voluntarily dressed nearly 100 enemy wounded who had been left behind.

Capt. THOMAS ROSS JAGGER, Austr. A.M.C., attd. 31st Bn., Aust. Infy.—For conspicuous gallantry and devotion to duty. He carried on his work under heavy fire during two attacks and attended to the wounded of his own and other units with utter disregard of danger. He set a splendid example of courage and self-sacrifice.

Temp. Lieut. EDWARD DIGBY KINSEY, R.A.M.C., attd 1st Bn., Bedf. R.—For conspicuous gallantry and devotion to duty. He remained in the open for over an hour when the battalion were incurring severe casualties from intense shelling, dressing the wounded and seeing that they were promptly carried into safety. His efforts resulted in the saving of many lives.

Temp. Capt. ALEXANDER CHESTER LAMBERT, R.A.M.C., attd. 8th Bn., R. Lan. R.—For conspicuous gallantry and devotion to duty. He repeatedly established aid-posts during an attack and under very heavy shell and machine-gun fire attended and evacuated wounded belonging to his own and other units. When a shell struck his aid-post, killing assistants and slightly wounding himself, he remained at duty and refused to go down. Throughout the operations his conduct was admirable.

Capt. PHILIP WHITESIDE MACLAGAN, R.A.M.C., attd. 1st Bn. Herts R.—For conspicuous gallantry and devotion to duty. He continued to bind up wounded on a road under shell fire. He also showed great ability in getting wounded evacuated from the aid-post; and generally showed great coolness and disregard of danger under fire throughout the operations.

Capt. (acting Major) EDWARD BERTRAM MARSH, R.A.M.C.—For gallantry and marked devotion to duty during an advance. He kept touch with the regimental medical officers' and bearer divisions under very adverse circumstances and heavy fire, and so coördinated the forward evacuation that the divisional front was cleared in the shortest possible time. His energy was remarkable throughout the operations.

Capt. JAMES KILBURN MOSSMAN, 5th Fd. Amb., Can. A.M.C.—For conspicuous gallantry and tireless energy in the execution of his duty. This officer was in charge of a section of stretcher-bearers, and rapidly organised the evacuation of the wounded. He followed close on the attacking infantry waves, and regardless of his own safety attended to the wounded. His zeal and judgment were a great example to the men.

Capt. FINLAY MUNROE, Can. A.M.C., attd. 52nd Can. Bn., Manitoba R.—For conspicuous gallantry and devotion to duty in dressing and attending to wounded during a hostile barrage. This officer has always disregarded personal danger, and has undoubtedly saved many lives on the battlefield.

Capt. (now Maj.) SYDNEY MICHAEL O'RIORDAN, Austr. A.M.C., attd. 13th Bn., Aust. Infy.—For conspicuous gallantry and devotion to duty. During the later stages of an advance, when the infantry were under heavy fire, he established his aid-post in an advanced position and dealt very rapidly with the casualties. His initiative and coolness under heavy fire were an inspiration to all who came in contact with him.

Temp. Capt. ANDREW FINLAY READDIE, 21st Fd. Amb., R.A.M.C.—For conspicuous gallantry and devotion to duty. While supervising the evacuation of the wounded from the front line he heard that a medical officer in charge of stretcher-bearers had been killed. He at once proceeded to the spot through heavy enemy barrage and took charge of the bearers, and it was due to his prompt action that no delay resulted. He has consistently done good work.

Capt. LOUDON CORSAN REID, 12th Fd. Amb., Can. A.M.C.—For conspicuous gallantry and devotion to duty. For several hours under heavy rifle and machine-gun fire he dressed and cleared wounded, and by his efforts saved many lives. He several times went forward to points of extreme danger to satisfy himself that all wounded had been cleared.

Temp. Capt. JOHN JOSEPH REYNOLDS, R.A.M.C., attd. 15th Bn., Hamp. R.—For conspicuous gallantry and devotion to duty. He formed an advanced regimental aid-post on the side of the road, thus shortening the stretcher-bearers' journeys. Eventually he was forced to evacuate this position owing to hostile fire. Later, he dressed and attended to all the casualties of three battalions, though partially gassed himself. By his untiring energy he undoubtedly saved many lives.

Capt. FRANK ELLIOT TRENOWETH TRUE, Aust. A.M.C. attd. 48th Bn., Aust. Infy.—For conspicuous gallantry and devotion to duty. He moved forward with the assaulting troops under very heavy fire, established his aid-post and organised his stretcher-bearers, and was the means of saving many of the wounded. He carried out his duties under heavy fire with great skill and courage.

Capt. FRANCIS LOUIS TRINCA, Austr. A.M.C., attd. 2nd A.L.H.R.—For conspicuous gallantry and devotion to duty. During an attack this officer, although suffering from fever, carried out his duties with great energy and total disregard of danger. Later, he accompanied the troops in a counter-attack, attending to casualties in the open under fire, and setting a fine example of endurance.

Capt. ALBERT HENDERSON WALLACE, 13th Fd. Amb., Can. A.M.C.—For conspicuous gallantry and devotion to duty. While in charge of five stretcher squads he followed a battalion into action and established collecting-posts for the wounded directly behind the battalion. His courage and initiative enabled the wounded to be got out rapidly, thereby saving many lives.

Capt. WILLIAM CHARLES WALSH, 13th Fd. Amb., Can. A.M.C.—For conspicuous gallantry and devotion to duty. With four squads of stretcher-bearers he followed the battalion into action and established collecting-posts a few hundred yards behind the front line. He dressed and evacuated wounded under heavy shell fire, working all day and night in the open until all were carried off the field. He behaved splendidly.

Capt. ERNEST HAROLD WHELPLEY, Can. A.M. Corps., attd. Hdqrs., 3rd Bde., Can. Gar. Arty.—For conspicuous gallantry and devotion to duty. He at once went to a battery which was being heavily shelled, and as casualties occurred dressed their wounds and superintended their evacuation. He showed great coolness and devotion to duty.

Temp. Capt. WILLIAM BROCKIE WILSON, R.A.M.C., attd. 1st Bn. Devon R.—For conspicuous gallantry and devotion to duty. He treated the wounded of his own and other battalions; this involved passing backwards and forwards over shell-swept areas. Later he went forward with his stretcher-bearers and searched all the ground up to the front line. He showed splendid zeal and disregard of danger, and set a fine example to those under him.

Capt. PAUL ERNEST VOSS, A.A.M.C., attd. 58th Bn. Aust. Infy.—For conspicuous gallantry and devotion to duty. He worked at his aid-post under heavy fire throughout two days' operations, and attended to the wounded of two divisions. He set a fine sample of courage throughout, and undoubtedly saved many lives.

The following awards are in connexion with operations in the White Sea and in the Adriatic respectively:—

Distinguished Service Order.

Surg. Lieut. JOHN GREENLAW DOBSON, R.N., H.M.S. "M25."—Though wounded by the explosion of a shell, he carried out all operations that could be effected on the wounded, working continuously from 7 P.M. till 10 P.M., when he collapsed. Throughout this time Surg. Lieut. Dobson went about his work as if nothing had happened.

Surg. Lieut.-Cdr. CYRIL VERITY GRIFFITHS, R.N.

FOREIGN DECORATIONS.

French.

Legion of Honour.—Commander: Surg. Vice-Admi. Sir W. H. Norman, K.C.B. Chevalier: Surg. Cdr. W. W. Keir, C.M.G., R.N.

OBITUARY OF THE WAR.

JOHN DOW, M.B., CH.B. ABERD.,

CAPTAIN, INDIAN MEDICAL SERVICE.

Captain J. Dow, who died at Shiraz, Persia, on Nov. 5th, at the age of 29 years, was eldest son of Peter Dow, headmaster of the West End School, Elgin. He was educated at his father's School, Fordyce Academy, and the Elgin Academy, and graduated with distinction at Aberdeen University, taking the M.A. degree in 1910 and the M.B., Ch.B. in 1915. He was then house surgeon to Professor J. Marnoch at Aberdeen Infirmary, and before going to India in 1916 held a commission in the R.A.M.C., being attached to the Highland Casualty Clearing Station at Aberdeen. Captain Dow had performed valuable work in India, Mesopotamia, and Persia, spending 18 months at Shiraz, where he was actively engaged in combating the cholera epidemic. His death was due to influenza.

FRANK CECIL HARRISON, M.R.C.S. ENG., L.D.S.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain F. C. Harrison, who was killed in action in Belgium on Oct. 13th, at the age of 26 years, was eldest son of the late Frank Harrison, M.R.C.S., L.D.S., of Sheffield. He was educated at Sheffield Grammar School and King Edward VII. School. He then studied dentistry at the Royal Dental Hospital, London, and attended Sheffield University as a medical student, taking the diplomas of the Conjoint Board in 1915. An enthusiastic worker in the Officers Training Corps at the University, he obtained the Coronation Medal in 1911. He was gazetted in August, 1914, joined the R.A.M.C. after qualifying, and went out to France in 1915. At the time of his death he was attached to the Duke of Wellington's Regiment in the 49th West Riding Division. The A.D.M.S. of his division writes that he was able in his work and keen in all that pertained to the well-being of his men. "He was brave as a lion and a true friend to us all."

MENTIONED IN DESPATCHES.

In a despatch received from the Commander-in-Chief of the British Forces in Italy, dated Nov. 15th, 1918, the following reference to the medical services occurs:—

The fresh influenza epidemic, which broke out shortly before the commencement of the operations, threw a heavy and additional strain on the medical services. Despite this the evacuation and care of both the sick and wounded were rapidly and satisfactorily carried out. All the arrangements were most ably organised by my Director of Medical Services, Major General F. R. Newland, C.B., C.M.G.

In connexion with operations in the Sudan the name of Major A. Gibbon, R.A.M.C., is brought to notice for distinguished and gallant service in the field.

The names of Surg. Lieut.-Cdr. W. E. Ormsby, R.N., and of Surg. Lieut. L. F. Strugnell, R.N., have been mentioned in despatches dealing with operations in the Adriatic.

Correspondence.

"Audi alteram partem."

THE VALUE OF PHYSICAL TREATMENT.

To the Editor of THE LANCET.

SIR,—The Prime Minister in his speech on Nov. 16th, in placing the case for the Coalition at the Central Hall, Westminster, said: "The health of the people must especially be the concern of the State. This is one of the war's revelations." Might I be allowed to express in your columns my views regarding the adoption of physical treatment in a State scheme of medical service?

During the past four years physical treatment in all its branches has made great progress; it has been universally adopted, and the War Office in 1915 recognised the important rôle it plays in the treatment of men who are suffering from the many after-effects of disabilities contracted in the war. Dr. Fortescue Fox and others have, through the Royal Society of Medicine and other channels, left no stone unturned in their endeavour to inform the profession what could be done in this country and what was being done in other countries. Its adoption has been to a very large extent in conjunction with orthopædic treatment, and most of the institutions where these cases are treated possess complete physical treatment installations. Cases pass from the surgical or medical sides of a hospital to the after-treatment or physical treatment department, and remain there until no further improvement can be attained.

I should like to enumerate a few of the conditions which can be successfully dealt with by these methods—viz., hydrology, electricity, massage, exercise (active and passive).

1. Debility from any cause, e.g., pneumonia, typhoid, dysentery, all post-operative conditions, e.g., appendicitis, hernia, &c.
2. Rheumatism, including myositis, myalgia, fibrositis, rheumatoid arthritis, osteo-arthritis, both in the earlier stages.
3. Neuritis, including neuralgias of all kinds, particularly headaches, which are often of rheumatic origin due to fibrositis of the cervical muscles.
4. Nervous conditions, including neurasthenia, loss of nerve tone, general tremors and insomnia associated at the present time with the overstrain of war and shell shock.
5. Heart conditions, particularly arrhythmia, tachycardia, bradycardia, loss of myocardial tone; dilatation whether associated with valvular disease or not.
6. Post-operative conditions, such as adhesions following abdominal operations, contracted scars producing deformity by the trapping of nerves or tendons.
7. Fractures with only fibrous union; in other words, deficiency of callus.
8. Paralysis and paresis of any nerve, more particularly facial, ulnar, median, musculo-spiral, sciatic and branches.
9. Synovitis and fibrous ankylosis of large or small joints where breaking down of tissue and re-education of movement are necessary.
10. Circulatory conditions, such as trench feet, post frost-bite, and erythromelalgia.

There are many other conditions which might be mentioned where physical treatment is indicated. It is the accurate and direct therapeutic application of exercise in its many forms which is absolutely necessary to ensure a scientific and well-balanced method of procedure. Most of the men in our Army have been brought under discipline for the first time in their lives, and training in speed, alertness, agility, the strengthening of flabby and weak muscles, all combine to give them a feeling of well-being, confidence, and fitness to which they have been strangers.

Professor Tait McKenzie, of Pennsylvania University, who has served as a Major in our Royal Army Medical Corps, in taking part, on his return to America, in a discussion on a paper concerning the Reconstruction and Rehabilitation of the Disabled Soldiers, says:—

"In the inspection of training camps (in the early days of the war), which ran from 30,000 to 80,000 men, it was my duty to travel from one to the other, and we repeatedly found a number of men who were unable to take full training. Now these were paraded, and in the course of examination we found that many of them were suffering from conditions that could be cured by proper treatment, sometimes by operation, but more frequently by some form of physical therapy that would bring them back to military usefulness. The number of these was very considerable."

During the past two and a half years 10,000 officers and men have been treated by physical therapy in the department of which the writer has charge. Of this number 45 per cent. have finally been passed fit. These statistics show what physical treatment can accomplish in restoring the unfit to a state of fitness or, failing that, to the maximum point of utility. I trust that the authorities who formulate the scheme of State medical service will bear in mind the important rôle played by this form of treatment. It will certainly replace many bottles of medicine and benefit the patient by Nature's remedies. But I would emphasise that the application of physical therapeutics to pathological conditions must depend for its success upon careful selection and accuracy of the dose employed, and also on persistence in following a course of treatment. It is the neglect of these considerations which is responsible for most of the failures in their application. The physician often fails to appreciate the range and effectiveness of the most powerful and versatile system of therapeutics which is always at his command.

I should like to say that there is a very grave danger of this form of treatment falling into unqualified hands, and I beg to suggest that the Government should take steps to prevent quacks and charlatans from gulling the public by unprofessional advice and unskilled treatment. At present there is no law to prevent these individuals from opening elaborate treatment rooms and advertising, and thereby gaining distinct and unfair advantage over the qualified practitioner.—I am, Sir, yours faithfully,

FRANK RADCLIFFE,
Western Command Depôt, Heaton Park, Manchester. M.O. 1/c Treatment.

ADVANCES IN THE TREATMENT OF FRACTURES.

To the Editor of THE LANCET.

SIR,—Having seen in THE LANCET of Dec. 14th Dr. R. Scot Skirving's description of his visit to No. 8 Stationary Hospital I would like to add my appreciation of the work that has been done there. Personally I do not believe that any man has afforded the wounded soldier more freedom from physical anguish than Major M. Sinclair has. On the occasion of my last visit to that hospital in November I was much struck by the excellent series of specimens illustrating the various fractures of bones resulting from projectiles. These were beautifully mounted and the innumerable comminuted fragments were collected and secured in position with perfect accuracy. They will make a valuable addition to a collection such as the Keogh War Museum at the Queen's Hospital at Sidcup. The cases in the wards showed how it was possible by the proper use of glue and by other means to obtain accurate axial continuity of fragments, even in the worst cases of comminution. They illustrated the importance of leaving as many fragments as possible in the wound, since they served after a time to make abundance of new bone. Perhaps one of Major Sinclair's devices which has proved most effective and painless is the use of screws inserted into the long bones. These afford secure holds on which traction can be readily exerted. At this hospital the accuracy of Sir Almroth Wright's view is fully borne out by the use of dry gauze dressings, no antiseptic having been employed for over two and a half years. It must be a great source of satisfaction to British surgeons that their fellow countryman has been able to do so much for surgery by putting it upon a definite scientific basis. If one were asked to allot credit for the work done by British scientists and surgeons in this war I would conclude that that of Sir Almroth Wright has been of the greatest scientific importance to surgery, and that of Major Sinclair of the highest clinical value to the wounded soldier.

I am, Sir, yours faithfully,

Dec. 14th, 1918. W. ARBUTHNOT LANE.

THE LONDON UNIVERSITY ELECTION: A PROTEST.

To the Editor of THE LANCET.

SIR,—You have very justly placed our postcard below Sir Wilmot Herringham's angry letter of protest in your last Friday's issue, and it will be seen that we simply point out the probability that the medical candidate, not being a

graduate of the University of London, will only alienate votes from the Coalition candidate, which on public grounds we should greatly deplore. From his letter it might be feared that if he were returned Sir Wilmot's methods of controversy, whilst adding to the liveliness of the House, would scarcely enhance the dignity of his adopted University.

I am, Sir, yours faithfully,

London, Dec. 14th, 1918. R. DOUGLAS POWELL.

SPINAL ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—Owing to the demands upon your limited space, my remarks at the meeting of the Section of Anæsthetics of the Royal Society of Medicine, as reported in THE LANCET of Dec. 14th, have been necessarily abbreviated, and two points which I think are of some importance have been omitted. I should like to be allowed to refer to them.

The first point is that there has been a misconception of the nature of the two solutions commonly employed in spinal anæsthesia. The specific gravity of Barker's stovaine-glucose solution is 1·023, that of the stovaine-saline solution 1·083. The former, however, has always been called the "heavy" solution, the latter the "light" solution, and has been used as a "light" solution, the patient being placed very soon after injection in the head-down position. The fall of blood pressure being largely compensated by gravity, pallor, sweating, faintness, and collapse have been less frequent and less severe, and Barker's solution has been gradually ousted from its former position of predominance. Gravity can, however, be made use of with advantage when Barker's solution is injected. Diffusion plays a much smaller part in the production of disquieting or alarming symptoms than was originally thought.

The second point is that blood-pressure readings should be taken almost as a routine in spinal anæsthesia. They throw much light on the difficulties of the method, and are valuable in helping the anæsthetist to form a prognosis.

I am, Sir, yours faithfully,

FRANCIS E. SHIPWAY.

Queen Anne-street, W., Dec. 16th, 1918.

HÆMATEMESIS AS A COMPLICATION OF APPENDICECTOMY.

To the Editor of THE LANCET.

SIR,—In THE LANCET of July 6th there is an article by Dr. E. Drybrough-Smith on hæmatemesis as a complication of appendicectomy. I have had two cases following appendicectomy similar to the case he records, but, unfortunately, with not the same happy ending.

CASE 1.—I was called to see a patient, 19 years of age, suffering from appendicitis; with rest in bed, she got better. About three months afterwards she had a similar attack, which likewise subsided, and to prevent future attacks she desired an operation. On Oct. 18th, 1914, she went into a nursing home. The next day menstruation commenced, and as there was no urgency the operation was postponed until the 29th. During the interval of waiting in the home she was on full diet, under observation, and did not complain of any abdominal pain. This is important, because the question of gastric ulcer might arise in a girl of 19.

On Oct. 29th I removed her appendix; there were a few adhesions, but there was no difficulty whatever about the operation. She was put to bed in good condition. About eight hours after the operation I was called to see her, as she did not seem to be doing well. She had a very fast pulse, was very pale and very restless, and was evidently suffering from hæmorrhage. Though there was no swelling or discolouration about the wound her condition pointed so strongly to hæmorrhage that she was given an anæsthetic, and the wound was reopened, for fear a ligature had slipped, but everything was found in order. About four hours afterwards she vomited a large quantity of coffee-ground vomit; she was given a hypodermic injection of morphia and atropine and teaspoonfuls of water containing 10 minims of adrenalin extract every half hour. This treatment did no good, and she kept vomiting the same kind of vomit, and died about 24 hours after the operation.

Case 2.—In September, 1916, when surgeon with the French Red Cross, I was asked by a French colleague, a physician, to see a little girl, 10 years of age, whom he was treating for appendicitis. A diagnosis of appendicular abscess was agreed upon, and she was taken to a military hospital for operation. I found a big abscess in which there was a gangrenous appendix; a portion of omentum was also gangrenous. This and the appendix were removed. A large cigarette drain was put in the abscess cavity and the child returned to bed. in a much better condition than before operation. About six hours after the operation the night sister who had charge of the child sent for me. The child was very restless and very pale and was clearly suffering from hæmorrhage; there was no blood escaping from the drain, but to make sure there was no hæmorrhage at the site of operation the wound was reopened, but there was no sign of bleeding there. About 12 hours after the operation she brought up a large quantity of coffee-ground vomit, and continued vomiting until she died 16 hours after the operation. In neither case could I get a post-mortem examination.

Osler, in his text-book, mentions operations in the abdomen as being a cause of hæmorrhage of the stomach, particularly when the omentum is wounded. He also states that many cases have followed operations for appendicitis, the complication being very fatal. There is an article in Moynihan's "Abdominal Operations" on post-operative hæmatemesis in which many theories are mentioned as to the cause. He states that, as a rule, the amount vomited is small—this was not the case in the two patients I have seen. The question is also discussed in Keen and Da Costa's "System of Surgery," in an article by Van Hooke and Kanavel.

The consensus of opinion seems to be that the hæmorrhage arises from small erosions in the gastric mucosa. If I ever have the misfortune to meet another case I should try hypodermic injections of serum. Serum is a useful adjuvant in cases of hæmorrhage.

In a case I saw recently of severe epistaxis, in which oozing persisted after plugging the posterior nares with plugs soaked in adrenalin, the bleeding ceased after an injection of antidiphtheritic serum used in lieu of plain serum.

I am, Sir, yours faithfully,

J. VERE ARKLE, M.D., F.R.C.S.

Kalgoorlie, Western Australia, Oct. 9th, 1918.

THE CAUSES AND INCIDENCE OF DENTAL CARIES.

To the Editor of THE LANCET.

SIR,—Dr. J. Sim Wallace begins the introduction to his book on the Prevention of Dental Caries as follows: "Dental caries is one of the most easily and certainly preventable of diseases." Is this true? If so, it is a scandal that the details of its prevention are not known to every father and mother in the civilised world. It is impossible to exaggerate the terrible state of the teeth in this country, the disease and economic loss following the dental caries.

I urge you, Sir, to demand a Government Commission to inquire into the matter at once. This is what the President of the Dental Association of New Zealand said to the Acting Premier last July: "The examination of thousands of school children in New Zealand shows the percentage of those suffering from dental caries to be 95. If cows were similarly affected they would not be tolerated for one month." It is my firm belief that Dr. Sim Wallace has solved the problem.

May I point out that three articles of food, which taken in large quantities are believed to be most pernicious, have been very scarce as regards the first two, unobtainable as regards the third—i.e., (1) milk; (2) manufactured sugar and sweets; (3) soft white bread and finely milled flour in biscuits. Cow's milk belongs to the calf, and milk is the correct food for the toothless young only. Manufactured sugar, in the enormous quantities consumed before the war, is a modern article of diet; previously we made our own sugar. There is all the difference between the native grinding and chewing the cane for his meal and the concentrated article in the sugar-basin. Wholemeal bread *must* be well chewed; it cannot be bolted like the soft white of pre-war days. How are the children to-day? Apart from influenza, which is prevalent throughout the world, their health is excellent. Mr. H. J. Morris, in a letter to THE LANCET dated April 2nd, 1918, states: "It is easier and cheaper to feed children on preventive lines than as they are generally treated." The matter cannot rest where it is to-day. Are we to teach the public prevention, which costs nothing, or are we to supply an army of dental surgeons to fill the teeth of the whole community?

In my lectures to the soldiers under my care on "Why Does the Tooth, the Hardest Part of the Body, Rot in the Nursery and the Schoolroom?" I have pointed out that I never saw a case of appendicitis amongst the poor country Arabs under my care in Egypt before the war; that no girl ever came to me with a history of indigestion and subsequent gastric ulcer; that cancer, which so often attacks some part of the alimentary canal, was practically unknown to me; that tonsils and adenoids never came my way, the last possibly because practically all the children were breast-fed.—I am, Sir, yours faithfully,

W. E. NICKOLLS DUNN,
Horton War Hospital, Epsom, Dec. 7th, 1918. Major, R.A.M.C.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Temp. Surg.-Lieut. C. K. Scales, who has been invalided on account of ill-health contracted in the Service, to retain his rank.

ARMY MEDICAL SERVICE.

Col. D. M. O'Callaghan, C.M.G., is placed on retired pay.

Headquarters of Administrative Services and Departments.

Temp. Major G. O. Taylor, Canadian A.M.C., to be Deputy Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

The undermentioned to be acting Majors: Capt. J. E. Hepper; Temp. Capts. H. G. Drake-Brockman and B. Sweeten whilst specially employed.

Temporary Lieutenants to be temporary Captains: S. F. Greenfield, P. S. Humm, H. W. Knowling, C. W. Joynt, L. H. Butler, F. W. H. Pilot, B. W. H. Fergus, J. G. Millar, J. C. Fox, H. S. Metcalfe, J. A. M. Bligh, G. T. Wrench, H. J. V. R. Allin, D. MacK. Gray, R. J. G. Halden, J. A. Johnstone, F. W. Lawrence, L. A. Morris, R. N. M. Rowstrom, D. B. Wilson, H. L. W. Woodroffe, R. Steel, B. E. Lawrence, A. R. P. Scott, H. Thomson, T. M. Hopgood, J. C. Johnson, G. C. Cossar, F. J. Power, G. Ferguson, R. O'Connor, H. S. Gabb, W. Crerar, F. C. Watson, E. Bottomley, W. Leathgarbarrow, E. A. B. Poole.

T. B. Sellors, late temporary Captain, is granted permission to retain that rank.

Officers relinquishing their commissions: Temp. Capts. J. D. Lithgow, H. C. Will, N. W. Walmsley, A. Griffiths (acting Major), D. R. Pike, H. C. Harper, H. A. Mason, G. P. White, A. Tait, H. A. Easton, H. Angel, F. W. K. Lawrie, A. C. Reid (and is granted permission to retain his rank); Temp. Lieuts. M. F. Tylor, C. I. Harmar.

TERRITORIAL FORCE.

Capt. (acting Major) G. T. Willan, D.S.O., is granted the pay and allowances of his acting rank.

General List.—Lieut.-Col. L. J. Blandford to be acting Colonel whilst employed as Deputy Director of Medical Services.

Lieut.-Col. T. F. Dewar to be acting Colonel whilst employed as Assistant Director of Medical Services.

Major G. C. Taylor, from Sanitary Service, to be Major.

2nd London Sanitary Company: Lieut. B. Chaikin to be Captain.

1st Lowland Field Ambulance: Major W. C. Murray to be a Deputy Assistant Director of Medical Services.

3rd West Lancashire Field Ambulance: Major A. A. W. Merrick, from Deputy Assistant Director of Medical Services, to be Major.

1st Home Counties Field Ambulance: Capt. C. H. Gregory, from Deputy Assistant Director of Medical Services, to be Captain.

Sanitary Service.—Lieut.-Col. L. J. Blandford to be Assistant Director of Medical Services, and to be temporary Colonel whilst so employed.

Lieut. Col. T. F. Dewar to be a Deputy Assistant Director of Medical Services.

Major G. C. Taylor to be a Deputy Assistant Director of Medical Services.

Attached to Units other than Medical Units.—Capt. A. S. M. Macgregor to be a Deputy Assistant Director of Medical Services.

TERRITORIAL FORCE RESERVE.

Major G. W. McIntosh, from Attached to Units other than Medical Units, to be Major.

Major (Brevet Lieut.-Col.) C. Rundle, from 1st Western General Hospital, to be Major.

Capt. W. M. Langdon, from the London Field Ambulance, to be Captain.

ROYAL AIR FORCE.

Medical Branch.—The undermentioned are granted temporary commissions as Captains:—T. E. Mulvany (late temporary Captain, R.A.M.C.) and R. J. Aherne (late temporary Captain, R.A.M.C.).

Dental Branch.—The undermentioned (temporary Captains, General List, Dental Surgeons) are granted temporary commissions as Captains: H. F. Barge, C. L. Colbran, C. J. Crocker, J. Speak, and T. F. Healey.

D. H. W. Williamson (temporary Lieutenant, General List, Dental Surgeon) is granted a temporary commission as Lieutenant.

THE Mental After-Care Association for Poor Persons Discharged Convalescent or Recovered from Institutions for the Insane, Church House, Westminster, earnestly appeals for further help to carry on and extend its work, which has largely increased owing to the many shell-shock and air-raid sufferers who have been among the applicants. The results of the work have been very satisfactory, and further particulars will be gladly given by the secretary.

Medical News.

UNIVERSITY OF OXFORD.—At examinations held recently the following candidates were successful:—

SECOND EXAMINATION FOR DEGREE OF BACHELOR OF MEDICINE.

Materia Medica and Pharmacology.—C. K. J. Hamilton, Lincoln; and M. H. MacKeith, Queen's.
Pathology.—H. P. Hodge, non-collegiate.
Forensic Medicine and Public Health.—Y. A. Brown, Exeter.
Medicine, Surgery, and Midwifery.—C. F. Krige, Hertford; A. E. Thomas, University; H. W. Toms, Jesus; and B. Tordoff, St. John's.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

SECOND EXAMINATION FOR MEDICAL DEGREES.

Part II.—Frederick Bach, London Hosp.; Edward Townley Bailey, Middlesex Hosp.; *Cecil Stedman Cloake, Lond. Hosp.; Betty Dent, Lond. Sch. of Med. for Women; Archibald Glen Duncan, London Hosp.; Keridwen Valentine Edwards, Univ. Coll., Cardiff; Gertrude Evans, Lond. Sch. of Med. for Women; Olive Gwendolin Fisk, Girton Coll. and London Hosp.; Richard Kenrick Fou kes, King's Coll.; Nellie Gray, King's Coll. and Westminster Hosp.; Muriel Minnie Harris, Lond. Sch. of Med. for Women and King's Coll.; Hilda May Haythornthwaite and Marjorie Browning Hubert, Lond. Sch. of Med. for Women; Shankar Ramchandra Joglekar, Middlesex Hosp.; Dilys Menai Jones, Univ. Coll., Cardiff; Henry Charles Victor Joy, London Hosp.; Bessie Levin, Lond. Sch. of Med. for Women; William Alexander Low, St. Thomas's Hosp.; Ivan Bailey McCann and Alan McKenzie, Guy's Hosp.; Templar Edward Malins, Univ. Coll., Cardiff; Leslie Stuart Morgan, St. Bart.'s Hosp.; Ernest Rudolf Dudley Nagel, St. Thomas's Hosp.; Bertram Sydney Nissé, London Hosp.; Thomas Stanley North, St. Mary's Hosp.; Rupert John Parry, Univ. Coll., Cardiff; Frederick Alfred Pickworth, King's Coll.; Olive Gwendoline Potter, Girton Coll. and London Hosp.; Edward Horace Richards, Guy's Hosp.; Edith Margaret Ross-Johnson, Cambridge Univ.; Elizabeth Merriman Sanderson and Dorothy Mary Stewart, Lond. Sch. of Med. for Women; William Hedley Summerskill, Guy's Hosp.; Wenefride Thompson and Helen Caroline Tompson, Lond. Sch. of Med. for Women; Frederick H. Wickham Tozer, London Hosp.; and Edith Helen Trimmer, King's Coll. and St. George's Hosp.

* Distinguished in Physiology and in Pharmacology.

CENTRAL MIDWIVES BOARD FOR SCOTLAND.—At the meeting of the Central Midwives Board for Scotland held in the offices, 50, George-square, Edinburgh, Sir Halliday Croom in the chair, intimation was made of the appointment of Sir John Lorne MacLeod as representative of the Convention of Royal Burghs in place of the late Sir Robert Kirk Inches.—The following are the decisions in the cases of midwives heard before the Penal Board:—

No. 1240. For failing to send the proper form for medical assistance in a case of still-birth, &c. The midwife was cautioned strictly to observe the Rules of the Board, and the local supervising authority was instructed to report to the Board at the end of one month upon her conduct as a midwife and as to her fitness to take pulse and temperature.—No. 179. For failing to advise medical assistance in the case of a child suffering from serious skin eruptions and for other breaches of the Rules. The midwife was suspended from practice for one month, and the local supervising authority was instructed to report on her ability to take pulse and temperature before she resumed practice.—No. 1724. For failing to send for medical assistance in a case of ophthalmia neonatorum and for other breaches of the Rules. The secretary was instructed to remove the name from the Roll of Midwives and to cancel the certificate.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held on Dec. 10th, 30 cases were considered and £282 voted to 25 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 82, and daughter, aged 42, of M.R.C.S. Eng. who practised at Camborne and died in 1892. The daughter has recently had an operation and is now unable to earn. Mother's income £79 from investments and an annuity. Owing to the high price of food unable to manage. Rent £32. Voted £10.—Widow, aged 65, of M.R.C.S. Eng. who practised at Brighton and died in 1898. Was left unprovided for with one daughter, now aged 38, who earns about £20 per annum as daily governess and lives at home. Applicant receives two small pensions amounting to £24. Rent £12. Applicant is now very ill. Voted £10.—Daughter, aged 12½, of L.S.A. Lond. who practised in North London and died in 1914. Mother also dead, and now in charge of an aunt, who applies for help towards clothes and holiday expenses. The aunt is a school mistress with £75 per annum, but owing to increased cost of living finds she cannot continue to keep her niece as she has done in the past. Voted £10.—Widow, aged 61, of M.R.C.S. Eng. who was in H.M. Prison Service and died in 1917. Has two daughters, now aged 37 and 34, working as temporary clerks. Husband left no means, and only income of applicant beyond help from her daughters is a small gift from another charity. Relieved once, £12. Voted £6.—Widow, aged 48, of L.R.C.P. Edin. who practised in Fife and died in 1913. Was left with six children, ages 27 to 10. She earns £30 by clerical work and receives £70 from children. Son on whom applicant mainly depends has been in hospital for three months. Relieved twice, £30. Voted £10 in two instalments.—Daughter, aged 40, of M.R.C.S. Eng. who practised at Streatham and died in 1914. Applicant's income is £20, and she lives with her mother, who also receives help from the Fund, and both are invalids. Relieved four times, £20. Voted £5.—Widow, aged 76, of M.R.C.S. Eng. who practised at Rye and died in 1891. Applicant receives £50 in dividends and lives in own house. A married daughter whose husband is in an

asylum lives with her. Applicant suffers from cataract in both eyes, and is too old to work. Relieved three times, £36. Voted £12 in 12 instalments.—Widow, aged 60, of L.F.P.S. Glasg. who practised at Heaton-on-Tyne and died in 1899. Left with six children, four of whom are married. One daughter, aged 27, at home to look after applicant, who is ill, and son, aged 19, who earns 28s. a week. Relieved 13 times, £142. Voted £12 in 12 instalments.—Daughter, aged 59, of M.R.C.S. Eng. who practised at Liverpool and died in 1893. Applicant was left without means, and is a chronic invalid and quite unable to work. An uncle pays her rent but cannot help further. Relieved 10 times, £114. Voted £12 in 12 instalments.—Daughter, aged 52, of L.R.C.S. Glasg. who practised in India and London and died in 1873. Applicant was left with about £20 per annum, and, being delicate, unable to undertake any regular employment. Relatives help occasionally. Relieved five times, £42. Voted £12 in 12 instalments.—Widow, aged 61, of L.S.A. Lond. who practised at Bournemouth and died in 1913. Was left entirely without means. Receives a pension of £26 from another society and tries to supplement this by taking in lodgers, but has not been successful. Relieved four times, £48. Voted £12 in 12 instalments.—Widow, aged 51, of M.R.C.S. Eng. who practised at Westminster and died in 1911. Applicant was left entirely unprovided for and has endeavoured to earn a living by teaching music, but owing to the war she has not many pupils. Relieved £5 some years ago. Voted £10 in two instalments.

Subscriptions may be sent to the acting honorary treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W. 1.

THE death is announced, on Dec. 13th, at the age of 66, of Dr. George Ogilvie, late senior physician to the French Hospital and to the Hospital for Epilepsy and Paralysis, Maida Vale.

A NURSING HOME TRAGEDY.—A Hove jury on Dec. 12th having returned a verdict of "Death from misadventure," the coroner recorded that Mary Jane Gray died from a fracture of the skull, caused by falling downstairs when struggling to prevent a male patient of unsound mind and insufficiently clad escaping from the house at night. Mrs. Gray was the matron of a nursing home. On Nov. 30th a patient entered with nervous breakdown. He had been a sheep farmer in New Zealand and only married on Nov. 14th. His condition developed into insanity in a very short time, and on Dec. 5th, five days after his admission, he overpowered those in the house, and in the struggle on the stairs the patient and Mrs. Gray fell to the bottom, Mrs. Gray dying from the injuries received. The patient escaped from the house, but was secured and removed to the county asylum. The jury added a rider to their verdict expressing the view that the care of male patients suffering from nervous maladies was not fit work for women alone without assistance, and that it should be enacted that at least one male attendant should be on duty in every nursing home. The coroner agreed to lay the matter before the proper authorities. On behalf of the family the deepest sympathy was expressed to the relatives of the deceased lady.

Communications, Letters, &c., to the Editor have been received from—

A.—Messrs. Abdulla and Co., Lond.; Mr. J. H. Allan, Liverpool; Dr. H. G. Adamson, Lond.; Major A. Abrahams, R.A.M.C.; Mr. R. J. Albery, Lond.

B.—Prof. W. M. Bayliss, Lond.; Mr. H. A. Baylis, Haslar; Messrs. Brown Bros., Lond.

C.—Mr. D. Caird, Lond.; Children's Jewel Fund, Lond., Administrative Committee of; Circle of Scientific, Technical, and Trade Journalists, Lond.; Dr. E. R. T. Clarkson, Lond.

D.—Capt. S. C. Dyke, R.A.M.C.; Dr. R. Donaldson, Reading.

E.—Mr. H. Ellis, Lond.

F.—Mr. C. J. C. Faill.

G.—Mr. T. H. Gunewardene, Lond.; Mr. A. Gaston, Cloughmills; Dr. H. J. Gauvain, Alton; Gaumont Co., Lond.; Dr. E. W. Goodall, Lond.; Dr. A. D. Gardner, Oxford; Capt. M. Greenwood, R.A.M.C.

H.—Dr. G. R. Hall; Dr. J. A. B. Hicks; Sir Thomas Horder, Lond.; Capt. C. W. Hutt, R.A.M.C.; Mr. H. M. Hopkins, Lond.

I.—Dr. S. T. Irwin, Belfast.

J.—Capt. W. H. Johnston, R.A.M.C.; Dr. G. Jessel, Wigan.

K.—Mr. W. H. Kesteven, Kingston Hill; Sapper L. Kelly, R.E.; Dr. F. H. Kelly, Hurstpierpoint.

L.—Major J. R. Lee, R.A.M.C.; Lieut. S. G. Lenzner, M.C., U.S.A.; Mr. E. M. Little, Lond.; Mrs. B. H. Leigh, Lond.; Dr. G. C. Low, Lond.; Local Government Board, Lond.

M.—Capt. R. J. Matthews; Medical Supply Association, Lond.; Dr. N. Macleod, Shanghai; Medical Research Committee, Lond.; Metropolitan Hospital Sunday Fund, Lond., Sec. of.

N.—Mr. W. G. Nash, Bedford

O.—Rev. E. G. O'Donoghue, Lond.

P.—Capt. E. W. Pineo, R.A.M.C.; Capt. E. Prideaux, R.A.M.C.; Panel Committee for the County of London; Miss K. Pilkington, Lond.; Major M. G. Pearson, S.A.M.C.; Sir R. D. Powell, Bart., K.C.V.O.; Dr. D. Pennington, Lond.; Major J. Parkinson, R.A.M.C.; Dr. J. Phillips, Bradford.

R.—Capt. H. Robinson, R.A.M.C.; Royal Dental Hospital of London, Sec. of.

S.—Sir G. H. Savage, Lond.; Mr. A. Scott, Lond.; Capt. H. G. F. Spurrell, R.A.M.C.; Dr. E. I. Spriggs, Banff; Surgical Instrument Manufacturers Association, Lond., Hon. Sec. of.

U.—United States Government Committee on Public Information, Lond.

V.—Dr. C. W. Vining, Leeds; Dr. F. Villy, Keighley.

W.—Dr. E. H. Worth, Lond.; Dr. W. H. White, Lond.; Dr. H. Woods, Lond.; Dr. J. A. Wilson, Warrington; Dr. G. D. H. Wallace, Rochester.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2

THE LANCET, VOL. II., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET to be completed with the issue of Dec. 28th is in preparation. Owing to the continued shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a *post-card* (which is more convenient for filing purposes than a letter) to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

Appointments.

ALBAN, EDGAR, M.B., B.S. Lond., M.R.C.S. Eng., L.R.C.P. Lond., Barrister-at-Law (Lincoln's Inn), has been appointed Deputy Coroner in the South-Eastern District to Dr. H. R. Oswald, one of H.M. Coroners for the County of London.

MACCARTHY, D., M.B., Certifying Surgeon under the Factory and Workshop Acts for the Ballyfeard District of the county of Cork.

Vacancies.

For further information refer to the advertisement columns.

Alton, Hants, Lord Mayor Treloar Cripples' Hosp.—Asst. Res. M.O. £200.
Barnstaple, North Devon Infirmary.—H.S. £150.
Barrow-in-Furness, North Lonsdale Hospital.—Second H.S. £250.
Bedford County Hospital.—H.S. or Clin. Asst.
Bootle Hospital, near Liverpool.—Jun. H.S. £170.
Brighton, Royal Sussex County Hospital.—Asst. Path. £200.
Cardiff, King Edward VII.'s Hospital.—H.S. £200. Also Student Dresser. 52 gs.
Dudley, Guest Hospital.—Hon. Surg. Staff.
Evelina Hospital for Children, Southwark, S.E.—H.P. and H.S. £160.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—1st and 2nd H.S.'s. £175 and £150 respectively.
Hospital in Serbia.—S.
Oxford, Radcliffe Infirmary and County Hospital.—H.P. £200.
Plymouth, South Devon and East Cornwall Hospital.—M.O. £350.
Putney Hospital, Lower Common, S.W.—Res. M.O. £150.
Salisbury General Infirmary.—Asst. H.S. £150.
Sheffield City Education Committee.—Asst. Sch. M.O. £400.
Southampton Free Eye Hospital.—Asst. Oph. Surg. £100.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £150 to £180.

AN appointment is vacant for a Medical Referee under the Workmen's Compensation Act, 1906, for the Dartford and Gravesend County Courts. Applications should be addressed to the Private Secretary, Home Office, not later than Jan. 6th, 1919.

Births, Marriages, and Deaths.

BIRTHS

FOSTER.—On Dec. 11th, at St. Loyes, Exeter, Anita, wife of Major Raymond L. V. Foster, R.A.M.C., of a son.

HALL.—On Dec. 15th, Margaret, the wife of Major G. Hall, C.M.G., R.A.M.C. (T.), Ellison-place, Newcastle-on-Tyne, of a daughter.

KERR.—On Dec. 10th, at Clairmont-gardens, Glasgow, the wife of Professor Munro Kerr, M.D., of a daughter.

SETH-SMITH.—On Dec. 14th, at Tower House, Bildeston, Suffolk, the wife of D. N. Seth-Smith, M.R.C.S., L.R.C.P., of a daughter.

SHARMAN.—On Dec. 12th, at Avenue-mansions, Hampstead, the wife of Henry Sharman, M.D., of a daughter.

MARRIAGES

BEAUMONT—HOUSTON.—On Dec. 14th, at the Parish Church, Pinner, Captain Vincent Beaumont, R.A.M.C., to Margaret Elma (Peggie), only daughter of the late T. J. Houston, J.P., Co. Wexford, Ireland.

KELSALL—ELDERTON.—On Dec. 13th, at St. Leonard's Church, Streatham, Major (acting Lieutenant-Colonel) Robert Kelsall, D.S.O., I.M.S., to Margaret Florence, third daughter of the late W. A. Elderton and Mrs. Elderton, Mount Ephraim-road, Streatham.

SHEPHERD—SULLY.—On Dec. 12th, at St. Andrew's Church, Cardiff, Charles Woolley Shepherd, M.B., B.S., of St. Andrew's-crescent, Cardiff, to Enid Mary, elder daughter of George Ernest and Mary Sully, of Park-place, Cardiff.

DEATHS

COTTERILL.—On Dec. 2nd, at No. 50 Casualty Clearing Station, France, of pneumonia, Captain Denis Cotterill, F.R.C.S. Edin., R.A.M.C.

FORD.—On Dec. 13th, at Sea View, Isle of Wight, after a long illness, Arthur Vernon Ford, Major, R.A.M.C. (T.).

OGILVIE.—On Dec. 13th, at Welbeck-street, after a short illness, George Ogilvie, F.R.C.P., Chevalier de la Légion d'Honneur, aged 66.

WINTER.—On Dec. 3rd, in British Honduras, of pneumonia, William Cecil Pollard Winter, M.R.C.S., L.R.C.P., Colonial Medical Service.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

POST-GRADUATE COLLEGE, WEST LONDON HOSPITAL.—During next week clinics will be held each week-day (except on Christmas Day and Boxing Day) at 2 P.M., Friday and Saturday also at 10 A.M.

Notes, Short Comments, and Answers to Correspondents.

THE ORGANISATION WORK OF CHILD WELFARE.

AT the Royal Institute of Public Health on Dec. 11th, Sir John Kirk presiding, Dr. Eric Pritchard spoke on the Organisation and Administration of Child-Welfare Centres. Comparing the present organisation with that of four years ago, an astonishing progress had been made. At the onset of the war no immediate prospect existed of grants-in-aid for child-welfare work. Now these grants were a matter of past history. In the face of official organisation there was a danger of doing scant justice to the army of voluntary workers who had done the spade-work for the past 10 or 15 years. Voluntary workers were not getting all the credit they deserved. It was the National Society for the Prevention of Infant Mortality and other voluntary associations whose propaganda work had rendered possible the present advances in official organised work. Without the voluntary worker the whole child-welfare movement would tend to become officialised. The recent Maternity and Child-Welfare Act sanctioned the coöption of outside workers on the municipal committees up to one-third of their total number, the presence of two women being obligatory. In the past the valuable suggestions of coöpted workers had been too often thrown out time after time by the plenary council. While he would like to see the whole of the maternity and child-welfare work taken over by the public health authority he would leave to the committees very considerable freedom in the control of the work and would encourage the assistance of volunteers prepared to help in any part of the district. The details of organisation could hardly be straightened out until a Ministry of Health was formed. When this had been done one of the first essentials would be to obtain a survey of the physical condition of the inhabitants of the British Isles, each person receiving a health card to be filled in from birth till death. An attempt had already been made to pass on records from welfare centres to school authorities, but only on a small scale. Dr. Pritchard favoured the scheme propounded by Dr. Gerstenberger in 1913 of a central child-welfare institute in direct *rapport* with outlying prophylactic centres, and with various special departments to which children could be brought for inspection. Attached to the centre would be a milk depôt and one or more institutions to which children could be sent for treatment, the whole country being divided up into areas of suitable size for the purpose. Dental clinics had already taken a useful place and their permanent value would be greatly increased if the attending dentist was a teacher able and willing to instruct the health visitors and voluntary workers present. The value of observation wards for sick children is, in Dr. Pritchard's view, educational rather than curative. Only a relatively small number of the cases attending at welfare centres were not amenable to home treatment by mothers acting on the advice given at the centres. The wards should be in relation to some hospital, so that serious cases could be passed on for treatment. Nurses and probationers were apt to look upon the children in such wards from a wrong point of view, that of disease instead of health. In his experience no more than four babies should occupy the same room. One was the ideal number; beyond this number all the babies were liable to suffer from the infective flora introduced by the others. After touching on the keeping of records and the ideal qualifications of health visitors, Dr. Pritchard went on to speak of the equipment desirable for the medical officer who supervised the work. The Local Government Board did not recommend a rota of doctors, a method which resulted in confusing the poor women who attended the centres by the conflicting advice given to them. The appointment to a health centre of a children's specialist from a hospital was no more successful, for he was apt to take a pathological rather than a physiological point of view. Nor was the general practitioner always to be desired, unless he took a special interest in children. The best practice was, he thought, to appoint a recently qualified woman doctor who had served an apprenticeship in a children's hospital and in the medical inspection of school children.

UNAUTHORISED.

THE Home Secretary has given notice that he has directed that George Frederick Handel Bartlett, chemist and druggist, of 38, Battersea Park-road, 236, Battersea Park-road, and 143, High-street, Battersea, who on Oct. 17th last was convicted of offences under Defence of the Realm Regulation 40 B, shall cease to be an authorised person for the purposes of that Regulation, which regulates dealings in cocaine and opium. The effect of this order is that Bartlett may no longer purchase or be in possession of opium or cocaine, and any person supplying him with these drugs will be committing an offence against the Regulation.

HOSPITAL ECONOMIES.

Lord Knutsford has given an interesting account of fuel and light saving effected at the London Hospital. As an exercise of thoughtfulness and reorganisation in large institutions the economy campaign at the London is notable and well worthy of imitation.

"It should be distinctly understood," said Lord Knutsford, "that economy has been effected without any lowering of the standard of treatment. For instance, there has been, and there can be, no question of reducing the large amount of electric current which is essential for X ray treatment, Tyrnauer baths, and Finsen lamp treatment. But as the result of organised effort, in which the entire staff are coöperating loyally, we have cut down light and fuel consumption in many other directions. The electricity consumption has been reduced from 170,000 units to 132,000 units. This includes the lighting of out-patient departments, theatres, and wards."

The following are some of the directions in which economy has been exercised:—

All baths have been marked with "high-water marks," above which the water is not to run.

The hot-water central heating system has been improved and rendered more efficient. A new boiler has been installed in the laundry, obviating the loss which was entailed by leading steam through 300 yards of piping.

Unnecessary bedside lights have been removed. Many electric lights have been cut out, some wholly, and others replaced by lamps of low candle-power.

All cooking is done by gas.

Clinical photography has been discontinued to economise current.

Sterilisers are only used at certain hours of the day.

Separate meters have been installed in every department and are read weekly. By this means extravagance is immediately traceable, and should such occur a notification is sent to the head of the department requiring him to cut down consumption, and the meter is examined to see that the instruction is carried out.

An economy leaflet has been issued to each sister and nurse, and to each outgoing patient.

The dental school has been partially closed.

THE "ABDULLA" ALMANAC, 1919.

Messrs. Abdulla and Co., of 173, New Bond-street, London, W.1, have again brought out an attractive almanac containing reproductions of pictures by well-known artists, the larger proportion in colour. The latter are particularly well executed, and include examples of the work of Charles E. Brock and Lionel Edwards. 20,000 copies are offered for sale at 1*s.* 4*d.* post free, of which 1*s.* a copy goes to the funds of the British Red Cross Society.

THE TREATMENT OF SCURVY.

To the Editor of THE LANCET.

SIR,—James Cooke, in his Marrow of Surgery to which is added the Marrow of Physick, published in 1676, gives the following prescription for scurvy "which hath been oft proved excellent":—

"Take of the biggest leaves of scurvy-grass N. 12, raisins of the sun stoned N. 20 shavings of horse-radish roots 3iss. Put them in a quart bottle of beer or ale; after two days drink it for ordinary drink. You may make as many bottles as you please, drinking it for a long time."

Scurvy-grass, it may be mentioned, is a biennial herb (*Cochlearia officinalis*) of the mustard family, highly prized by Arctic explorers for food and as a remedy for scurvy. In the light of recent observations it would be interesting to apportion the relative efficacy of the various constituents of this drink against the disease. At any rate, it is to be noted that the vehicle is beer or ale, presumably home-brewed.

I am, Sir, yours faithfully,

Lowestoft, Dec. 15th, 1918. H. MUIR EVANS, M.D.

PLAGUE DISPENSARIES.

TRAVELLING dispensaries are a feature of Indian administration, and a report on plague administration shows that by February of this year these mobile dispensaries were increased to 110 to meet the severe plague epidemic. The additional dispensaries (23) were to close at the end of May, but were required for relapsing fever work. Compounders were specially trained by civil surgeons in inoculation work and in the treatment of plague and relapsing fever, and were put in charge of the dispensaries when a sub-assistant surgeon was not available. These trained medical assistants are working quite satisfactorily. It is due to the formation of these additional travelling dispensaries that it has been possible to cope, to some considerable extent at least, with the outbreak of relapsing fever in the western districts and with a severe epidemic of cholera in the eastern districts. Travelling dispensaries are coming to be recognised as an established institution in some provinces, and are enjoying ever increasing popularity. There has been an increase of 41,493 in the number of patients treated by them during the year, and 929,279 patients were treated (new and old cases) against 887,786 last year. 18,290 operations were performed by the travelling dispensaries, 694 of which were major operations, including 302 cataract operations, which were mostly done by civil surgeons. The travelling dispensaries do useful educational work by the distribution of pamphlets relating to plague, malaria, relapsing fever, cholera, small-pox, and tuberculosis.

Some Observations ON THE BACTERIOLOGY AND PATHOLOGY OF "INFLUENZA."

Delivered at the Royal Society of Medicine on Nov. 13th, 1918,

BY HAROLD E. WHITTINGHAM, M.B., CH.B. GLASG.,

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AND

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THE following investigations were undertaken to ascertain whether the present October "influenzal" epidemic and the July "Spanish plague" were due to one and the same micro-organism or group of organisms.

That the causal organisms were not the same in both cases was suggested by the distinct difference in the signs and symptoms, the physical signs of pulmonary involvement being marked in the present disease, but only transient or absent in the July epidemic. A dry hacking cough is an early symptom; in fact, often the only one of which the patient complains. Moreover, in July the febrile period frequently lasted three, and more rarely six, days; in the present disease the febrile period is longer—seven to fourteen days—and the temperature higher throughout. In short, pharyngitis and laryngitis, with marked nervous prostration, distinguished the earlier epidemic; bronchitis and broncho-pneumonia, with septicæmia, the plague now with us.

The varying reports that have been published concerning influenza in the last four months must cause the general public to remark, "Doctors always differ!" but the professional mind wonders if all observers have been studying one and the same disease. There is a distinct tendency when an epidemic disease is raging to assign all maladies to the one common origin. Thus many pyrexias of sudden onset, such as acute tonsillitis, lobar pneumonia, cerebro-spinal fever, are labelled "influenza." In the following notes we wish to emphasise the fact that we are dealing with a "compound" disease.

Over a hundred cases were examined as regards the micro-organisms present in the posterior nasal swabs and sputa. The urine of these cases was also examined on several occasions. As blood cultures were performed on only the first 50 of the cases admitted to the two hospitals in which we worked, we have based all our figures on these 50 cases. Taking each case as admitted, whether mild or severe, gives as fair a picture as possible of the pathological findings of the disease.

Fortunately the cases dealt with in this paper are directly comparable to those reported on in July.[1] In both epidemics the patients were Royal Air Force officers and cadets from the same district and living under similar conditions.

BLOOD CULTURES.

Blood cultures were performed on 50 cases.

In each case 10 c.cm. of blood was added to 100 c.cm. of citrated broth and incubated at 37° C. for eight days. Several loopfuls of each broth culture were sown daily on blood agar and slides made in case micro-organisms were present which would not subculture.

Positive results were obtained in 7 of the cases (i.e., 14 per cent.); of these, 5 proved to be streptococcus, 1 pneumococcus, and 1 resembled the *Diplococcus mucosus* of Stephan.[2]

The streptococci varied as regards the first day on which sub-cultures could be obtained from the broth cultures. Four days was the longest period; in one case the growth of streptococci in the original broth culture was very abundant in 24 hours. The pneumococcus was subcultured out after two days in broth, the *Diplococcus mucosus* after three days.

Three of the streptococci isolated hæmolysed distinctly and two slightly. Only one of these grew in long chains in broth, the rest being short and arranged more or less in diplococcal formations. Growth on agar at 20° C. was slow and poor, at 37° C. moderate. All grew well on blood agar, giving typical colonies, in two the viridans type. Inulin was not fermented. Capsule formation absent. Acid and clot in milk on the second to third day. Only two of these streptococci were subjected to animal experimentation. Both organisms proved to be non-pathogenic to young rabbits when inoculated subcutaneously.

The pneumococcus was quite characteristic—capsule formation was present and inulin fermented. A young rabbit inoculated subcutaneously in the flank died in 30 hours. Pneumococci were found abundant in the heart's blood; there was marked congestion of trachea and lungs, petechial hæmorrhages of pleura and peritoneum, especially the latter, and fluid pus in the peritoneal sac.

The *diplococcus mucosus* when first isolated appeared as a Gram-negative diplococcus (each coccus measuring about 0·7 to 1 μ in diameter), very similar to the meningococcal group, except that there was a distinct capsule. When incubated at 37° C. it grew as small, rounded, semi-transparent, pin-head colonies on blood agar and even on agar in 24 hours; at 20° C. it grew visibly in 40 hours. The colonies became somewhat granular after 48 hours.

Smears made from the second subculture onwards showed the organism to be very pleomorphic; in places it appeared as rounded, in others as oval diplococci, while at times small bacillary forms were seen. The staining with Gram's was variable in the same smear, some of the cocci being distinctly positive and others negative. The bacillary forms were Gram negative.

That these were not influenza bacilli is evident from their growth on ordinary agar, and also from the fact that they stained readily with 1 in 10 fuchsin in ten to twenty seconds. A contamination was suspected, but these small bacillary and variable Gram staining forms were found when individual plate colonies were examined.

In broth there was distinct general turbidity in 24 hours; this cleared somewhat on the third day, and a fine powdery deposit covered the bottom of the tube. Acid was produced in glucose, saccharose, maltose, lævulose, and galactose, but not in lactose, mannite, dulcite, or inulin. Litmus milk on the second day showed slight acid reaction and slight basal clot formation, which became more marked on the following day. There was only slight hæmolysis of blood media.

Experimental inoculation, intravenously and subcutaneously, into young rabbits proved the organism to be non-pathogenic to these animals. It should be noted that the patient died from whom this organism was isolated. Unfortunately a post-mortem examination could not be obtained.

Note.—At one period of these investigations blood from some of the cases which gave a negative result on culture was used to make blood agar. The growth of some of our stock cultures was poor on this media, so two series of blood agar tubes were put up, one series being made from the blood of apparently normal individuals, the other from the blood of influenza patients. *B. influenzæ*, pneumococcus, streptococcus, and meningococcus isolated from cases under investigation, were implanted into tubes of the first and second series respectively. The result, read at the end of 48 hours, was a good growth of all the organisms in the normal blood series, while in the influenza blood series practically no growth of the *B. influenzæ* occurred and only comparatively feeble growths of the pneumococcus, streptococcus, and meningococcus. This result, at least as regards the *B. influenzæ*, was to be expected. The experiment is mentioned to emphasise the fallacy of using blood from "influenza" patients to make up media for the isolation of the micro-organisms in such an epidemic.

Of the 50 cases death occurred in 7, 5 of which gave positive blood cultures during life (streptococcus in 4, *D. mucosus* in 1)—i.e., 71 per cent. of the cases in which micro-organisms were isolated from the blood died. Amongst the patients giving a negative blood culture 2 died—i.e., 4·6 per cent. Of these, one was a case of cerebro-spinal meningitis; the other of purulent bronchitis with pleurisy and peritonitis. From the latter case streptococcus was isolated from the heart's blood at the post-mortem; so probably if blood cultures had been made on this patient late in the disease a positive result would have been obtained.

The day of disease on which the various blood cultures were made and the results of culture are shown in Table I. A glance at these figures would suggest that if all the blood cultures had been taken on the sixth or seventh day of disease many more positive results would have been obtained. As it is, there are not enough figures to go by, but, in considering the table, one must bear in mind that the bloods cultured on the sixth and seventh days were from those patients who were progressing badly and already in a markedly toxic condition.

In the July epidemic[1] blood cultures were repeatedly negative, except on two occasions when Gram-negative diplococci were found, which would not subculture.

TABLE I.—*Results of Blood Cultures in 50 Cases.*

Day of disease.	1	2	3	4	5	6	7	Total.
Cases cultured ...	10	14	16	2	5	1	2	50
,, positive ...	—	1	2	—	1	1	2	7
Per cent. ,, ...	0	7	12·5	0	20	100	100	14

We have repeatedly observed, both in this and the previous epidemic, that after the withdrawal of 10–20 c.cm. of blood early in the disease, for culturing purposes, there is a distinct fall in the temperature. We mention this as a point worthy of note for clinicians.

THROAT SWABS AND SPUTUM.

Posterior nasal swabs were examined from 50 cases.

In each case direct smears and plate cultures were made. In those cases where there was expectoration the sputum was examined—23 out

of the 50 cases. The sputum to be cultured was first well washed in sterile salt solution. The plates were examined at the end of 24 and 48 hours' incubation at 37° C.

TABLE II.—*Bacteriology of Sputa and Throat Swabs.*

Direct smears.	Cases.	*Cultures.*	Cases.
Diplococci—		*M. catarrhalis*	36
Gram —	49	Pneumococcus	33
,, + ...	50	Streptococcus	40
Cocci, Gram + ...	21	Staphylococcus	27
Bacilli—		*B. influenzæ*	23
Pfeiffer-like	36	*B. septus*	10
Coliform	34	Pneumobacillus	8

TABLE III.—*Percentages of Cases in which Organisms were Present.*

—	(1)	(2)	(3)	—	(1)	(2)	(3)
Pneumococcus	65%	58%	66%	*M. catarrhalis*	65%	70%	72%
Streptococcus	82 ,,	76 ,,	80 ,,	Meningococcus	—	8 ,,	8 ,,
B. influenzæ	54 ,,	38 ,,	46 ,,	Staphylococcus	44 ,,	52 ,,	54 ,,

(1) Sputum (23 cases). (2) Throat swabs (50 cases). (3) Combined sputum and throat swabs.
Only the chief micro-organisms are shown.

In order to gain some idea of the micro-organisms present in all cases the throat swabs and sputum results had to be combined, as sputum could only be obtained from some of the patients. This combination varied only slightly from the two separate returns. (Table III.)

The examination showed a very mixed and fairly constant flora in all cases. The chief micro-organisms present were streptococcus in 80, pneumococcus in 66, *M. catarrhalis* in 72, staphylococcus in 54, *B. influenzæ* in 46, *B. septus* in 20, pneumobacillus in 16, and meningococcus in 8 per cent. of the cases. The percentages were taken from the cultures and not from the direct smears. (Table II.)

These micro-organisms merit a more detailed description. We were unable in a routine laboratory to put the various organisms through a full series of tests, but had to confine ourselves to the standards stated below.

Streptococcus.—The streptococci present were for the most part diplo-streptococci in short or long chains. They were usually Gram-positive, although at times some units of the chains were Gram-negative. Growth on agar was slow at room temperature. Acid was produced in glucose, lactose, saccharose, and maltose. Mannite, dulcite, and inulin were unchanged. Litmus milk was rendered slightly acid with the formation of clot in most cases. The hæmolytic action of these organisms varied. Briefly, the *longus* type hæmolysed strongly, whereas the *brevis* type produced little or no hæmolysis, and the colonies had a greenish colour. Some of the *brevis* type caused distinct hæmolysis. We therefore divided the *streptococci* into *hæmolyticus* and *non-hæmolyticus*, depending on the degree of hæmolysis rather than on the actual length of the coccal chains. *Streptococcus hæmolyticus* was present in 46 per cent., *non-hæmolyticus* in 34 per cent. of the cases; from the remaining 20 per cent. streptococci could not be obtained. Streptococci were the predominant organisms in 30 per cent. of the cases.

Pneumococcus.—Difficulty was experienced in classifying certain of the Gram-positive diplococci found. Some were distinctly lanceolate in direct smears, while others were rounded. In cultures the varieties of form and chain formation rendered the task more difficult. As in the case of the streptococci, the Gram staining was a little variable at times. In some instances inulin was fermented; in others acid production was absent in this sugar. Hæmolysis was even produced by some of these pneumococci. The presence of a capsule was the deciding element in these cases. Probably some of the so-called pneumococci were really streptococci or the *Diplococcus epidemicus* of Bernhardt,[3] but in the absence of animal inoculation in all cases the returns had to be made as stated above. Pneumococci predominated in 28 per cent. of the cases.

Micrococcus catarrhalis.—Under this head are grouped all the Gram-negative diplococci, most of which grew on agar at 20° C., but did not produce any acid formation in glucose, lactose, saccharose, mannite, maltose, or inulin. In 34 per cent. of the cases *M. catarrhalis* was the predominant germ. These organisms were very similar to those isolated so frequently in the previous epidemic.[1]

B. influenzæ.—Minute bacilli or cocco-bacilli which failed to grow on ordinary agar at 37° C. and would not ferment either glucose, lactose, saccharose, mannite, maltose, or dulcite. These Pfeiffer-like bacilli were found in many of the cases, usually in small numbers, but in one case it was the predominant micro-organism.

Staphylococcus.—This was the predominant organism in 8 per cent. of the cases. Both varieties, *aureus* and *albus*, were present, most frequently the former. (See Table II.)

Meningococcus.—From the posterior nares of four cases meningococci were isolated. Two of these cases developed typical cerebro-spinal fever, two failed to show meningeal signs and were apparently carriers.

POST-MORTEM EXAMINATIONS.

Of the fifty cases dealt with in this paper there were 7 deaths, giving a case mortality of 14 per cent. The average age of the patients treated was 25, that of those who died 23, the youngest and oldest of this series being 19 and 29 years of age respectively. The day of disease on which death took place varied from the fifth to the fourteenth

Post-mortem examinations were performed on only five cases. Broadly speaking, the pathological findings were more marked in those who died later in the course of the disease. Beyond this we cannot generalise from so small a number of cases. A summary of the main points is given, as it may be of value for statistical purposes.

Synopsis of Post-Mortem Findings.

Case 12.—Trachea: Acute congestion. Small white fibrinous patches. Bronchi: Acute congestion. Submucosal hæmorrhages. Lungs: Both congested and œdematous. Pleuræ: Blood-stained exudate (left, 30 c.cm., right, 50 c.cm.). Adhesions at base, recent in left. Petechial hæmorrhages. Pericardium: Normal. Heart: Slight dilatation right heart, pallor cardiac muscle. Sub-endocardial injection. Aorta: Marked sub-intimal injection. Bronchial lymph glands: Normal. Peritoneum: Few petechial hæmorrhages. Stomach and intestines: Submucosal hæmorrhages. Liver: Slightly fatty. Spleen: Slightly enlarged, congested, pulpy. Kidneys: Congested. Brain and meninges: Congested. Cerebro-spinal fluid: Normal.

B. influenzæ isolated from bronchi and lungs, pneumococcus from lung; streptococcus from lung and bronchi, spleen, pleuritic fluid.

Case 39.—Trachea: Acute congestion; small white fibrinous patches. Bronchi: Acute congestion. Lungs: Congested and œdematous. Pleuræ: Recent adhesions left apex and base. Slight petechial hæmorrhages (both). Pericardium: Normal. Heart: Dilatation right heart. Muscle pale. Aorta: Normal. Bronchial lymph glands: Normal. Peritoneum: Petechial hæmorrhages distinct. Stomach and intestines: Normal. Liver: Slightly fatty. Spleen: Slightly enlarged, congested, pulpy. Kidneys: Congested. Brain and meninges: Normal. C.S. fluid: Normal.

Pneumococcus isolated from lungs and bronchi; streptococcus from lungs and bronchi; *Staphylococcus aureus* from lungs and bronchi; pneumobacillus from lung.

Case 19.—Trachea and bronchi: Acute congestion. Lungs: Left—Lobes adherent. Lung collapsed. Purulent bronchitis lower lobe. Right—Basal congestion. Pleuræ: Left—500 c.cm. turbid fluid (exudate). Fibrinous exudate over lower part lung and diaphragm. Right—A few petechial hæmorrhages. Pericardium: Normal. Heart: Slight dilatation right heart. Pallor of cardiac muscle. Sub-endocardial injection. Aorta: Normal. Bronchial lymph glands: Enlarged and congested. Peritoneum: Fibro-purulent peritonitis. Petechial hæmorrhage. Stomach and intestines: Fibrinous adhesions. Liver: Slightly fatty. Spleen: Slightly enlarged, congested, pulpy. Kidneys: Toxic nephritis. Brain and meninges: Normal. C.S. fluid: Normal.

Streptococcus isolated from lungs, heart's blood, spleen, peritoneal fluid, pleuritic fluid.

Case 5.—Trachea: Acute congestion. Small, white, fibrinous patches. Bronchi: Acute congestion. Coated with fibrinous lymph. Filled with pus. Lungs: Left—Lobes adherent. Lung collapsed. Purulent broncho-pneumonia. Right—Lobes slightly adherent. Marked congestion. Pleuræ: Empyema (left). Petechial hæmorrhages (both). Pericardium: Sero-fibrinous pericarditis. Petechial hæmorrhages. Heart: Dilatation right heart. Pallor of cardiac muscle. Sub-endocardial injection marked. Aorta: Marked sub-intimal injection. Bronchial lymph glands: Enlarged and congested. Peritoneum: Petechial hæmorrhages, especially over liver and diaphragm. Stomach and intestines: Submucosal hæmorrhages. Liver: Slightly fatty. Spleen: Slightly enlarged, congested, pulpy. Kidneys: Toxic nephritis. Brain and meninges: Congested. C.S. fluid: Normal.

Pneumococcus isolated from lungs, bronchi, pericardial sac, pleuritic fluid; streptococcus from lung, bronchi, heart's blood, pleuritic fluid; *Staphylococcus aureus* from lungs and bronchi, pleuritic fluid; pneumobacillus from lung.

Case 30.—Trachea: Acute congestion. Small white fibrinous patches. Bronchi: Acute congestion. Fibrinous patches. Submucosal hæmorrhages. Lungs: Lobar pneumonia of left lower lobe, and of right lower and mid lobes. Pleuræ: Blood-stained fluid 400 c.cm. left, 200 c.cm. right. Recent adhesions left base. Adhesions posteriorly right pleura. Petechial hæmorrhages (both). Pericardium: Normal. Heart: Dilatation right heart. Pallor cardiac muscle, slight sub-endocardial injection. Aorta: Marked sub-intimal injection. Bronchial lymph glands: Enlarged and congested. Peritoneum: Petechial hæmorrhages. Stomach and intestines: Normal. Liver: Slightly fatty. Spleen: Normal. Kidneys: Cloudy swelling and fatty changes. Brain and meninges: Normal. C. S fluid: Normal.

Pneumococcus isolated from lungs, pleuritic fluid; streptococcus from lungs and bronchi, pleuritic fluid.

Summary of Post-Mortem Findings.

Pharynx and larynx.—Showed only slight congestion.

Trachea.—In the five cases there was marked acute congestion of the mucosa; thin, whitish, fibrinous patches here and there. These changes were more marked in the lower part. In two of the cases greenish-yellow pus filled the lumen of the tube.

Thorax.—Bronchi were markedly congested in all cases, the mucosa being very bright red in colour. Pus filled them in two cases as mentioned under trachea.

Lungs.—In the two cases which died on the fifth day there were only marked congestion and œdema of both lungs. One case presented the picture of purulent bronchitis; one of purulent broncho-pneumonia. In both cases there was collapse of the left lung. In the remaining case there was double lobar pneumonia (early grey hepatisation).

Pleuræ.—In all cases there were numerous small petechial hæmorrhages, especially under the visceral layer at the bases of the lungs. A fibrinous exudate loosely bound the bases of the lungs of one case to the parietal wall, while in two other cases both pleural sacs contained about a pint of blood-stained inflammatory exudate. In two further cases unilateral empyema was present—in both instances the left pleural sac was involved. Several pints of sero-pus almost filled the sac in one of these cases.

Pericardium.—Sero-fibrinous pericarditis was present in one of the cases with empyema. Petechial hæmorrhages studded the epicardium in this case. Fibrinous patches covered the surface of the right ventricle, especially towards its base. In the other four cases the pericardium was normal.

Heart.—In all cases there was more or less dilatation of the right heart, ante-mortem clot in right auricle and ventricle, and pallor of the cardiac muscle. In all except one case there was marked injection of the endocardium, especially in the valvular regions extending into the pulmonary arteries and aortic arch (aortitis).

Bronchial lymph glands were distinctly enlarged, soft, and congested in three of the cases.

Abdomen.—*Peritoneum.*—Fibro-purulent peritonitis was found in one case and petechial hæmorrhages in all, best marked over the liver, especially the diaphragmatic surface.

Liver.—Early fatty changes throughout.

Spleen.—Somewhat enlarged, congested, soft and pulpy, except in one case where there was no change.

Kidneys.—In one, slight fatty changes; two showed marked congestion, and two distinct toxic nephritis.

Stomach and intestines.—Submucosal hæmorrhages in two cases.

Brain.—Distinct congestion of meninges and grey matter of the cortex in two cases. Ventricular fluid normal in all.

The bacteriological examination of materials taken at the post-mortem showed: *B. influenzæ* in the bronchial discharges and lungs in one case only. Pneumococci were present in the bronchial discharges, lung smears, and pleuritic fluid of these cases; in every instance accompanied by streptococci, and in two cases by *Staphylococcus aureus*. On one occasion pneumococci were isolated from the pericardial sac.

Streptococci were present in the bronchi and lungs of all five cases, in the pleuritic fluid of four, heart's blood and spleen of three, and peritoneal fluid of one. The cocci conformed to the *hæmolyticus* type in all except one case. Pneumobacilli were isolated from the lungs of two cases. *Staphylococcus aureus* in the bronchi and lungs of two cases.

THE URINE.

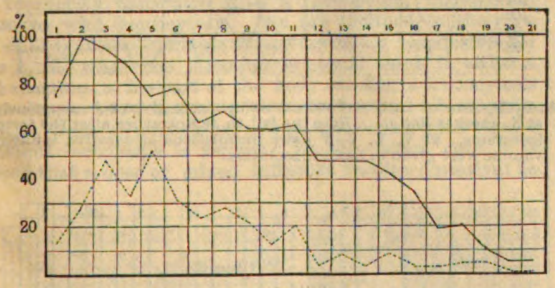
The urines from 50 cases were subjected to a thorough routine examination. The outstanding features were the presence of albumin and renal casts in many, acetone and excess of urates in some, especially at the height of fever in the pneumonic cases. The acetone disappeared with the fever.

As in the July epidemic,[1] albumin was present in a high percentage of cases—on the second day of disease 100 per cent. Casts and renal epithelium undergoing granular degeneration were present in 50 per cent. on the third to fifth day. Granular casts and renal cells were the commonest. Hyaline casts were frequently present, and in some of the more severe cases epithelial and even blood casts were found.

On the whole, the kidney changes were greater in the present outbreak (see Table IV. and Graph); the Esbach

TABLE IV.—*Percentage of Cases of "Influenza" with Albumin and Casts in the Urine.*

Day of disease.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
No. of cases examined	8	18	27	32	32	40	37	32	26	23	24	23	23	23	23	20	21	19	20	17	17
Percentage with albumin	75	100	96	87	75	77	65	69	62	61	62	48	48	48	43	35	19	21	10	6	6
Percentage with casts...	12	27	48	34	53	32	24	28	23	13	21	4	8	4	8	4	5	5	5	0	0



Graph showing percentage of cases of "influenza" with albumin (continuous line) and casts (dotted line) in the urine on successive days of the disease.

reading on the third to fourth day was often 2 to 3 parts per 1000. These higher readings were seen for the most part only in cases showing definite chest signs. Moreover, the albumin continued to be present over a longer period, in some instances not clearing away until the twenty-first day of disease. In many cases the albumin gradually diminished in amount from the second day of disease, disappearing on the seventh, eighth, and ninth days, only to return when the patient was given an increase in diet or allowed out of bed.

In those cases confined to bed for a fortnight a slight "dietetic" rise was apparent about the ninth day; this soon disappeared, reappearing quickly when the patient was allowed up on the fourteenth day. Certainly the amount was small, but its significance is obvious in that we have seen patients return to duty only to relapse, with distinct albuminuria and œdema of the eyelids. This point we wish to emphasise on account of men who have mild attacks of influenza and are discharged from hospital at the end of a week or so. They return to duty, often up the line, where they run the risk of developing nephritis. Several such cases have come to our notice. It is of the utmost importance that all influenza cases should be free from exposure to the elements and hard work for at least three weeks after the acute symptoms subside, otherwise in the long run the health and efficiency of the fighting forces is diminished.

THE LEUCOCYTE COUNT.

Daily total and differential leucocyte counts were done on 12 cases over a period varying from 5 to 21 days. Individual counts were made on 20 cases. The daily counts were always taken at the same hour of day (all were collected between 10 and 11.30 A.M.), with the same instruments, and by the same observer in each case. The total white counts were mounted three times and the leucocytes on the 256 squares of a Thoma-Zeiss hæmocytometer slide counted with each mounting. This routine eliminated as far as possible errors of technique.

A critical survey of the results obtained show three distinct types of leucocytic curves in the present "influenza" epidemic, viz.:—(1) Influenza uncomplicated; (2) pneumonic form of "influenza"; (3) lethargic form of "influenza."

1. *The influenza type* is depicted in Charts 1 and 1A.

The salient features are a total leucocyte count a little below normal in the early days of the disease, and a leucocytosis of moderate degree (10,000 to 15,000 per c.mm.) sets in from the fifth to seventh day, this being most marked when the patient gets out of bed and goes about (20,000 per c.mm.). The absolute number of lymphocytes and neutrophil polymorphs (neutrophils) are slightly below the normal on the first two days of the illness; they soon recover their normal proportions, the lymphocytes recovering first. There is from now, as long as the fever lasts, a slight relative and absolute lymphocytosis, followed by a neutrophilia when convalescence sets in. The eosinophils and basophils are much decreased or absent during the pyrexia, but soon reappear when the fever subsides. (Table V.)

2. *The pneumonic type* shows a striking contrast to the above.

Distinct leucocytosis is present from the onset, and the total white count never falls below normal, unless death occurs, when either a leucocytosis or leucopenia may supervene. The leucocytosis varies from 15,000 to 30,000 per c.mm. (See Chart 2 and Table VI.) Often the highest counts are found after the temperature has fallen to and remained normal. This leucocytosis gradually lessens during convalescence unless complications arise.

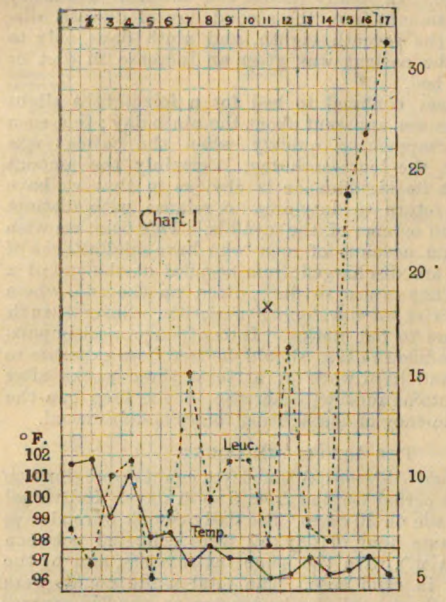
There is a relative and absolute increase in the neutrophils in the first few days of the fever, followed the next few days by a fall to normal of the number of neutrophils per c.mm., while the lymphocytes are subnormal. After the fifth day relative and absolute neutrophilia again becomes marked, and although the total number of lymphocytes increases it only reaches the normal line. Eosinophils and basophils disappear during the fever and reappear when the temperature returns to normal. If complications ensue the eosinophils disappear again. (Table VI.)

3. *The lethargic form* is quite distinct from either type 1 or 2. An absolute decrease in leucocytes (2000 to 3000 per c.mm.) is present from the first. This leucopenia lasts 7 to 12 days, at times remaining at a more or less constant level, at others slowly rising until convalescence sets in. The onset of convalescence is marked by a distinct increase in the total number of white blood corpuscles (10,000 to 15,000 per c.mm.) (Chart 3.) In those cases where death takes place the leucopenia becomes more and more pronounced as the end draws near. (Chart 4.)

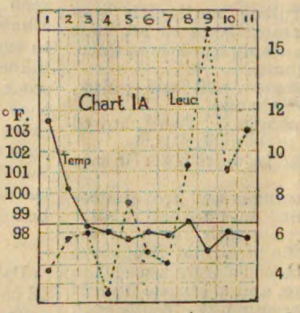
All the normal varieties of white corpuscles show an absolute decrease in their numbers during this leucopenia. The neutrophils, eosinophils, and basophils are most affected, the lymphocytes less so. With convalescence relative and absolute neutrophilia gradually establishes itself. (Table VII.)

EXPLANATION OF CHARTS.

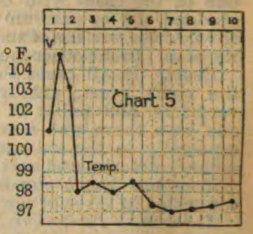
In all the charts the continuous line gives the temperature (key on left-hand margin); the interrupted line the leucocyte count in thousands per c.mm. (key on right-hand margin). The numbers at the head of the chart refer to the day of disease.



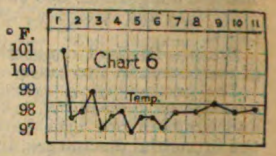
Leucocyte Count, Type I. Note the relatively low count during the febrile period, followed on the seventh day and onwards by a distinct leucocytosis. At × the patient was up for the first time.



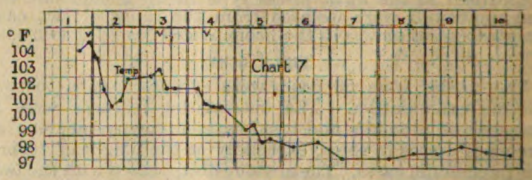
Note the leucopenia during febrile period, followed by a leucocytosis on the eighth day. This case was from the July epidemic.



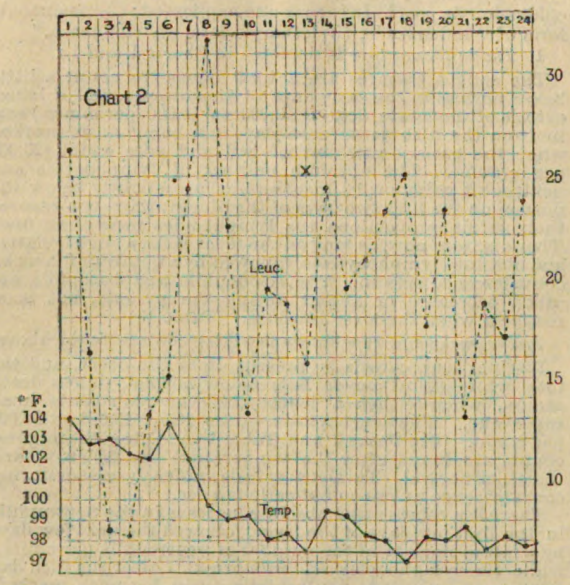
At V 0·5 c.cm. of prophylactic vaccine was given. Note the high initial temperature and the rapid return to normal.



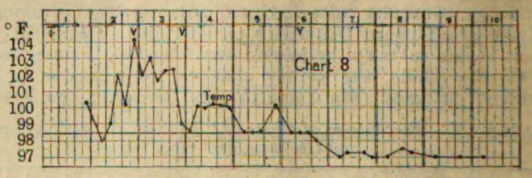
This case received 0·5 c.cm. of the prophylactic vaccine five days previous to the onset of influenza. Note the short course.



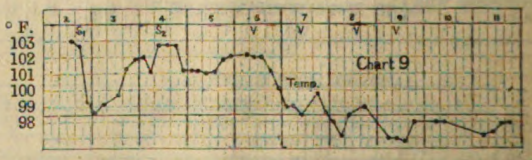
This case was admitted with definite pulmonary symptoms. Vaccine treatment (V, V, V, dose 1 c.cm.); short course; uninterrupted recovery.



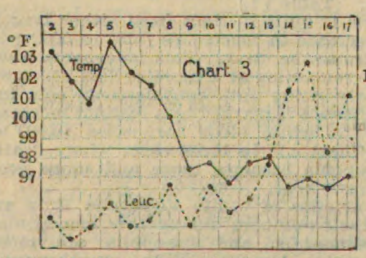
Leucocyte Count, Type II. Note the distinct leucocytosis throughout. At × onset of empyema.



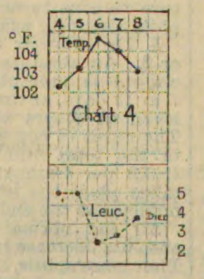
At V, the second day of disease, when the temperature reached 104·2° F., the first inoculation of 1 c.cm. curative vaccine was given. The dose was repeated on the third and sixth days. General improvement set in after vaccine treatment was started.



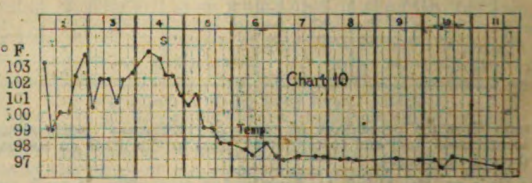
At S_1 20 c.cm. of antistreptococcal serum were given subcutaneously; at S_2 another 10 c.cm. Note the fall in temperature after the serum injections. At V, V, V, V daily inoculations of curative influenza vaccine were given to hasten resolution.



Leucocyte Count, Type III. Recovery. Note the leucopenia lasting 13 days, followed by a slight leucocytosis.



Leucocyte Count, Type III. Continued leucopenia up to the time of death.



At S, the fourth day of disease, 20 c.cm. of antistreptococcal serum were given subcutaneously.

Charts 9 and 10 may be compared with Chart 11, shown on the opposite page. This chart illustrates the failure of serum given after the fifth day.

TABULAR STATEMENT OF THE LEUCOCYTE COUNTS.

TABLE V. (*Case 23*).

Blood taken 11.30 A.M. daily.

Day of disease.	Temperature °F.	In 1000's.			Differential count per cent.								%	
		Total white cells.	Small lymphocytes.	Neutrophils.	Small lymphocytes.	Large lymphocytes.	Hyalines.	Transitionals.	Neutrophils.	Eosinophils.	Basophils.	Leucoblasts.	Non-granular.	Granular.
1	102·6	7·5	1·2	4·8	16	5	1	11	65	1	—	—	22	77
2	102·8	5·6	1·0	3·5	18	6	3½	8½	64	—	¼	—	27	72
3	100	10·0	4·0	4·4	40	5½	1	8½	44	—	—	—	47	53
4	100·2	10·6	3·0	5·6	28	8¾	1½	8½	53	—	¼	—	38	61
5	99	5·0	2·2	1·6	44	8	1	12	32	1	2	—	53	47
6	99·2	8·1	1·8	5·1	22	7	—	6½	63	½	½	—	29	71
7	97·6	15·0	4·4	8·2	29	4¾	—	8¾	55	1¾	¼	—	34	65
8	98·5	8·7	2·8	4·6	32	5	—	7¾	53	¾	½	—	37	62
9	98	10·6	3·3	5·4	32	8	1¼	5¼	51	2¾	¼	—	41	59
10	98	10·6	3·3	6·2	31	3½	1	5½	58	½	—	—	35	64
11*	97	6·5	1·7	3·5	27	6	3	5¼	54	4¼	¾	¼	35	64
12	97·2	16·2	5·9	7·6	36	3½	2	8	47	2½	1	—	41	58
13	98	7·5	2·5	4·0	34	3	1	5	54	1½	1½	—	38	62
14†	97·2	6·8	2·9	3·1	42	3	2	4	45	2½	1	—	47	52
15	97·4	23·7	6·3	12·8	26	4½	1¼	12	54	1½	½	—	32	67
16	98	26·8	6·2	14·6	23	5½	1½	11	54	3	1½	—	30	70
17	97·2	31·2	4·8	17·2	15	7¼	1½	18	55	2	¼	—	24	75

* Up for first time. † Outdoors first time.

TABLE VI. (*Case 11*).

Blood taken at 11 A.M. daily.

Day of disease.	Temperature °F.	In 1000's.			Differential count per cent.								%	
		Total white cells.	Small lymphocytes.	Neutrophils.	Small lymphocytes.	Large lymphocytes.	Hyalines.	Transitionals.	Neutrophils.	Eosinophils.	Basophils.	Leucoblasts.	Non-granular.	Granular.
1	105	26·2	1·3	22·3	5	2	1	7½	85	—	—	—	8	92
2	103·8	16 2	1·4	14·0	9	1½	1½	2	86	—	—	—	12	88
3	104	7·5	·5	6·5	7½	2½	—	2½	87	—	—	—	10	90
4	103·4	7·2	·5	6·0	7½	2	¼	6¼	84	—	—	—	9¾	90
5	103	13·1	·8	11·9	6½	1	—	2	90	—	—	—	7½	92
6	104·6	15·0	·8	13·6	5¼	2	—	2¼	90	—	—	—	7¼	92
7	103	24·4	1·1	22·0	4¾	2¼	¼	3½	89	—	—	—	7¼	92
8	100·6	32·0	3·6	26·1	11	2	—	4¼	82	½	—	—	13	86
9	100	22·5	1·5	19·2	7	3	—	4¼	86	—	—	—	10	90
10	100·2	13·1	1·0	11·5	8	1	¼	2¾	86	—	¼	—	9¼	90
11	99	19·4	1·4	16·1	7¼	5¼	—	3¼	83	¼	¾	—	12	87
12	99·4	18·7	1·5	15·6	8¼	2¼	¼	4¾	83	¼	¾	—	10	89
13*	98·4	15·6	1·6	13·1	10	1¼	1	3¼	84	¼	¼	—	12	87
14	100·5	24·4	2·3	21·4	9¾	1¼	½	½	88	—	¼	—	11	88
15	100·2	19·4	1·7	16·5	9	2	1	2½	85	—	—	—	12	88
16	99·2	20·6	1·8	17·0	8¾	3½	1½	3¾	82	—	¼	—	13	86
17	99	23·1	2·5	19·1	11	¾	1	4¾	83	—	—	—	12	87
18	98	25·0	1·5	21·5	6	3¼	½	3¼	86	—	¾	—	9¾	90
19	99·2	17·5	2·4	14·2	14	½	¾	3¼	81	¼	¼	—	15	85
20	99	23·1	2·8	19·0	12	1	½	3½	82	¼	½	—	13	86
21	99·6	13·0	·8	11·0	6½	3¾	½	3¼	85	—	1	—	10	89
22	98·5	18·8	1·6	15·0	8¾	4¼	½	5¼	80	—	¼	—	13	86
23	99·2	17·0	1·8	13·1	11	4¾	¾	6	77	—	¼	—	16	83
24	98·6	24·0	1·5	18·4	6½	5¾	1	8½	78	¼	—	—	13	86
25	99	42·5	5·6	31·8	13	¼	¾	11	75	—	¼	—	14	85
26	98·5	17·5	3·3	12·5	19	1¼	1¾	3¾	72	1¼	1¼	—	21	78
27	98·5	20·0	2·0	15·8	10	1	¾	8¼	79	¾	½	—	11	88

* Empyema developing.

TABLE VII. (*Case 48*).

Blood taken 10 A.M. daily.

2	103·1	3·1	1·1	1·3	37	9	3	7	41	—	3	—	48	51
3	101·8	2·2	·9	1·0	42	6	1½	2½	46	½	½	—	50	50
4	100·6	2·5	1·1	1·1	45	7¼	½	2	44	—	½	—	53	47
5	103·6	3·8	1·3	2·0	35	6	1	3	54	—	½	½	42	58
6	102·2	2·5	·9	1 3	38	5	4	2	50	—	½	—	47	53
7	101·6	2·8	1·8	·6	63	7¼	—	6½	23	—	—	—	70	29
8	100	4·7	2·2	1·8	48	7	—	4	39	2	—	—	55	45
9	97·2	2·5	·8	1·2	34	10	4	2	48	2	—	—	48	52
10	97·8	4·7	2·0	1·4	42	17	3¼	8	30	—	—	—	62	37
11	96·7	3·1	1·4	1·3	45	5½	—	6¼	41	2¼	—	—	50	49
12	97·8	4·0	1·4	2·0	35	9¾	¾	2½	46	4½	½	—	46	54
13	98	5·6	1·4	3 0	25	7	2	8	53	4½	—	—	34	66
14	96·5	9·4	2·3	6·0	24	5	¼	5½	61	2¾	—	—	29	70
15	96·8	10·8	4·0	5·3	36	6	—	4	50	3	½	—	42	57
16	96·5	6·2	2·0	3·5	33	5½	1¼	2¾	55	1¾	½	—	39	60
17	97	9·0	2·7	5·4	30	5¼	¾	4¾	59	—	—	¼	35	64

TABLE VIII. (*Case 39*).

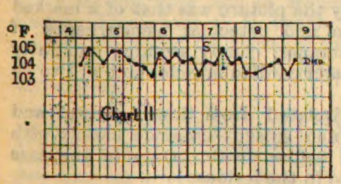
Blood taken 10.15 A.M. daily.

Death on ninth day.

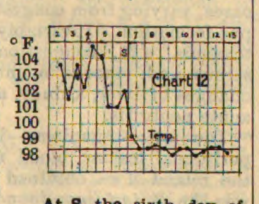
4	102·2	5·0	1·1	3·2	21	5½	3	4½	65	½	¼	—	30	70
5	103·2	5·0	1·8	2·8	36	3¾	1	2¾	56	—	¼	—	41	59
6	104·6	2·5	·8	1·5	33	5½	¾	1¾	59	—	—	—	39	60
7	104	2·8	1·1	1·5	38	3	1	3	54	—	—	¼	42	57
8	103	4·0	1·1	2·3	30	4	1	½	62	—	—	1½	35	64

What the exact significance of these different leucocyte curves is it is difficult to say. The variation may be due to differences in the infecting agents, or the defensive and recuperative powers of the individual. Bacillary infections are frequently associated with a leucopenia, micrococcal infections with leucocytosis. We are inclined to the view that one organism—perhaps *B. influenzæ*—is responsible for Type 1, and when the infection is coccal there is either a good reaction on the part of the body causing a leucocytosis to develop, or the defensive powers are low and a leucopenia results. Generally speaking, a leucocytosis is a good sign, a persistent leucopenia is serious. In the latter case it is advised that a dose of mixed influenza vaccine (curative) be given to try to produce a leucocytic reaction. Serum is of no avail, for with it we have found a leucopenia.[4]

One other point worthy of mention is the disappearance of the eosinophils, not only when there is actual fever, but also with approaching fever or sepsis with low fever. Their return is of good omen. We have repeatedly noticed them disappear with the febrile stage of pneumonia, reappearing as defervescence takes place. In cases where an empyema supervened the eosinophils were absent from the peripheral blood prior to the condition being diagnosed clinically. (Table VI.)



At S 30 c.cm. of antistreptococcal serum were given subcutaneously. The dotted lines indicate where the temperature was reduced by sponging.



At S, the sixth day of disease, an inoculation with 18 c.cm. of anti-streptococcal serum was given. Note the fall of temperature to normal on the seventh day.

VACCINE TREATMENT.

The vaccine prepared by us was made from micro-organisms isolated from severe cases in the present epidemic. Most of the streptococci and pneumococci were obtained from post-mortem examinations. The vaccine was used (1) as a prophylactic and (2) as a curative. It consisted of the following micro-organisms:—

Streptococcus (a mixture of short and long chain streptococci from six severe cases) ... ... } 50 millions each per c.cm.
Pneumococcus (a mixture of pneumococci from six cases) ... ... }
Micrococcus catarrhalis (a mixture from two cases) ...
Bacillus influenzæ (a mixture from two cases) ... ... } 20 millions each per c.cm.
Meningococcus (a mixture from two cases) ... ... }

First dose = ½ c.cm. Second dose = 1 c.cm. (seven to ten days later). The curative dose was made up a tenth of this strength, and given daily in some cases, in others every second day.

Since the preparation and use of this vaccine we note that the conference held at the War Office on Oct. 14th,

1918,[5] recommended that the vaccine for influenza should consist only of *B. influenzæ*, pneumococcus, and streptococcus. We still continue to incorporate the *Micrococcus catarrhalis* on account of its common occurrence (72 per cent. in this epidemic); its frequency and advisability as an ingredient of an influenza vaccine has been commented on by others.[6] On account of the cases of cerebro-spinal meningitis accompanying influenza, the meningococcus was added to the vaccine. The present disease apparently varies according to the number and virulence of one or more of these organisms, and so the "blunderbuss" method of treatment is forced upon us.

Prophylactic Vaccine.

This has been administered to several hundred people, the local and general reaction being slight, passing off completely in 24 hours, although some cases complained of local tenderness for 48 to 72 hours, but on inspection the cause was usually found to be injury to some small vein at the time of inoculation. There is little or no fever. A few cases have complained of some depression after the second inoculation. All the persons inoculated have continued their daily duties without experiencing any inconvenience.

We confine our attention in this report to the inoculated and uninoculated cases in one institution.

The total number of persons in the institution was 305. Of these, 156 were inoculated and 149 uninoculated.

The case-incidence of the inoculated was 8 in 156 (i.e., 5 per cent.); amongst the uninoculated 18 in 149 (i.e., 12 per cent.).

All the inoculated persons who developed influenza had only mild attacks. Four of the eight attacked had slight fever and malaise at the time of inoculation and definite fever (102° to 104·8°) within 24 hours. This febrile period terminated in 48 hours, in contra-distinction to the seven-day course of the uninoculated. (See Chart 5.) The associated albuminuria disappeared within five days, convalescence being well established by the end of a week.

The protective influence of the vaccine is even more striking if the incubation period is taken as 40 hours.[7] The above four cases should then not be counted, thus reducing the disease incidence amongst the inoculated to 2·5 per cent. Of the remaining cases two developed the disease five days after the first inoculation, the other two four days after receiving a second injection. In each of these four cases the fever was slight (100°–101·5° F.), the temperature returned to, and remained, normal after 24 hours. (Chart 6.) There were no pulmonary symptoms in any of the inoculated cases.

The 18 uninoculated cases who fell victims to the disease had typical attacks with a five to seven day course in the milder, and a more prolonged one in the complicated cases. Pulmonary involvement was distinct in seven of the cases.

It is not claimed that the above vaccine is an absolute preventive, but we certainly think it will abolish or considerably modify the toxic type of the disease. The argument that vaccine treatment during the epidemic renders people more susceptible to infection carries little weight when the short and comparatively mild course of the disease in the inoculated is considered.

Curative Vaccine.

The dosage used by us in all cases was 1 c.cm. containing:

Streptococcus	5 millions.	Meningococcus ...	2 millions.
Pneumococcus	5 ,,	*B. influenzæ*	2 ,,
M. catarrhalis	5 ,,		

The first injection was given as soon after admission as possible, and repeated daily until the temperature fell to normal.

The vaccine was used alone in cases giving a temperature of 103·5° F. or under; for cases with higher temperatures 20 c.cm. of polyvalent antistreptococcus serum was given subcutaneously, thereafter 10 c.cm. being administered daily for three or four days. At times vaccine treatment was combined with the serum. (See Charts 7 and 8.)

In no instance had the vaccine any ill-effect, but, on the contrary, several cases cleared up rapidly, the fever passing off in three or four days, at times sooner, even when the initial temperature was high and the patient obviously ill. Furthermore, the albuminuria and renal casts disappeared more rapidly in the cases treated with vaccine than in those treated with drugs only.

In a few cases of the pulmonary type, when there was no sign of abatement of the disease on the seventh day, 1 c.cm. of the vaccine was injected daily, the result being a fall of the temperature by lysis. This, of course, may have been a coincidence, but in two cases aspirin and various other drugs failed to affect the fever, whereas the temperature gradually fell about 24 hours after the vaccine treatment started.

Personally, we are convinced that the vaccine does no harm, but frequently promotes a quick recovery. Such vaccines should be administered as early in the disease as possible. The short acute course of two cases inoculated the first day of the disease with a full prophylactic dose suggests that all cases seen early may have their course cut short by a large dose of the vaccine before toxæmia has time to set in.

SERUM-THERAPY.

Briefly, cases treated early in the disease have a far greater chance of recovery than those treated late, as a glance at Table IX. shows. All the cases were severe. Of those injected with serum before the sixth day all recovered—i.e., six out of six; while of those injected after that day—six all told—four died (i.e., 66 per cent.).

TABLE IX.—*Day of Disease of First Serum Injection.*

Case.	Day.	Result.	Case.	Day.	Result.	Case	Day.	Result.
22	2	Recovery.	48	5	Recovery.	26	8	Died.
19	4	,,	16	5	,,	34	10	Recovery.
38	4	,,	2	7	,,	5	10	Died.
33	5	,,	27	7	Died.	21	13	,,

In Chart 9 the effect of the administration of serum early in the disease is well shown. This patient had definite pulmonary signs, but from the third day there was a distinct general improvement in the case; recovery from the seventh day was uninterrupted. Curative vaccine was given daily on the sixth to ninth day inclusive. Chart 10 shows the effect of the serum given on the fourth day of the disease. These charts should be compared with No. 11, illustrating the failure of serum given after the fifth day.

It is apparently necessary to emphasise the importance of not laying too much stress on vaccine or serum treatment delayed until the sixth or seventh day of disease, as we have seen much credit given to most forms of treatment solely from the results as depicted in Chart 12. In such cases the sudden fall in the temperature and general improvement of the patient is most likely due to the natural termination of the pneumonia on those days.

These observations on antistreptococcus serum apply solely to that prepared by Messrs. Burroughs, Wellcome, and Co.

SUMMARY.

1. The results of blood cultures show that there is septicæmia in some of the cases. Most of these have a fatal issue. The figures at our disposal are insufficient to make any definite statement as to whether this septicæmia is present early in the disease or only as a late symptom. That it is a late symptom is borne out by the fact that streptococci were isolated from the heart's blood after death in cases where the blood-culture result was negative early in the disease.

2. The causal micro-organism of the septicæmia is not the same in all cases.

3. The examination of sputa and posterior nasal swabs shows a *mixed* and fairly constant flora. Such organisms as streptococcus, pneumococcus, *Micrococcus catarrhalis*, and *B. influenzæ* are present in a high percentage of cases; in all instances over 66 per cent., except in that of *B. influenzæ* (46 per cent.).

4. The predominating organism varies, being: *Micrococcus catarrhalis* in 34 per cent., streptococcus in 30 per cent., pneumococcus in 26 per cent., *Staphylococcus aureus* in 8 per cent., and *B. influenzæ* in 2 per cent. of the cases. It should be noted that in only one of this series of cases was Pfeiffer's bacillus found to be the predominating organism.

5. Post-mortem examinations show lung lesions in all cases, varying from congestion and œdema to pneumonia and pus formation. Invariably the picture was that of a marked toxæmia, e.g., congestion and petechial hæmorrhages of serous and mucous membranes, cloudy swelling and fatty changes of liver, kidney, and cardiac muscle, and in two an acute nephritis.

The micro-organisms—isolated from lung, pleural and peritoneal lesions, blood and spleen—coincide closely with the mixed flora obtained before death. Only in one case was the *B. influenzæ* found in the lesions.

6. Isolation of diplostreptococci from the heart's blood and spleen post mortem supports the view that a true septicæmia is present.

7. Albuminuria is a constant feature. Casts are present in 50 per cent. of the cases. That there is a definite

nephritis in some cases is clear from the appearance of epithelial and blood casts, and fully substantiated by the post-mortem findings.

8. There is sufficient evidence in all cases that the renal condition warrants especial care during convalescence.

9. The daily leucocyte counts show that all cases do not conform to one type. Broadly speaking, a leucopenia, if continued, is of bad, a leucocytosis of good, prognostic import. A marked leucocytosis after the eighth or ninth day, especially if the eosinophils are much decreased or absent, strongly suggests complications. Incomplete recoveries and the oncoming of a relapse can often be diagnosed from the blood picture, even when the clinical signs are slight or absent.

10. Prophylactic vaccination on two, preferably on three, occasions with a weekly interval between each inoculation is without risk, increases the immunity of the individual, and prevents the onset of pulmonary complications. Should the inoculated develop influenza the course of the disease is invariably mild.

11. As regards treatment, we recommend that: (1) In very early cases a full dose of prophylactic vaccine should be administered. No further doses to be given at least for several days. (2) Cases seen on the first day, or later, provided the temperature is not above 104° F. or the patient markedly toxic, should be given 1 c.cm. of the curative vaccine daily until temperature falls to normal, unless symptoms become worse. (3) Those cases which show high pyrexia or toxic condition from the start should be treated with polyvalent antistreptococcus serum, 20 c.cm. should be administered subcutaneously *as soon as possible*, and followed by daily injections of 10 c.cm. for three or four days. With this treatment calcium lactate, gr. 5, should be given daily for 7 to 10 days to ward off serum sickness. Vaccine may be combined with this if required.

There is no reason why other forms of treatment should not be combined with the above.

CONCLUSIONS.

The variety of clinical types, as depicted by symptoms and leucocyte counts, the mixed bacterial flora obtained from blood cultures, sputa, throat swabs, and at post-mortem examinations, render it quite impossible to assign any one specific virus as the causal organism. The bacillus of Pfeiffer was found in 46 per cent. of the cases, and only as the predominating organism in one case out of 50. It may possibly be the primary agent, and the other micro-organisms found secondary, but we see no reason why this should be the case when such micro-organisms as the streptococcus and pneumococcus are far more frequently found in the pathological lesions in this disease.

Although there is the remote possibility of there being an underlying ultra-microscopic agent at work in lighting up the epidemic, one cannot conceive a *single* activating agent in a disease attacking its victims in such diverse ways.[8]

In our opinion the presence of a more or less constant group of micro-organisms renders each individual the potential possessor of the specific symptoms caused by each virus. This will depend on various factors, such as the number and virulence of the micro-organisms, the resistance of the patients, and intercurrent diseases.

From the foregoing results we are forced to conclude that the malady we have been studying is not a simple but a "compound" disease.

We are greatly indebted to Lieutenant-Colonel T. S. Allan, R.A.M.C. (T.), O.C., Military Hospital, Hampstead, and Lieutenant-Colonel F. F. Muecke, R.A.F. (M.S.), O.C., R.A.F. Central Hospital, Hampstead, for permission to carry out this work, and to Major W Byam, R.A.M.C., and Surgeon-Lieutenant O. H. Gotch, R.N., and other medical officers concerned for access to their cases. Special thanks are due to Miss Samuel, B.Sc., for her loyal assistance throughout.

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SOME OBSERVATIONS ON THE MORE SEVERE CASES OF INFLUENZA OCCURRING DURING THE PRESENT EPIDEMIC.

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IT is as yet too early to write a full and adequate account of the prevailing epidemic of influenza. Some time must still elapse before the clinical and pathological experience of different observers can be collated, and before the statistical results of those who have been in charge of large numbers of cases under Service conditions can be properly interpreted. But it may be well even at this stage to put on record certain observations of a general sort, with such reflections concerning them as may lead to critical analysis by others of their own experience. These observations being more or less disjointed, they are set out under certain convenient headings.

I.—*The Pyrexia.*

The temperature rises abruptly with the invasion symptoms, which are not nearly so painful in many cases as they were wont to be in former recent epidemics, and reaches 103–4–5°. In the majority of cases it remits or intermits. It also usually "responds" at the early stage to various antipyretic drugs, falling with a sweat, and rising again. If no such response occurs, assuming an adequate dose has been given, this is a bad sign; the case is likely to prove one of the more serious sort. *With this experience it is unwise to repeat the drug.* If the initial temperature rises to a high level and continues there without remission the case will probably be one of the intensely toxic kind; it may even fulminate and prove rapidly fatal. If it be a case of the lesser degree of these two conditions, the condition may in three to six days become hyperpyrexial, with dusky facies, delirium or stupor, tremor, dry tongue, shallow respirations, and a deceptively low pulse-rate in proportion to the high temperature, which may reach 106° or higher. If neither of these two very serious conditions ensues the temperature continues to remit or intermit until about the fourth to fifth day, when it may suddenly rise to a higher level and remain there, indicating some acute pulmonary event, which in the majority of instances turns out to be pneumonia. In this case the subsequent course of the pyrexia depends upon the developments in the lung (*vide* § II.). If the pulmonary event is a broncho-pneumonia, or a purulent bronchitis, or a pleurisy, the higher level of the pyrexia remains but the temperature intermits. Should no pulmonary event supervene other than the congestion common to nearly all severe cases, the temperature usually begins to fall about the fifth or sixth day, and reaches normal, by a process of lysis, about the tenth to twelfth day. In a few cases a crisis is observed, and in rather more a pseudo-crisis, followed by a recrudescence, and this recrudescence is very prone to be accompanied by an acute pulmonary complication. The pyrexia sometimes terminates rapidly with the expectoration of a large amount of bloody sputa (*vide* § III.), as if a pneumonic process "aborts." Once it is down the temperature may remain subnormal for a few days and gradually return to normal. True relapses are uncommon in the absence of gross mismanagement. A few cases show a quotidian intermitting temperature (to 99 5–101°) for several days, it may be for two or three weeks, after the main fall in the pyrexia, and the rise is sometimes in the morning and not in the evening.

The question of the existence of *apyrexial cases* of influenza is, I think, to be answered in the affirmative. Though it is scarcely possible to make a diagnosis in the absence of a raised temperature, I have met with instances of relatively severe prostration associated with pulmonary catarrh, lack of heart tone, and sweats without fever that were probably due to influenza. They have generally, but not always, been in persons over 60 years of age. In this connexion it is well to remember that typhoid fever may be apyrexial in elderly patients. There is an obvious practical point as regards treatment underlying this consideration.

II.—*The Respiratory System.*

The respiratory system is affected in a large number of ways. But it is perhaps worthy of note that the "catarrhal"

element, in so far as the mucosa of the upper air passages is concerned, seems much less in evidence during this epidemic than during former ones. Not only is this so in the course of the disease, it is seen also in the relative infrequency of catarrhal sequelæ. But certain considerations warn us not to take this fact to mean that we are not dealing with the same virus as was responsible for the epidemics of influenza in which catarrhal manifestations were very prominent: (1) The bronchiolitis which is so common a feature in many of the severe cases is essentially a catarrhal process; (2) the so-called "simple febrile" type of influenza occurring in other epidemics was a catarrhal; (3) different epidemics of well-known diseases (e.g., scarlet fever) are prone to exhibit different features, though probably due to the same virus.

The respiratory manifestations extend from laryngitis and tracheitis through bronchitis to lobular and lobar pneumonia and pleurisy, both "dry" and with serous or purulent effusion. But the characteristic feature, and one which is rarely absent in any severe case, is a condition of capillary bronchitis with intense pulmonary congestion. It may be unilateral or bilateral, is more often basal than apical, but is not seldom universal. The physical signs are copious fine râle (crepitation), with impaired vesicular sound, and, less often, impaired percussion tone. The degree and the extent of this lesion vary from day to day. It is undoubtedly the chief cause of the cyanosis which is so common a feature; it contributes the bloody sputa which are not seldom seen and it embarrasses the heart and, indirectly, the central nervous system. It may be termed the essential lesion of the disease. *Even when consolidation of the lung is present, this is quite often an incident by comparison, and if the patient dies he dies with the consolidation rather than of it.* When asked "if the patient has pneumonia" we try to give some comfort by replying that he has not got it yet, when the correct answer would be that he has the first stage of pneumonia already. Whether the patient dies or lives depends upon the extent of this pulmonary congestion, together with the intensity of the toxic process in relation to the central nervous system. It is extremely difficult to form an estimate of how many cases of the severer sort, with this pulmonary engorgement, develop areas of consolidation, because routine examination of the back is impossible, and, indeed, is inadvisable. But the proportion is probably larger than is usually thought.

It is interesting to note that a "sthenic" pneumococcal lobar pneumonia may be, as it were, an intercurrent event, leading to its own signs and temperature curve, and, after resolution, leaving the patient in much the same condition as it found him, save for the further weakness left by the superadded disease. Post-mortem observations show how varied is the flora associated with the incomplete pneumonic areas in fatal cases—pneumococci are present, as would be expected, but streptococci, *S. aureus*, and Pfeiffer's bacillus are found in varying degrees, and not infrequently in much larger numbers than the pneumococci. One sign of the incomplete nature of the process of hepatisation in many cases is the relative infrequency of pleuritic rub over the consolidated area as compared with ordinary cases of pneumonia. The duration of the pneumonic patch is very variable. It may endure for a day only, resolving rapidly with crisis, or it may persist after the pyrexia has gradually ceased (*vide* § IV.). *In the main its existence depends upon the state of the patient's general condition; it clears slowly as this mends, or it spreads rapidly as this lapses.* Cases of true broncho-pneumonia do not seem very common—the name is sometimes given in error to pneumonia of the lobar type when the patches are small and bilateral—apart from infants and little children. Nor is pleurisy common apart from pneumonia. The apparent relative increase of streptococcal, as against pneumococcal, empyemata during recent months may be accounted for by the cases being secondary to influenza with pleurisy.

III.—*The Sputa.*

The sputa vary considerably. They may be absent throughout the whole course, even of very severe cases, including some in which there is intense and widespread pulmonary congestion. When present they include the tenacious mucus of acute tracheitis and bronchial catarrh, the muco-pus and pus of purulent bronchitis, and the rusty sputa of lobar pneumonia. About these sorts of sputa there is nothing characteristic of the disease. Two other kinds occur, however, with some frequency, and both of them are very typical of severe influenza. 1. Bright pink frothy mucus, produced without difficulty and sometimes in large amount, it may be as much as a pint or more in 24 hours. The fresh rose-red colour of this expectoration is very striking, and suggests strongly that it results from acute inflammatory œdema of the lung, which indeed it does, as proved by post-mortem evidence. At times this material is expelled involuntarily during cough and some of it may spurt from the nostrils. 2. Tenacious mucus, less viscid than in lobar pneumonia, of greater amount, and differing also in colour, which may be of several hues—red, brown, saffron, and various tints of green, all of these being present at the same time. Seen in a white earthenware vessel, this type of sputa is very striking and is highly diagnostic. Dr. Hurtley, to whom I gave a specimen of these green sputa, tells me that the chief band present in the spectrum was that of hæmatoporphyrin. Both of these sorts of sputa may occur in the same case and in the order as regards time that they are here described.

IV.—*The Post-febrile Period.*

In a large number of the severe cases, and in not a few of the mild ones, a state of exhaustion quite disproportionate to the duration of the illness follows the pyrexial period. Careful examination often reveals no incriminating feature in any organ. The degree of prostration may be profound, and may be much more trying both to patient and doctor than was the disease itself. Profuse night sweats are common. Various other immediate sequelæ are to be noted.

1. *The nervous system.* The "higher centres" suffer chiefly; marked depression is common, emotional instability is often seen, and suicide is by no means rare. In a few cases a condition of amnesia which was present during the febrile stage persists for some days, then clears away. Neurasthenic states and insomnia which were present before the illness tend to be accentuated, or, if they were yielding to time and treatment when the disease appeared, they are prone afterwards to give further trouble.

2. *The heart.* In most of the instances in which the heart is left in an unsatisfactory state—and they are very many—there is no systematised defect that can be discovered on examination at the bedside. Despite the objection of some cardiologists to the use of the term in this connexion, we can but call many of these hearts "weak." It is reasonable to postulate a state of fatigue, whether of nerve or muscle or both, though no doubt a condition of toxic myocarditis also occurs. But as the symptoms pass off in many of the cases after a few days of continued recumbency, it is not likely that this last-named condition is present in many of the patients who exhibit cardiac inadequacy. Bradycardia of simple type is common, the pulse dropping to 50, 40, and even to 30. This state of things can be shown not to be a dissociated effect—i.e., not a state of heart-block. "Heart attacks," chiefly of the type termed "cardiac asthma," are not uncommon; *the appearance of one of these attacks may be the first sign to an unsuspecting patient or to her friends that all is not well.* These attacks, though very alarming, are rarely fatal. They are seen more often in women than in men. The cardiac element in the attack may be associated with, or may be overwhelmed by, obvious neurosis; the dissociation of the two elements is sometimes exceedingly difficult and the prognosis is correspondingly obscure. Of the ultimate effect of the present severe forms of influenza upon the nerves and upon the hearts of the patients we cannot yet speak.

3. *The pulmonary system* sometimes shows sequelæ during the post-febrile period. The most common condition is the persistence of an area of chronic congestion at one base, with or without a suspicion of pleural involvement. This "soppy" base may be present for weeks, or even for months. (? Whether some of the cases in which this condition is known to have persisted for years are not originally influenzal in origin.) Pneumonic patches may be found during this period. They are of two kinds: (*a*) areas of unresolved pneumonia, and (*b*) what may not inappropriately be termed "residual consolidation"—patches of pneumonia that appear with, or just after, the fall of temperature. These areas usually clear quietly and slowly, their duration depending chiefly upon the progress made by the patient in tone and strength: the more rapid the general improvement the quicker does resolution take place. Pleural effusion may be discovered during the afebrile stage and may call for aspiration. The fluid is serous, is either sterile or contains scanty streptococci, and the occurrence of the effusion by no

means indicates that the patient is tuberculous. No doubt the discovery of some of these pulmonary lesions during the post-febrile stage is due to lack of adequate examination during the more acute period of the disease, but this is certainly not the explanation in all cases.

V.—*Diagnosis.*

Experience of the present epidemic throws light upon the nature of many obscure cases which occurred during the past summer. It is now obvious that these were sporadic cases of the now prevalent disease. As in some other epidemic and endemic diseases it is common to see the main wave of incidence preceded by small ripples, so in influenza. (Cf. cerebro-spinal fever.) This fact leads to the appearance of individual cases, often quite severe, the nature of which, in the absence of bacteriological or other criteria of an absolute kind, remains obscure until a flood of cases of a similar sort establishes the diagnosis.

Early in July two boys and their mother were admitted (from the same house) to St. Bartholomew's Hospital. The mother's illness took the form of a moderate pyrexia with diarrhœa. Both boys were gravely ill, with high continued fever, relatively low pulse-rate, marked cerebral irritation—in one there was definite "meningism" leading to lumbar puncture with a view to exclude cerebro-spinal fever—dry tongue, and constipation. A leucopenia was present in both cases. There was widespread pulmonary congestion, but no signs of pneumonia. There were no spots, the spleen was not palpable, blood cultures were negative, and no agglutination was obtained against *B. typhosus* and *B. paratyphosus*. All three cases recovered. In face of these data no diagnosis could be, nor was, made. How simple the diagnosis would be to-day!

I can think of no less than six cases of severe illness, seen during the summer, with high temperature, marked nerve prostration, leucopenia, and negative blood culture, in all of which the diagnosis of typhoid or para-typhoid would have been made but for the absence of agglutination. In four of them the degree of pulmonary congestion was not more than is frequently seen in typhoid fever, although in the other two cases it certainly was. But *the likeness of severe influenza to typhoid fever* may be closer than this. In August I was asked to see a young doctor on the tenth day of his illness because he was passing a large quantity of blood by the bowel, following upon a dose of calomel. The onset of the disease had been sudden, with a rigor. When I saw him he was running a persistently high temperature (104–5°), his pulse-rate was not above 90, he was tremulous, delirious, had sordes on lips, his face was dusky, and his abdomen was distended. He had no typhoid spots and his spleen was not palpable. There was congestion of the base of the right lung, but not to a marked degree. He continued to pass blood freely for 48 hours. A blood culture was negative, as also were agglutination tests. He developed an incomplete pneumonia and died on the seventeenth day of his disease. I have recently seen a similar case in which the enterorrhagia followed the use of an enema.

By no means all the pneumonia now prevalent is influenzal. There are a goodly number of cases of uncomplicated pneumonia of pneumococcal origin, both the lobar type in adults and the lobular type in children, and the prognosis in most of them is, as usual, not unfavourable. This should be remembered in view of the present very natural popular dread of a dire result whenever pneumonia is diagnosed. Careful analysis of the mode of onset of the pulmonary event, the clinical features of the case, and, when possible, bacteriological results will usually lead to a correct differential diagnosis.

Poliomyelitis is evidently rife at the present time, contrary to the usual seasonal incidence of the disease. The early symptoms may easily be mistaken for influenza when the latter disease is so ubiquitous. I have recently met with a small outbreak of poliomyelitis in a boy's school, in which 150 boys out of 200 were affected by influenza. Six boys fell victims to the virus, all of them 15–16 years old and five out of the six were in the same house. In two of the cases it is certain that the influenza preceded the poliomyelitis by a definite, though short, interval; in one it is probable that the reverse order of infection was observed; in the remaining three cases both infections would seem to have occurred simultaneously. It is not at all unlikely that some of the cases of "neuritis" following influenza, in children and in young adults, are really cases of this disease. The importance of diagnosing the condition as early as possible is obvious.

VI.—*Prognosis.*

Despite the protean nature of the disease and the many grades of severity that the clinical picture may assume, prognosis is not found to be so difficult as is often supposed. The real crux in the early stages of the disease is the question, Which cases are going to be severe and which are going to be mild? The degree of suddenness, or rather the degree of initial intensity, of the onset, does not decide, nor the height of the pyrexia during the first 48 hours, nor the amount of the patient's discomfort. *If the patient comes under treatment late this fact is of bad omen;* nearly always the case is severe, very frequently it is fatal. 1. Fulminating cases are, of course, rapidly fatal; there is never any doubt as to their issue. 2. Next to the fulminating cases the outlook is worst in those patients who sink progressively into a state in which there are cyanosis, delirium or stupor, diminishing cough, high continued fever, and physical signs of extensive pulmonary congestion. *If this condition is reached rapidly, such as any time before the sixth day, the case is usually fatal.* 3. Of less gravity, but still with a very serious outlook, are the cases in which after four or five days of moderately severe illness the temperature rises suddenly to a higher level, continues there, and signs of patchy consolidation of lung appear. 4. Cases of purulent bronchitis, with patches of broncho-pneumonia, cause great anxiety, but usually give time for treatment; they are more hopeful. 5. If a "sthenic" lobar pneumonia supervenes upon a fairly mild attack the prognosis is still less serious, even though, as already mentioned in § II., no complete crisis is likely to occur. 6. In simple pleurisy the outlook is good, whether liquid effusion arrive or not. 7. Bronchial catarrh is the least unfavourable of all the pulmonary events, and rarely leads to a fatal issue unless it be in the elderly and in infants.

Speaking of other than pulmonary complications, the following points appear to be in the patient's favour: an age which is below 20 or above 40 years, irregularity of the pyrexia as contrasted with high continued fever, catarrh of the upper respiratory tract and air passages, coarse as contrasted with fine râle on auscultation of the chest, muco-purulent sputa rather than tenacious and bloody mucoid sputa, strict correspondence of the temperature curve with the pulse-rate, absence of cyanosis, and a moist skin. In addition to the bad points to be inferred *per contra* from this list, the following also tell against the patient's chances: delirium, stupor, insomnia, persistent vomiting, and repeated diarrhœa.

Postscript on Treatment.

Further experience in the treatment of the more severe class of case now occurring has but confirmed the views expressed in THE LANCET of Nov. 23rd as to the great value of aero- and hydro-therapeutic measures. A free current of air, both in the room by means of widely open windows and over the patient's body by means of a "cradle" and very little bed covering, frequent sponging, the fearless use of the cold pack when hyperpyrexia is present: these measures are of greater service in the intensely toxic cases with high fever than are febrifuge drugs, which usually fail of their object and depress a heart which is already hard put to it to maintain the struggle. *In these very bad cases sweating does not occur, and it is useless to attempt to get it.* In them heat is lost from the body by radiation, and to this process many blankets are a deterrent and not an assistance. If the skin is losing heat by way of sweating well and good, let it be encouraged by warm blankets, but there is here no cause for much anxiety. The anxious cases are those in which sweating does not occur (I am speaking of the earlier stages of the disease), and in them the removal of heat and the consequent adjustment of the body temperature should be provided for in the manner above indicated. It may seem a matter of supererogation to point out this distinction, and yet it is one which is not infrequently lost sight of in practice. I am still more convinced of the necessity of caution against overfeeding, both as regards the quantity and the character of the food. So-called specific drugs continue to be very disappointing. The creasote and iodide mixture that has been advocated does not seem to justify itself, either with pneumonia present or not; it not seldom causes vomiting, and thus introduces an additional difficulty in the case.

THE USE OF VACCINES IN ACUTE INFLUENZA

AND INFLUENZAL BRONCHO-PNEUMONIA.

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THE object of this paper is to call attention to the successful results obtained by the treatment of acute influenza and influenzal broncho-pneumonia with adequate doses of vaccine containing *B. influenzæ*, streptococci, and pneumococci.

Principles of Treatment.

The recommendations of the Conference held at the War Office on Oct. 14th, which have been adopted by the Army and Local Government Board, show a certain timidity in the use of vaccines for treatment.[1] Whilst recommending prophylactic inoculations with, what I consider to be, entirely inadequate doses, they state that vaccine is most likely to be of service in the treatment of subacute and chronic cases, and recommend a dose of 6 million *B. influenzæ*, 20 million pneumococci, and 8 million streptococci as an initial dose. As regards severe cases of secondary broncho-pneumonia they do not recommend vaccine, but if it be desired to treat such cases an initial dose of 1½ million *B. influenzæ*, 5 million pneumococci, and 2 million streptococci is suggested.

The treatment of influenzal broncho-pneumonia in no way differs from the treatment of acute pneumonia and broncho-pneumonia due to other causes. In a paper in which I recorded the results obtained by the early administration of vaccines in acute pneumonia[2] it was urged that the best results were obtained by injecting an adequate dose as early as possible. 100 million pneumococci were given as an adequate dose for an adult man. Since then acute pneumonia has been consistently treated, not only by myself, but by many practitioners all over the British Isles, according to the principles laid down with excellent results. Broncho-pneumonias of all kinds have been similarly treated.

Influenzal broncho-pneumonia during an epidemic period resembles acute lobar pneumonia in that a suitable stock vaccine can be kept ready for use, whereas with other broncho-pneumonias time is lost in discovering the nature of the infection and making the appropriate vaccine.

For the treatment of influenza and its secondary broncho-pneumonia Lord Fisher's advice is appropriate: "Strike early and strike hard." The first moment the patient is seen is the time to inject, and the dose should be sufficiently large to produce a satisfactory response within a few hours. Hesitation and delay are fatal. Every case should be regarded as a serious one. Many cases beginning mildly rapidly get out of hand if untreated and prove fatal. Action must be decisive—offensive, not merely defensive. Drifters must not be sent into action when battle cruisers are required.

My practice is to inject, and advise others to inject, every acute case seen in the early stages of the disease, unless the patient is obviously beyond help. At first I used 50 million pneumococci, 50 million streptococci, and 30 million influenza bacilli as an initial dose in an adult, gradually increasing to 100 million and 60 million respectively if further doses were required. Now I more often begin with a dose of 80 or 100 million of all three organisms, and find more decisive results in aborting the disease are obtained. In a certain group of cases *B. Friedländer* was found, and for these this organism was added to the vaccine. These therapeutic doses are larger than those recommended by the War Office Conference for prophylaxis, and very much larger than those suggested for the treatment of acute cases. The pneumococci used in the vaccine were obtained from recent cases in primary culture, the streptococci were also recent strains and, as far as possible, in primary cultures. The influenza bacilli were partly isolated by myself, partly obtained from Messrs. Parke Davis, and Co.

[1] THE LANCET, 1918, ii., 565.
[2] Brit. Med. Jour., March 13th, 1915.

Record of Cases.

Some hundreds of patients have now been treated on these lines by myself and by practitioners associated with me. During the present rush of work complete statistics are not yet available. Of cases directly under my care there has only been one death among those inoculated within 48 hours of the onset. Several doctors have told me that they have had no deaths in inoculated cases. The few cases here briefly recorded with their charts are taken from a large number. They are in no way exceptional, and are given as showing what may be expected of vaccine treatment in various types of the acute disease.

A. *Acute Influenza, Uncomplicated.*

CASE 1.—A young woman aged 26. Injected about eight hours after onset with 50 million pneumococci and streptococci, 30 million influenza bacilli. Respirations 30, pulse 96. Pains severe, suffused eyes. Pharyngitis. No complications. Temperature reached normal nine hours after injection. During the second night it rose again to 99·4° and thereafter remained normal.

CASE 2.—A man aged 40. Onset severe and rapid with shivering, intense pains, slight vomiting, furred tongue, explosive cough. Pulse 108, respirations 30. Injected about three hours after onset with 100 million of each organism. Temperature reached normal 24 hours after injection. Labial herpes appeared on the third day. No further rise of temperature, but some cough for four days.

CASE 3.—A boy aged 8. He left home for school at 8 30 A.M. and arrived back three hours later scarcely able to stand, shivering, giddiness, severe headache, and nausea. Injected at 1.30 P.M. with 20 millions of each organism. Temperature was then 102·6°. Next morning temperature had fallen slightly, but rose later to 103·8°. On the morning of the third day a dose of 40 million of each organism was injected. This was followed by a fall in the temperature, which reached normal during the afternoon of the fourth day. Weak breath sounds and sticky crepitations were heard at bases of both lungs. This was one of the very few cases of simple influenza which required a second inoculation to cause a fall in temperature.

These three patients were injected within a few hours of the onset, but other charts could have been given showing a similar fall of temperature when the initial dose was given after two, three, or four days of sustained temperature.

I have seen no similar charts in uninoculated cases. Occasionally mild cases are seen with a pyrexia of 48 hours, but a duration of 4 to 6 days is more usual. Occasionally a fall by crisis is seen in untreated cases, but lysis is the rule. As crisis has almost invariably followed a single adequate dose of vaccine in my cases of simple influenza at whatever stage of the disease, it is difficult to resist the conclusion that they are related as effect and cause.

B. *Acute Influenzal Broncho-pneumonia.*

CASES 4, 5, 6, and 7 may be taken together. The patients were all young men. They were typical cases of the moderately severe type. There were dullness, weak breath sounds, and many crepitations at the bases of both lungs, with small areas of bronchial breathing, moderate cyanosis, respirations 28 to 32, pulse 100 to 120. Blood-stained, frothy sputum in Cases 4 and 5, frothy muco-purulent in the other two. Considerable distress in all four. Case 4 was injected about 24 hours after the onset with 70 million pneumococci and streptococci and 40 million influenza bacilli. The temperature after first rising slightly fell rapidly and reached normal 24 hours after the injection. No further injection was required. Case 5 was not injected until the third day; the disease was of a more severe type, and a dose of 100 million pneumococci and streptococci and 60 million influenza bacilli was given, followed by a fall of temperature to 100°, then after a rise to 102·2° it reached normal early on the fifth day. As the temperature did not quite settle a second injection was given on the sixth day. Case 6 received a dose of 80 million of each organism on the third day, and had a normal temperature early on the fifth day. Case 7 reached normal 24 hours after an injection of 100 million pneumococci and streptococci, 60 million influenza bacilli.

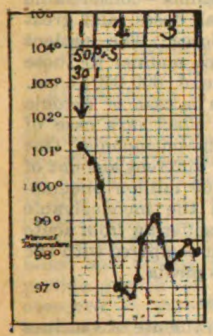
CASES 5, 6, 7, and 10 belong to a group of 17 patients from the same community admitted with influenza. Of these, 9 had broncho-pneumonia. Five not under my care were not inoculated and 4 died, the remaining 4 were inoculated and all survived. The cases, however, cannot be taken as strictly comparable, as three out of four of my cases gave rise to no special anxiety, although it is difficult to say what they might have become had the fever not been cut short.

C. *Very Severe Confluent Broncho-pneumonia.*

CASE 8.—A young woman aged 25. Symptoms began with great severity, extreme cyanosis, prostration, weak pulse, extensive signs throughout both lungs with large confluent patches at bases, sleeplessness, and delirium. Condition extremely critical for five days. Respirations reached 48, pulse 120. The first injection of 50 million pneumococci and streptococci and 30 million influenza bacilli caused a critical fall of temperature from 104° to 97°, a second dose on the fourth day was followed by a more gradual fall, after which the temperature remained normal. Two more injections were given later and were followed by general improvement. On the tenth day she had left femoral thrombosis.

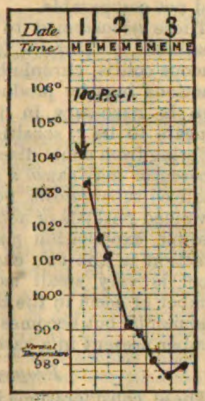
CASE 9.—A man aged 50. A case of the worst kind in a stout, flabby man with a bad alcoholic history. Enlarged liver, much albumin with casts and pus cells in urine. Very severe onset. Respirations 50 on first day. Pulse did not exceed 112, but was very feeble. At first much struggling and attempts to get out of bed, later muttering delirium and picking at bedclothes. Crepitations all over both lungs, large confluent patches involving the whole of both lower lobes, explosive exhausting cough with little sputum. Retention of urine. Much

1



CASE 1.—Female, aged 26. Influenza, uncomplicated.

2



CASE 2.—Male, aged 40. Influenza, severe onset.

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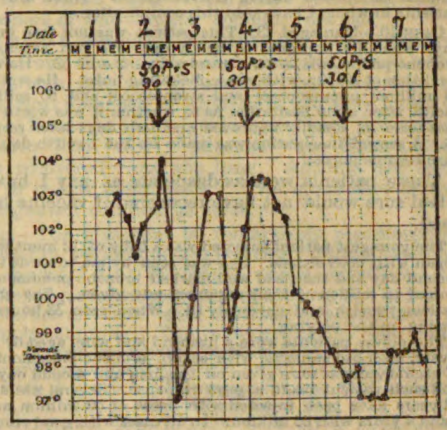

CASE 8.—Female, aged 26. Very severe confluent broncho-pneumonia.

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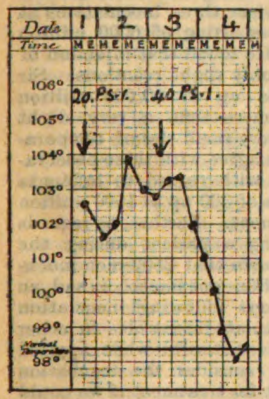

CASE 3.—Male, aged 8. Influenza, severe onset.

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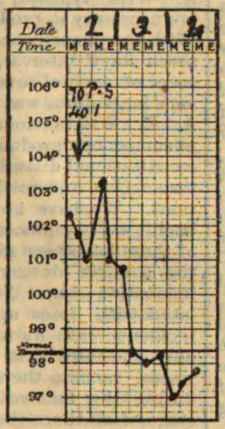

CASE 4.—Male, aged 38. Influenzal broncho-pneumonia.

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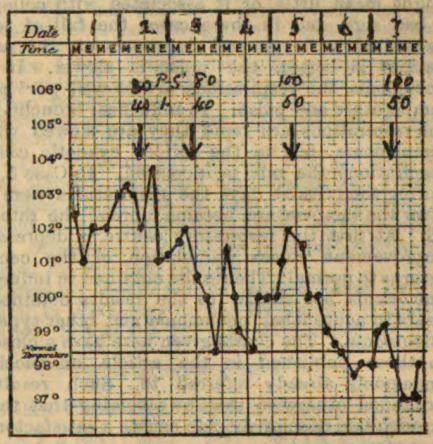

CASE 9.—Male, aged 50. Very severe confluent broncho-pneumonia.

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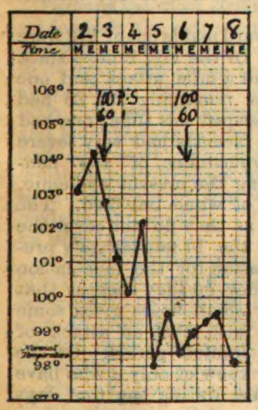

CASE 5.—Male, aged 28. Influenzal broncho-pneumonia.

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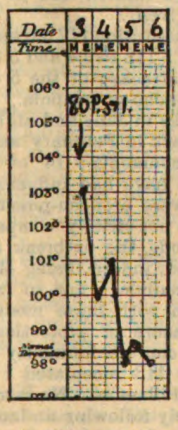

CASE 6.—Male, aged 21. Influenzal broncho-pneumonia.

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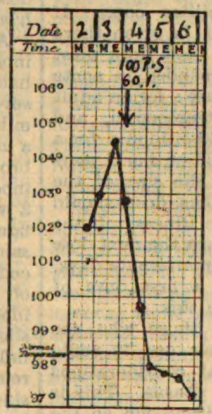

CASE 7.—Male, aged 28. Influenzal broncho-pneumonia.

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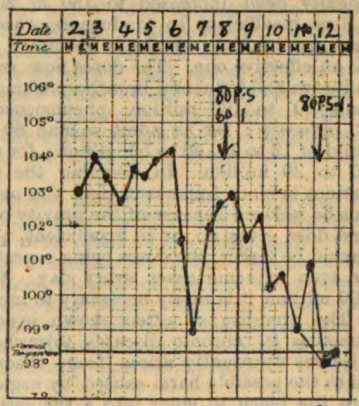

CASE 10.—Male, aged 28. Very severe confluent broncho-pneumonia.

cyanosis. Each injection was followed by a fall in temperature, and after the third the normal temperature persisted. Two more injections were given during convalescence. This patient also had left femoral thrombosis during convalescence. These are the only two patients in whom I have seen this complication.

CASE 10.—Man aged 28. This patient was not seen until the eighth day, when he appeared to be dying. He had extensive confluent broncho-pneumonia, with a respiration-rate of 52. He was lying in a condition of stupor, with weak flickering pulse. He was injected with 80 million pneumococci and streptococci and 50 million influenza bacilli after some hesitation as to whether it was worth while. From that time he steadily improved and two days later respirations were 26. A second inoculation was made on the twelfth day and temperature became normal.

These patients were as desperate as any I have seen, and I feel sure would not have recovered if vaccine had not been used.

The youngest patient injected was a baby of 12 months. Her illness began with convulsions. She was seen by me towards the end of the second day and then had well-marked broncho-pneumonia. An injection of 15 million of each organism was given. The child was then listless, peevish, and obviously ill. When seen 38 hours later she was sitting up and playing.

The oldest patients were a husband and wife, aged 69 and 68 respectively, both bad subjects, with severe broncho-pneumonia. 80 million of each organism were given on the first and second days respectively and each patient made a good response. Several children of 10 and 12 years have been injected with doses of 50 million and children of 3 and 4 years with 20 million. In all cases with good results.

Results of Curative Vaccination.

In no case have I seen any bad result from the use of vaccine in these doses when used early in the disease. If it may be argued that vaccine has no curative action in acute diseases a study of these cases will show that at least it does no harm. A constant feature has been the drop in temperature following an injection. This if standing alone might mean little, or if associated with collapse would be a bad sign, but in these cases the fall of temperature is associated with general improvement, the aspect of the patient is better, the pulse is slower. In acute lobar pneumonia the respirations are slowed *pari passu* with the temperature and pulse. In influenzal broncho-pneumonia, if the respirations are rapid they are slowed with the fall of temperature, but in the serious cyanotic cases with slow respirations the rate is increased. In Case 8, for instance, during the critical days the respirations were 20 to 30, but after the temperature became normal the rate increased to 48. At first the respiratory centre is depressed, but with improvement comes stimulation of the centre before it returns to normal. The results obtained in influenzal broncho-pneumonia are similar to the results obtained for several years in acute lobar pneumonia and other types of broncho-pneumonia. The charts given here have a close resemblance to those published in the article on vaccines in acute pneumonia already referred to. Such results cannot be explained otherwise than by assuming that the injection of an adequate dose of vaccine causes a satisfactory immunising response.

The Question of Dosage.

When I first used vaccines in these diseases such small doses as 5 million were given. Although occasionally good results were obtained they were uncertain. With further experience the doses became larger and the results better. In acute pneumonia, when 100 million pneumococci have not given a satisfactory response the dose has occasionally been increased to 150 or 200 million cocci. If a dose insufficient to produce improvement is given there may not be time to give a second. The first dose must be an effective one. The doses now recommended in acute influenza and influenzal broncho-pneumonia are: for an adult man 80 to 100 million pneumococci, streptococci, and *B. influenzæ*; for an adult woman 60 to 80 million; for a child of 12 to 14, 40 to 50 million; for a child of 2 or 3 years 10 to 20 million. In deciding the dose the size of the patient is more important than the age. The dose should not be reduced because of the gravity of the illness. If the first dose gives no, or an insufficient, response the next dose should be larger, the doses being repeated on alternate days, or even in some cases every day. With a first dose of 100 million it is rarely necessary to increase this.

The timidity so often shown even by those who use vaccines in chronic diseases towards their use in acute diseases apparently arises from theoretical considerations as to the possible harm caused by negative phases. This is not the place to enter into a theoretical discussion on the mode of action of vaccines in acute diseases. My attitude for the moment is the pragmatist's, "It is true because it works." But it may be pointed out that the doctrine of the negative phase was worked out in patients suffering from chronic localised diseases. The conditions existing in healthy persons and in patients with acute disease are very different and not comparable.

Those accustomed to vaccine therapy know that in the treatment of chronic localised diseases—chronic arthritis, mucous colitis, chronic bronchitis and asthma—considerable reactions may be produced by quite small doses, and great care is necessary in increasing the doses. The patient appears to be "sensitised" in a different manner to those suffering from acute disease. Again, a dose of ·000,0001 c.cm. tuberculin may cause a smart reaction in a case of chronic localised tuberculosis, but would have no effect in a case of advanced phthisis or acute caseous broncho pneumonia. One possible explanation may lie in the very different amount of infection in the two cases. A dose of 100 million pneumococci is very small as compared with the inconceivable number of cocci in the body of a patient suffering from acute pneumonia, but becomes appreciable when compared with the number present in a case of chronic otitis media.

Prophylactic Vaccination.

These considerations have a bearing on the use of vaccines for prophylaxis. Doses which seem inadequate are being recommended apparently from the fear of a period of increased susceptibility following upon inoculation, or of the possible danger of inoculating a patient during the incubation stage. Within certain limits the period of immunity depends upon the size of the dose inoculated, the limits being set not so much by the actual quantity of vaccine used as by the amount of antigen which the tissues can set free from it. With typhoid, doses of 1000 million and 2000 million are necessary to produce immunity lasting a reasonable time. With the pneumococcus Lister advises three inoculations at seven days' interval, each dose consisting of 6000 million cocci of each of several groups. He found that injection of very large doses was followed by only slight reactions. Sir A. E. Wright found that doses up to 40,000 million pneumococci produced nothing more than a very slight constitutional disturbance and a very small rise of temperature. Cole and his fellow-workers agree with these observations. We have no similar data with regard to influenza bacilli and streptococci. But doses of 300 up to 1000 million of these have been given for treatment. Further, as regards the possible danger of inoculating a patient during the incubation stage, Wright[3] has shown that 2500 men inoculated with doses up to 1000 million pneumococci had an incidence rate during the four days following inoculation only one-third that of 750 uninoculated controls—in other words, vaccine therapy is highly successful when applied during the incubation stage. I consider the incubation stage of all times the best to inject for treatment if we could discover it in the individual.

Prophylactic injections have been given to 230 persons, 100 million of streptococci and pneumococci and 50 million *B. influenzæ* being used as a first dose, and after a week double these doses to 90, but as there is no good reason for reducing the number of influenza bacilli the last 140 have had equal numbers of each organism. In some cases a third dose of 400 million and in a few a fourth of 800 million has been given.

At one institution 117 nurses and ward maids out of 170 were inoculated; 112 twice and 5 once. Of the 112, 2 have since had mild attacks; of the 5 one had a mild attack and one severe broncho-pneumonia. Of the remaining 53, 25 had mild attacks in June and all have escaped this time; one had a mild attack in February and has recently had very severe broncho-pneumonia; 14 of the remainder of the non-inoculated have had influenza during the present epidemic, 2 with severe broncho-pneumonia, of whom one died. The figures are not strictly comparable as they do not cover the same periods, the outbreak among the 14 immediately preceding, and, indeed, being the occasion for the inoculation of, the remainder; but so far as they go they suggest that inoculation with these moderately small doses gives some slight measure of protection, and also that an attack of influenza confers immunity for a limited period. Of the remaining 113 inoculated I so far know of only 2 who have since had influenza. No case fell sick during the four days immediately following an inoculation.

[3] THE LANCET, 1914, i., 91.

SOME OBSERVATIONS ON THE RECENT INFLUENZA EPIDEMIC

AT A BASE HOSPITAL IN FRANCE.

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I.—*An "Intensive" Culture Medium for the Isolation and Growth of Pfeiffer's Bacillus.*

As the growth of *B. influenzæ* is better in association with staphylococcus than in pure culture, it appeared that possibly the basis of the symbiosis was a pabulum created by a proteolytic ferment generated by the latter organism, containing all the split-products of protein in all stages of cleavage. If this were true, then *B. influenzæ* would be expected to grow abundantly in the presence of an active tryptic ferment in the medium. The simple method of trypsinising whole blood and adding it to ordinary nutrient agar yielded a prolific growth of the organism. Strict asepsis must be observed in the technique, as subsequent sterilisation is inadmissible, the whole point of the method being to avoid the inactivation of the ferment.

A simple method adopted was the following:—

Into a 10 c.cm. syringe containing 3 c.cm. of citrated (1 per cent.) physiological saline, 5 c.cm. of rabbit's blood is drawn; this is quickly added to a mixture of 5 c.cm. citrated saline with 2 c.cm. liq. trypsinæ co. contained in a test-tube. The whole is mixed and placed in the incubator for one hour to start the proteolysis of the serum-albumin and globulin. Meanwhile, 100 c.cm. of nutrient agar (acidity + 10) in a 200 c.cm. flask is cooled down to 46° C. in a water-bath. The trypsin-blood, previously placed for a minute or two in the bath, is added to the agar at 46° C. Ten plates are quickly poured, and afterwards stored in the ice-chest until required.

The red blood cells are not too far altered by this treatment to preclude facility in making observations on the hæmolytic power of organisms, provided that growth has not exceeded 24 hours in the incubator, for in the latter case the red cells would be completely digested by the ferment.

This medium may be used with advantage for the growth of other delicate organisms—e.g., the gonococcus.

Note on oxygen supply.—For the growth of obligatory aerobes it has been shown that the essential constituent in blood media is the hæmoglobin. Is the function of the Hb to provide a readily available supply of oxygen? To determine this point, an agar medium was made in which neutralisation was effected by the chemical equivalent of sodium peroxide in place of caustic soda. The employment of this peroxide is confronted with technical difficulties. Since prolific growth on potato may be due to the presence of oxidases and peroxidases, one may possibly find that the addition of minute quantities of certain colloidal metals will be easier to incorporate in media for the same purpose. The call for oxygen by these obligatory aerobes is probably due to the necessity for the rapid oxidation of products like lactic acid, which inhibit growth.

II.—*The Extreme Prostration and the Involvement of the Suprarenal Capsule.*

Perhaps the most striking feature of the present influenza epidemic is the extreme prostration. Suddenly the patient appears to lose his physiological resistance completely, and in 24 hours the pulse becomes almost imperceptible. This atonia drew attention to the condition of the suprarenal body. In the first autopsy (in which the heart, spleen liver, and kidneys were normal) the left adrenal was soft, diffluent, and congested. On examining histologically it revealed multiple hæmorrhages in the medulla extending into the zona reticulata of the cortex and œdema of the cells of medulla and cortex. (Further examinations were held up by routine work.)

It is possible that adrenalin in small doses, repeated four-hourly, might prove useful during this period of marked asthenia, to be followed in convalescence by the administration of suprarenal capsules until repair is complete. The arterial tension might be used as an index for the control of treatment.

III.—*An Organism Resembling* B. pestis *in Appearance.*

Introduction.—Cultural examination of the aseptically obtained lung-juice from a case of "influenza" eight hours after death gave an organism resembling *B. pestis* in appearance. To eliminate the possibility of it being one of the many types of organism found post mortem the lung-juice was aspirated immediately after death (within a quarter of an hour) in the second case. From these two cases—both German prisoners of war—similar colonies grew out.

It was not until a fortnight later that the same organism was isolated from the throats of "carriers"; these were again two German prisoners of war, who had been sent in for bacteriological diagnosis of diphtheria and were found to be negative. [It may be of interest to record here that in two cases of death from this "influenza" the Klebs-Löffler bacillus was recovered from the lung. Aphonia had been a symptom in one of these cases.] The characters of the plague-like organism will now be given:—

Morphology.—The organism is remarkably pleomorphic. The type found in parent culture is a short plump bacillus. Its breadth ranges 1–2 μ; its length varies, mostly 2–3 μ; here and there longer forms may be met with up to 4 or 5 μ.

Staining characters.—The most striking characteristic is the marked polar staining. The organism stains well with aniline dyes. It does not retain the stain in Gram's method.

Cultural characters.—Isolation and growth are difficult in comparison with *B. pestis*. The organism was first isolated from the top, shallow, partially desiccated film of a serum slope. This suggested that it grew best on a hypertonic neutral medium; subcultures were therefore made on 2 per cent. salt neutral agar plates.

The parent growth on serum appears as a white colony about 1–2 mm. diameter in 24 hours. Subculture on gelatin proved a failure on two occasions. Subculture on salt-agar yields dense cream-coloured circumvallate colonies up to 3 mm. diameter in 24 hours; these show chains of bacilli and pear-shaped involution forms. (Hankin describes similar forms for *B. pestis* grown under the same conditions.)

Pathogenicity.—This has not been satisfactorily investigated. Only subcultures on salt-agar have been tested, and these were found to be avirulent: hypodermic injection of a rat caused 3 or 4 days' illness with subsequent recovery, whereas intraperitoneal inoculation of a guinea-pig only served to sharpen the appetite.

Further investigation with early cultures on a less attenuating medium is desirable.

Conclusion.—The organism thus agrees with *B. pestis* in morphology and staining characters, but isolation and growth are far more difficult than with *B. pestis*. Its virulence, if any, may depend on the concomitant action of some other organism—e.g., *Streptococcus brevis* or *viridans*—similar to what is suggested for Pfeiffer's bacillus.

I wish to express my thanks for the interest taken by the Assistant Adviser in Pathology for the Calais area (Captain E. L. Horsburgh, R.A.M.C.) in the verification of my observations.

SOME CLINICAL ASPECTS OF LONG-STANDING PULMONARY TUBERCULOSIS.

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THE last decade has seen a wide dissemination of knowledge with regard to pulmonary tuberculosis among the medical profession. Thanks more to individual apostles than to the teaching of the medical schools, practitioners now think far more frequently of tubercle in patients showing pleurisy, hæmoptysis, or intractable cough, and realise that in the great majority of cases these events signify pulmonary invasion, and in most cases metastasis from a previous lymph-gland focus. Meanwhile the books and journals, English and foreign, shower on their readers methods devised to facilitate a yet earlier diagnosis.

While, therefore, current medical literature abounds in appeals for the early diagnosis of *early* tubercle, it may seem odd that one should have to plead for the early diagnosis of *late* tubercle. But the fact remains that one sees case after case in sanatoria, in which pleurisy or hæmoptysis occurred seven or eight years ago, after which the patient was lost sight of from a medical point of view, and consequently was not thought of as a possible case of phthisis when he applied to a doctor after some years for the relief of further symptoms.

So benign is the course of phthisis, that many of these patients whose treatment only lasted a week or two at the time of the original manifestation, have maintained reasonable

health and working capacity over several years without attaining pathological healing. This was very obvious in the review of recruits for the Army, where in so many cases men were accepted not as cases of obsolescent tubercle fit for service, but simply without any recognition that they were in any way abnormal. Many have stood military life well; many, alas, have gone under.

Non-recognition of Cases and its Results.

That some of these cases should have escaped recognition need cause one no surprise; there are many conditions much more easily observed. In the absence of careful history-taking, and with a frequent absence or denial of sputum on the part of the patient, a cursory chest examination on the traditional lines may not rouse suspicion, since compensatory changes in the chest have a marvellous power of masking signs, especially in men, in whom the round, silent, emphysematous chest is commoner than in women.

The chest may be reasonably resonant, except perhaps at the extreme apices, and there may be no adventitious sounds of any kinds. The breath sounds may be weak or slightly harsh in quality, but more or less equally so all over. But while in some cases the physique may be good, careful inspection of the chest is generally enough to provide the necessary clue. Shelving apices and local rib deformities and asymmetries, supraclavicular hollows, muscular wasting about the shoulder-girdle, heart displacements, localised respiratory movements, and the use of extraordinary accessory muscles of respiration; some or all of these will help to indicate the damage that has been done.

The result of these cases being missed is that many patients who are really old chronic phthisical subjects, are not recognised as such when they first begin to feel run down, and too often it is only when they have gone on to breakdown, and their chests are a mass of squeaks and crackles that they are diagnosed at all. The fortunate few who find their way to a sanatorium when their initial manifestation of pulmonary invasion occurs, learn automatically that they have consumption. They are marked down as tuberculous; and that greatly to their advantage, since a subsequent toxæmic bout is less likely to be passed over as influenza, and the past history is much more likely to be brought to the notice of the medical attendant.

But even assuming that the old obscure fibroid cases are lucky, and previous to breakdown get swept into the net of the tuberculosis institutions, even so, they are not always recognised at once for what they are. Charts of their chest condition are handed about from one place to another, with perhaps a few strokes across the clavicles and "no adv. sounds," just as though they were cases of early pulmonary deposit. This is most unfortunate, because their difficulties and their treatment are not entirely the same as those of the early case. Most of the ordinary canons of sanatorium routine are common to both. Both must have rest until toxæmia has subsided. But the old fibroid cases have a disability which the early cases do not present, and I should prefer to call it their *mechanical disability*.

Oxygen-want.

Generally speaking, they have achieved all the compensation of which they are capable, and their response to exertion varies according to the extent of the damage to their respiratory apparatus. The early case has no marked difficulty in getting his blood oxygenated. If he is at all dyspnœic it is generally a toxic manifestation which disappears with his toxæmia. But the old chronic remains dyspnœic on exertion when quite free from toxæmia, and his disability is reflected in his colour oftener than the text-books would lead one to suppose. Unfortunately, most doctors only recognise a person as "cyanotic" when he is (in the modern sense of the word) quite blue, as in congenital heart disease or some cases of "idiopathic" emphysema. But this intense blue appearance represents more than pure oxygen-want. It is oxygen-want plus venous congestion, and the cyanosis of old tubercle and other conditions is not always a striking blue, but more often an ashen, livid, or leaden tint. It may be that the blue colour occurs where there is some degree of right heart congestion; in many of these chronic cases we certainly get some objective evidence of the heart working under strain, but unfortunately little work has been done as yet, which enables one to estimate the amount of the mechanical disability directly attributable to the myocardium. The main thing to recognise is, that when a tuberculous person is cyanosed or livid, his blood is not properly oxygenated for the degree of activity in which he has at that moment engaged. He may not complain of dyspnœa except on strenuous exertion, though his respiration may be increased both in rate and depth. The range of automatic compensation is wide. I have even seen patients engage in a short period of obvious forced breathing at the sight of a hill, thought quite unconscious of the fact!

But the question is, To what extent does this slight chronic oxygen-want matter? More, it may be, than is usually supposed. Apart from any theoretical disadvantage to viscera already past their prime, there is reason to think that it may be a direct cause of physical and mental ill-health. Many chronic tuberculous subjects who show none of the ordinary signs of tuberculous toxæmia, who keep an afebrile chart, and whose signs are quiet nevertheless complain of vague malaise, with many queer subjective symptoms, some of sympathetic type; sinking feelings, feelings of constriction, palpitation, insomnia, headache, nausea, depression, and nervousness, and other sensations reducing both their comfort and their working capacity. One cannot attribute all of these to the imagination or to indiscretions in diet. It is naturally most difficult to place them accurately, but perhaps it will be possible eventually to separate the syndrome of "anoxæmia" from that of tuberculous toxæmia, when the effects of slight oxygen-want over long periods are more definitely understood. This is certainly one of the directions in which increased coöperation is required between the physiologist and the clinician.

Relation to Classification and Treatment.

In handing on these cases to the care of another, it is plainly going to help him very little in assessing their capacity or recording their progress, to know that they are "ambulant afebrile," or that they come into Class 2 or 3 of Turban's grouping. Nor does Philip's valuable method enable one to record shortly *all* the essential factors. But with a small modification it would do so. In any case of pulmonary tuberculosis one wants to record shortly: (1) extent of lesions; (2) degree of toxæmia; and (3) mechanical disability; and this might well be done by the combination of the letters L T M, numbered from 0 to 3. Thus cases like those under consideration would often be $L_3T_0M_1$—extensive lesions, no toxæmia, slight mechanical disability. In so far as shorthand notes of cases are of value, such a method would cover the essential factors of pulmonary tuberculosis in all its stages. And in actual practice such a note certainly makes for careful observation of patients, by continually drawing one's attention to fundamentals. It is especially in institutions that patients are so liable to go automatically through a routine, unless anything gross happens to call attention to their particular needs.

Again, in special treatments, like artificial pneumothorax, it is most essential to consider all the factors involved. It is of doubtful advantage to an old fibroid case (except as a life-saving operation) to flatten out his foci by collapse therapy, and at the same time to leave him with too little lung to carry on his occupation with comfort, and with an overworked heart handicapped by the embarrassment of a displaced mediastinum. And the same care is wanted in fixing the limits of activity for these chronic cases where surgical treatment is not undertaken. They will not generally benefit by being taken past the stage of exercise represented by light gardening, nor is there any justification for making them short of breath

The country is alive with schemes, some in an early stage, some already in working, for dealing with the tuberculous patients discharged improved from sanatoria. How are these old chronic fibroid cases going to fare? Their working capacity is often great, and their expectation of life indefinite. They can do a relatively large quantity of work, assuming it is work of the right kind and within their respiratory capacity, but they are not capable of sudden great exertion, and are most comfortable on a fairly sedentary job. It follows that in the laudable desire to get them open-air conditions we must not overlook their limitations. If we are going to send them to open-air colonies we must make provision for sedentary occupations, many of which are compatible with open-air conditions. They will certainly live longer and do more useful work under the light physical strain of sedentary employment than they would by going blue in the effort to get through the average day on a farm.

A CASE OF

BENCE-JONES'S ALBUMOSURIA WITH LYMPHOCYTIC LEUCOCYTHÆMIA.

BY HENRY L. HEIMANN, B.A. CAPE,
AND
C. BAWDEN WILSON, B.A. CANTAB.
With Note by
H. BATTY SHAW, M.D., F.R.C.P. LOND., F.R.C.S. ENG.,
PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL.

Note by Dr. BATTY SHAW.—The following case appears to be of special interest because of the association of leucocythæmia with Bence-Jones's albumosuria; presumably the marrow has shared with other tissues in producing the picture of leucocythæmia. If Bence-Jones's albumosuria were expressive of a pathological function of the marrow, then it should be more common in leucocythæmia, especially in the myelocytic form. It has not been my experience to meet with this coincidence of leucocythæmia and Bence-Jones's albumosuria before, nor is it referred to much in the literature on the subject. I can only therefore conclude that the association is purely an example of coincidence, or would be more frequently observed if greater care were taken in the examination of the urine in cases of leucocythæmia as was happily taken by Mr. Heimann and Mr. Wilson in this case.

The patient, a married woman aged 39, was admitted to University College Hospital, London, on July 22nd, 1918, under the care of Dr. Batty Shaw.

There was a history of "albuminuria," shortness of breath, and cough for 14 days, with blood-stained expectoration. She stated that in childhood she had had scarlet fever, measles, and whooping-cough, whilst for the last ten years she had suffered from anæmia. In August, 1917, her legs began to swell, but returned to their normal size on resting; she was unable to resume her occupation without the same condition recurring.

There was no swelling of the legs when she entered hospital; her complexion was waxy in colour and she looked wasted. The anterior abdominal wall was lax and there was a ventral hernia; the liver was palpable to a distance of three finger-breadths below the costal margin and an enlarged spleen extended two inches below the subcostal plane in the direction of the umbilicus. The heart was enlarged; there was a well-marked "blowing" systolic murmur in the mitral area, and this was conducted into the axilla. Nothing abnormal was found in the chest. No albumin was found in the urine, but on heating a flocculent precipitate appeared which largely disappeared on boiling.

Urine examination.—A detailed examination of the urine was made (H. L. H. and C. B. W.).

A 24-hours' specimen was filtered. The filtrate was clear and measured 1275 c.cm. in volume; the reaction was acid and the specific gravity was 1018.

A test-tube of urine was heated in a water-bath, and a slight precipitate appeared at 56° C., and on gradually raising the temperature it became heavier by increments up to 62° C., after which there appeared to be no more precipitation. The precipitate was filtered off and the filtrate heated. No more precipitation occurred, so it was concluded that precipitation was complete at 62° C.

On heating the urine to boiling point all the precipitate first formed redissolved, with the exception of a trace which disappeared on the addition of a few drops of acetic acid.

It was apparent that we were dealing with Bence-Jones's albumose, and the following confirmatory tests were made:—

To a test-tube of the specimen caustic soda and a few drops of copper sulphate were added, and a deep rose-red colour developed in the cold (biuret test).

Other tests for proteins:—A. Colour reactions: (1) Xantho-proteic, positive; (2) Millon's reagent, positive; (3) Molisch's test; positive; (4) the sulphur reaction was slight.

B. Precipitation reactions: (1) Ammonium sulphate, precipitate; (2) HCl (strong), precipitate; (3) ferric chloride, precipitate (solution in excess); (4) alcohol, precipitate; (5) picric acid, precipitate; (6) mercuric chloride, negative; (7) trichloracetic, negative.

All the above tests were confirmed in a solution of the purified albumose.

Further experiments were made with a specimen of urine and a saturated solution of ammonium sulphate.

It was found that on adding 8 c.cm. of ammonium sulphate solution to 10 c.cm. of urine an opalescence appeared. This was filtered off and a clear solution obtained. It was found that the filtrate gave no precipitate on adding more ammonium sulphate until a further 4·7 c.cm. of saturated solution had been added.

This process was repeated, and a series of definite precipitates was obtained for definite concentration of ammonium sulphate in solution. All these precipitates gave the biuret reaction for albumose.

This phenomenon, combined with the different increments obtained by coagulation, suggests that Bence-Jones's albumose is a complex of a number of albumoses.

Estimation of the contents of the urine was made by us, the patient being on a light fish and milk diet.

Total sulphates	1·8 g. H_2SO_4	Urea N	9·27 g.	10·29 g.
Total N (Kjeldahl)	11·7 g.	Creatinine N	0·15 g.	
Albumose N	1·09 g.	Ammonia N	0·61 g.	
Unestimated N	0·32 g.	Uric acid N	0·26 g.	

This leaves 1·41 g. of N which is made up of albumose N, and other N products which we were unable to estimate.

Estimation of N in albumose.—It was found that mere precipitation by heat of the product and washing subsequently was unable to purify it.

Therefore 25 c.cm. of urine were taken; the albumose was coagulated and filtered off. It was then redissolved in boiling water and the precipitate obtained by cooling. This was thoroughly washed until no urea reaction was given by filtrate. No albumose was lost by this method, as was ascertained by testing the various filtrates.

The precipitate was then dried and weighed. The total albumose excreted per diem was found to be 35·7 g. The nitrogen content of albumose was found to be equivalent to 1·09 g. per diem. The albumose therefore contains 3 per cent. of nitrogen. We see the unestimated N amounted to 0·32 g. per diem.

A catheter specimen of urine was examined by the bacteriologist for organisms, and streptococci were found in large numbers and in pure culture. The strain was very virulent to rabbits. No casts were found in the urine.

Blood examination by F. H. Teale, M.D. Lond., F.R.C.P., clinical pathologist to University College Hospital:—

Wassermann reaction negative.

Total red cells, 2,860,000 per c.mm.; hæmoglobin, 59 per cent.; colour index, 0·9. Average size of red cells was increased. Numerous microcytes and macrocytes were present. There were a few normoblasts and gigantoblasts. There were poikilocytosis and vacuolation.

Total white cells, 8000 per c.mm.; lymphocytes, 63 per cent.; large lymphocytes, 8 per cent.; hyaline cells, 1 per cent.; polymorphonuclear cells, 27 per cent.; polymorpho-oxyphile cells, 0; myelocytes, 1 per cent.

The patient was under observation until August 16th, 1918, when she left the hospital. During that time she always had a slight evening temperature (average 99·6° F.). Her appetite was good, and she complained of always being hungry, whereas her weight, which was 6 st. 9 lb. on entering, never rose above 6 st. 11 lb. The urine was examined daily, and showed on each occasion the characteristics described above. We were unable to account for the presence of the streptococci in the urine, and she showed no signs of harbouring virulent pyogenic organisms in her bladder or upper urinary passages.

No deformities were found in the spine, nor were there any painful areas on any of the long bones. No enlargement of the lymph glands could be detected, and no metaplastic nodules were felt in any part of the body.

The condition of her heart had improved, and the cough had disappeared when the patient was discharged.

Diagnosis.—The outstanding points in the case seem to be the presence of the albumose in the urine, with a relative and total increase of small lymphocytes in the blood, and the absence of any signs of malignant growths. F. Parkes Weber and Ledingham describe five conditions of myeloma—i.e., lymphocytic, myeloblastic, myelocytic, erythroblastic, and plasmocytic.[1] F. G. Hopkins and H. Savory state[2] that this proteosuria may occur in three pathological conditions, myelomatosis, lymphoid hyperplasia of bone marrow and osteomalacia. We are inclined to regard the lymphocytic myeloma of the former observers as identical with the lymphoid hyperplasia of the bone marrow of the latter observers, and we believe the case described is one of this type, and gives the clinical picture according to the blood count of lymphocytic leucocythæmia. The enlargement of the liver and spleen also points to a hæmopoietic disease.

The secondary points of interest in this case were the heart disease, exemplified by the enlargement, the murmur, and the dropsy in the legs, together with the presence of streptococci in the urine. It is tempting to ascribe the heart lesion to an endocarditis of streptococcal origin, and to speculate whether a pyogenic organism of this type can affect the bone marrow and lead to the production of a lymphoid hyperplasia. We are convinced that this was a case of albumosuria from the beginning, and that the albumin reported in the urine earlier in the disease was really the proteose we found. It is possible, however, that the patient had true albuminuria during the periods of dropsy. We were unable to examine the urine and blood of her three children, who were at work and apparently healthy.

[1] Proc. Roy. Soc. Med., Path. Sec., ii., 1909.
[2] Journal of Physiology, xlii., 1911.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

SIX CASES OF PURULENT BRONCHO-PNEUMONIA ASSOCIATED WITH THE MENINGOCOCCUS.

BY J. A. GLOVER, M.D. CAMB., D.P.H.,
CAPTAIN, R.A.M.C.

DURING the examination of the contacts of a case of cerebro-spinal meningitis which occurred recently at the 4th London General Hospital, the following interesting facts were brought to light:—

The patient C., who subsequently developed cerebro-spinal fever, was admitted to hospital on Sept. 28th from Egypt with a long history of malaria and marked wasting. On Oct. 12th he was moved into another ward and placed in the next bed to a man, H. H. was a convalescent and one of the three survivors of a party of six men, all of whom had had severe purulent broncho-pneumonia and whose history will be dealt with later. H. had still a persistent cough.

Owing to the fireplace the beds of H. and C. were close together, although the ward was not crowded.

On Oct. 20th, after eight days of this close neighbourship, C. began vomiting and later developed other signs of meningitis.

On Oct. 24th, he being desperately ill, was lumbar punctured by me, turbid fluid with plenty of meningococci was obtained, and he has made a splendid recovery with antimeningococcus serum prepared for the Medical Research Committee, only two doses of the pooled I.–II. serum being required. The meningococcus in his naso-pharynx was Type I., that from the cerebro-spinal fluid not being grown.

Owing to the length of time C. had been in hospital it was probable that he had been infected there, and hearing of H.'s history of purulent bronchitis and persistent cough I took several swabs of him, all of which yielded a nearly pure culture of Type I. meningococcus.

The profuse growth from H.'s naso-pharynx contrasted strongly with the slight growth obtained from C.'s, from which the meningococcus was only recovered with difficulty after many swabs.

None of the other patients in C.'s ward was a carrier and the only staff contact who was positive was a sister who carried Type II., and who therefore obviously had neither infected nor been infected by either H. or C.

With the kind assistance of Dr. T. H. Jamieson I learnt, as stated above, that H. was one of the three survivors of a party of six patients transferred from Holborn Military Hospital, Mitcham, on Sept. 21st, all of whom had developed severe purulent broncho-pneumonia. Following up the other two survivors, I found that N., a great friend of H., but in another ward and on another floor, was also a "pure plate" carrier of Type I., and that the third survivor, J., who had been transferred to a convalescent hospital, was also carrying an almost pure culture of Type I.

All six of this party had been in hospital in Malta suffering from malaria acquired in Salonika. On August 29th they left there by hospital ship and arrived at Marseilles on Sept. 2nd, where they were 10 days under canvas in a general hospital. This they left on Friday, Sept. 13th, and after three days in a hospital train across France, crossed the channel via Southampton and arrived at Mitcham on Sept. 16th. On Sept. 18th all had high pyrexia, which in view of their history was considered malarial, and on Sept. 21st they were transferred to the Malaria Block of the 4th London General Hospital.

All now developed severe purulent broncho-pneumonia and three died, H., N., and J. only surviving after very dangerous illnesses.

Dr. Jamieson kindly gives me the following notes:—

In all cases there were marked dyspnœa and considerable cyanosis. In all cases the sputum was purulent and copious, and was *not* rusty or blood stained. Examination of the sputum showed pneumococci. In two cases there was diarrhœa, and in three albumin was present in the urine. The cause of death in each of the fatal cases was gradual cardiac failure. Two post-mortem examinations were done. Both showed broncho-pneumonia with quantities of purulent secretion in the bronchioles; in fact, the lungs, when cut into and held up, dripped pus. The sputum throughout had been noted as being very purulent. In none of the cases did any of the symptoms suggest meningitis.

We may now review our dates. H. was quite convalescent on Oct. 12th, when he was moved next to C. C.'s onset of cerebro-spinal fever was about Oct. 20th On Oct. 24th this was definitely diagnosed, and the same day H. was first swabbed and found to be a carrier. N. was found to be a carrier on Oct. 25th. J. on Oct. 26th, all nearly "pure plate" carriers of Type I. No other Type I. carriers were found among the contacts at either hospital.

In my opinion we may consider that C. was undoubtedly infected by H., and that in all probability the purulent broncho-pneumonia from which the six men suffered was due to a mixed infection of pneumococci or Pfeiffer's bacillus and Type I. meningococci. It was characterised by (1) high mortality, half the patients dying; (2) the extreme purulence and great abundance of the sputum; (3) the absence of rusty sputum or blood so common in the present epidemic of pneumonia. C.'s recovery was a dramatic proof of the potency of the Medical Research serum. Thirty-six hours after being apparently moribund he was demanding the morning paper, and he has only required two doses, although the first fluid showed many typical meningococci.

Efforts to isolate and agglutinate the meningococcus from H.'s sputum have failed, but it is to be remembered that this was only attempted more than a fortnight after convalescence was fully established.

LOCAL ANÆSTHESIA FOR EMPYEMAS.

BY C. W. MORRIS, M.B., B.S.DURH., M.R.C.S., L.R.C.P.,
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AND
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AT the present time when the influenza epidemic, with its sequela of pneumonia, is subsiding, and the virulence of the infection is lessening, a large number of the pneumonia cases, who in the earlier stages of the epidemic would have died, are developing empyemas. In view of the very serious condition of many of these patients the administration of a general anæsthetic for the removal of a rib is accompanied by great danger and likely to prove either fatal at the time of the operation or seriously to minimise the chances of recovery.

It is on account of these dangers that we have always employed local anæsthesia at the Royal Naval Hospital, Haslar, both before and during the present epidemic, and the experience gained in dealing with 150 cases, of which 85 occurred during the last six months, may prove of interest and use to those who are now faced with like cases.

We use a 0·5 per cent. solution of novocaine and sterile water, to which adrenalin chloride 1 in 1000 is added in the proportion of three drops to the fluid ounce, and the following is briefly our technique:—

The patient is placed in position on the table and the skin preparation made. Three inches of the rib over the site of the empyema are accurately outlined with a blue pencil, and the needle thrust perpendicularly through the skin at the posterior end of the marked area, injecting the solution at the same time, until the point touches the rib. The point is then directed down to the lower border and turned into the subcostal groove, and 5 c.cm. injected into the intercostal nerve.

Without withdrawing the needle the periosteum on the whole outer surface of this section of the rib, as far forward as can be reached through this puncture, is thoroughly infiltrated, beginning at the posterior end and working forward, paying especial attention to the two edges. The intercostal spaces above and below are injected and then the subcutaneous tissues and skin infiltrated. The needle is then withdrawn and inserted through the analgesic skin in the centre of the marked area, and the periosteum, intercostal spaces, and coverings of the rib infiltrated in a similar manner. One more puncture, again through the infiltrated skin, at the forward end of the marked portion of rib and the same process repeated will complete the infiltration. Should sufficiently long needles be used the whole area can be covered by two infiltrations, one at each end.

We find that to ensure the best results some 20 c.cm. must be injected at each of the three punctures, and in stout patients larger quantities will be necessary. If the vertical incision rather than that along the rib should be preferred, we carry out the same infiltration, with the addition that we extend

the injection through the second puncture into the skin and subcutaneous tissues well over the intercostal spaces above and below. The infiltration is easy to carry out and only takes a few minutes; the patient feels only the one prick of the needle. The operation can be started immediately it is finished. It is necessary to emphasise the importance of using the rib shears with the utmost care, as any wrenching will give rise to pain at the costo-sternal junction.

On opening the pleural cavity there may be some discomfort, especially should the patient have a fit of coughing, which is sometimes the case in large empyemas.

In nearly all of the 85 cases operated upon since May the patients were suffering not only from empyema but had signs of active pneumonia in both lungs, and many had a blood pressure of well below 100 mm. Hg. Notwithstanding their serious condition no patients were lost at the operation nor did their behaviour during it give rise to further anxiety.

We claim that local anæsthesia for these patients gives greater safety and increases the chance of ultimate recovery.

INFLUENZA AND BLACKWATER FEVER.

BY SAMUEL SAMUEL, M.B., CH.B. LEEDS, M.R.C.S.,
LATE CAPTAIN, R.A.M.C; HONORARY MEDICAL AND SURGICAL OFFICER, LEEDS JEWISH HOSPITAL.

MUCH has already been written in connexion with the present influenza epidemic, both in regard to its etiology and its complications. In the lay mind especially the present influenza has been looked upon by some individuals as a type of malaria, probably spread by the returning malarial soldier, and this, amongst other reasons, accounts, to a certain extent, for the great consumption of quinine, both as a prophylactic and as a curative drug.

The present influenza has been of a most virulent type, and the commonest of complications have been the various hæmorrhages which have included the various rashes, bleeding from certain organs—e.g., nose, uterus, stomach, lungs, &c. Though cases have occurred frequently where blood has appeared in the urine, it has chiefly been present when an acute nephritis has beeu a complication. I doubt, however, if many have experienced a case similar to the following, where the urine has appeared as blackwater, similar to what some of us who have seen active service in Macedonia have witnessed.

The patient, a male aged 45, previously quite well in health and never domiciled abroad, began on Monday, Nov. 25th, with typical influenza. He was treated with simple remedies such as spir. æther. nit. and simple alkalies, but no quinine was administered. His temperature began to subside on the third day, i.e., on the Wednesday. This same day he began to complain of violent colic in the epigastrium, which on the following day moved also to the flanks. Warm applications, simple warm-water enemata, and even small doses of morphia, had no effect in quieting the pain. On the Friday evening, whilst the pain was still severe, the patient passed quite an abnormally large quantity of urine as black as ink, with a reddish tinge showing just at the edge where the urine came in contact with the side of the chamber. An examination of the urine revealed the same features as are present in typical blackwater fever. On the Saturday morning the patient was seen in consultation with Lieutenant-Colonel G. W. Watson, who ordered tr. belladonnæ in 5 min. doses every three hours for the colic and warm applications to the flanks. The colic began to disappear almost with the second dose, and in the evening the patient was free from pain, though still passing the black urine. On the Sunday the black urine began to clear and to diminish in amount. The patient's conjunctivæ and skin then assumed a marked yellow tinge, which, however, disappeared gradually in the course of the next few days with the nightly dose of calomel gr. 1 and a morning seidlitz powder. Albumin and granular casts still persisted for about two days after the blackwater disappeared, when these also disappeared.

The patient to-day (Dec. 9th) is free from all symptoms, though weak and anæmic and earthy-looking. He is now allowed up for one hour a day. Just a week has now passed and there has so far been no recurrence of the blackwater, and the urine is quite clear and normal in all respects.

Leeds.

ROYAL SANITARY INSTITUTE.—The Henry Saxon Snell prize of 50 guineas for an essay containing the best suggestions for Improvements in Apparatus and Appliances for Dealing with House Refuse has been awarded, along with the bronze medal of the institute, to James Jackson, superintendent of the refuse disposal department at Birmingham.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

A MEETING of this section was held on Dec. 13th, when Dr. E. W. GOODALL, Lt.-Col., R.A.M.C., delivered his Presidential Address on

Enteric Fever in Flanders in 1914–1915.

He said that enteric fever was prevalent in Belgium at or about the time war broke out and cases occurred in England during the autumn of 1914 among Belgian refugees. The rapid advance of the Germans and the flight of the inhabitants were likely to assist the spread of the disease, the more so if the nature of the invaded country be considered. Belgium, west of a line drawn through Antwerp and Brussels, is a plain, intersected with rivers, mostly canalised, the water in which can flow but very slowly. This plain is, in places, thickly populated and highly cultivated, and human excreta are largely used for the purpose of fertilisation. The water is usually derived from shallow wells. Further, the Belgians, as a defensive measure, flooded the country to the north-east of Dixmude, the effect of which was to accentuate the stagnation. When trench warfare began, in November, 1914, the trenches were consequently in a very insanitary condition. At this time, of the four armies engaged in Flanders, the British alone was protected adequately by antityphoid inoculation. He gave evidence to show that by the end of November, 1914, there was in the Flanders area a considerable number of cases of enteric in the Belgian, French, and German armies, and probably amongst Belgian civilians, and a comparatively small number in the British Army. The outbreak began to assume epidemic proportions soon after the armies settled down to trench warfare.

An account was then given of the Friends' Ambulance Unit. Nearly all the members belonged to the Society of Friends, many being professional men, so that whatever line of work was taken up there was no difficulty in finding, amongst themselves, expert organisers and advisers. Part of a large building just outside Ypres was given to them, and here the local headquarters of the unit and the hospital were set up. Besides the treatment of patients in hospital the medical officers of the unit carried on an extensive outdoor visiting practice amongst the remaining inhabitants of Ypres and the surrounding villages not occupied by the enemy, and the hospital had been recognised by the Ypres Committee of Safety as the Ypres Civil Hospital. The authorities of the British Army enlisted the services of this unit as a friendly link between themselves and the Belgian civil authorities to help them in their campaign against the epidemic. The area, not occupied by the enemy, affected by the epidemic was about 31 miles long and 12 miles broad, stretching from Nieuport on the north to Ploegsteert on the south. The epidemic probably spread rapidly towards the end of December, 1914.

With regard to the number of cases information was limited, but it was probably very considerable; there must have been about 4000 cases under treatment daily during January and February, 1915, in the French military hospitals in Dunkirk and its neighbourhood, and the number in the Belgian Army must also have been considerable. One thousand cases (Belgian civilians) passed through the hospitals of the unit at Ypres and Poperinghe, and about 1000 more came to the knowledge of the officers of the unit, which were treated elsewhere. The British Army furnished comparatively few cases—only 827 up to May 22nd, 1915.

Character of the Cases.

The disease differed in several points from the types the speaker had seen in England during the previous 25 years. 1. The fever ran a very irregular course, the oscillations being frequent and extreme, so that the chart at the height of the disease resembled in many cases that of pyæmia or phthisis. Temperatures of 104° to 105° F. were by no means uncommon. 2. A considerable number of the cases exhibited pronounced nervous symptoms, coma or semi-coma, or restlessness and delirium. These symptoms did not pass off as the general condition improved and the temperature fell. The comatose cases did worse than the others; in such cases death occurred without recovery of consciousness,

though the temperature fell. He attributed the mental state to the harassing conditions under which the patients had been living before they became ill. 3. Clinical evidence showed that the intestinal lesions were by no means entensive or severe. Death was due either to cardiac failure, probably caused by myocarditis, or to hypostatic pneumonia.

Cases which he saw later among French soldiers were less severe, and conformed to the type he had been used to seeing in England. This he accounted for by the fact that the patients were well fed, many had been inoculated, and a large proportion were cases of paratyphoid. As soon as laboratory methods of diagnosis were employed it was found that a considerable number of cases were paratyphoid. Of 43 cases at the Queen Alexandra Hospital, Dunkirk, in which the blood cultures were positive, 16 were typhoid, 22 were paratyphoid A, 3 were paratyphoid B, and 2 were paratyphoid, but whether A or B was not ascertained. If to these cases were added those in which the results of the blood serum tests were taken as clinching the diagnosis, there were 43 cases of typhoid, 32 of paratyphoid A, 12 of paratyphoid B, and 2 of paratyphoid, ? A or B, so that 52 per cent. were paratyphoid.

This proportion was very different from that found amongst the Belgian civilians admitted to the Hôpital Elisabeth at Poperinghe. Out of 308 cases in which the clinical diagnosis was supplemented by positive blood cultures or serum tests, 245 were typhoid, 62 were paratyphoid B, and only 1 was paratyphoid A—that is, 20 per cent. were paratyphoid. Several reasons were given which might account for this difference, one of which was the fact that of the 102 cases in the Queen Alexandra Hospital 29 per cent. had not been inoculated, whilst of the 454 cases admitted to the Hôpital Elisabeth 92 per cent. had not been inoculated. The presence in any particular area of more or fewer cases of the three varieties must also be taken into account. It was generally believed that paratyphoid A was introduced by carriers among the troops, as it was very rare in Europe before the war, and the figures given indicated that the Belgian civilians were not exposed to the infection of paratyphoid A, but that the French soldiers were.

Of the 435 cases admitted during the febrile period to the Poperinghe Hospital 93, or 21 per cent. died, whilst of 102 cases admitted to the hospital at Dunkirk 10, or 9·8 per cent., died. The Poperinghe cases were of all ages and both sexes, but with a majority of females; the Dunkirk cases were all males, mostly from 30 to 40 years of age. The fatality rates for typhoid and paratyphoid in the two hospitals were also different. For the Hôpital Elisabeth they were as follows: Typhoid, 9·7 per cent.; paratyphoid, 19·2 per cent. For the Queen Alexandra Hospital: Typhoid, 20·9; paratyphoid, 2·1 per cent.

Preventive Measures.

The measures employed against the epidemic were: (1) those for providing for the sick; and (2) those for protecting the healthy. 1. The medical departments of the several armies dealt with the soldiers, and the Friends' Ambulance Unit chiefly with the civilians. Hospital accommodation was provided for those who had to be so treated. 2. As regards the measures adopted for preventing the spread of the epidemic by protecting the healthy, the authorities acted quickly and energetically. They were such as are usually taken in epidemics of this nature—viz., (*a*) the removal and isolation of the sick in hospitals; (*b*) the cleansing and disinfection of premises; and (*c*) the provision of a safe water-supply. The inoculation of the civil inhabitants of the infected areas with antityphoid vaccine was made obligatory by the Belgian authorities, those who refused inoculation being liable to be expelled from the zone occupied by the Allied Armies and treated as refugees. Enteric fever was made notifiable, omission to notify being punishable by fine or imprisonment. The following table of statistics was given of inoculation of the Belgian civil population by the Ambulance Unit from Feb. 5th, 1915, to May 31st, 1916:—

1915.	First.	Second.	Percentages of second inoculations.	Total.
Feb. 5th to 28th ...	4,890 ...	2,649 ...	(54·1) ...	7,539
March 1st to 31st ...	4,942 ...	4,576 ...	(92·5) ...	9,518
April 1st to 30th ...	1,010 ...	972 ...	(96·2) ...	1,982
	10,842	8,197	(75·6)	19,039
To end of July, 1915	14,836	11,375	(76·6)	26,211
To end of May, 1916 (total inoculations)				26,700

By the middle of March the epidemic was on the wane as far as the French Army was concerned, and by the beginning of the summer it was at an end, not only in the armies, but amongst the civilians. Colonel Goodall attached more importance to the effects produced by the usual sanitary measures than to the inoculations, because the inoculations were against *B. typhosus* and not against *B. paratyphosus A* and *B*. Now that the enemy had been driven from Belgium the civilian inhabitants would be returning in large numbers, and every effort should be made to prevent a fresh outbreak.

SECTION OF OTOLOGY.

A MEETING of this section was held on Nov. 15th, under the presidency of Mr. HUGH JONES, of Liverpool.

Acute Osteomyelitis of Temporal Bone.

Mr. HERBERT TILLEY showed a boy who had made a remarkable recovery from Acute Osteomyelitis of the Right Temporal Bone. The patient was admitted to hospital on account of acute suppurative otorrhœa of six weeks' duration, associated with pain, pyrexia, sleeplessness, and malaise. The roofs of the antrum and tympanum were found at the operation to have been destroyed by disease, the dura was replaced by a mass of granulation tissue. The wound was left open and dressings applied. During the following month the soft tissues in the temporal and mastoid regions became swollen and œdematous. At the second operation the squamous and mastoid portions of the temporal bone were freely exposed, and were found to be so softened by inflammation that large portions could be scraped away and removed by forceps. During the long convalescence herniæ cerebri occurred on three occasions in the original mastoid wound. With the exception of a small sequestrum the patient was now well. Acute spreading osteomyelitis of the temporal bone Mr. Tilley regarded as rare, and most of the cases were fatal. Probably the very wide removal of inflamed bone accounted for the successful issue in this case.

Mr. W. STUART-LOW spoke of the value in such cases of a wound-protecting shield, which permitted efficient drainage and obviated pressure on the wound edges.

Mr. HUNTER TOD described three similar cases, two of which were fatal. Usually the pulse was not rapid nor the temperature very high. The only hope in such cases was early recognition and the removal of as wide an area of bone as possible. He regarded it as a blood infection.

Dr. D. R. PATERSON (Cardiff) commented on the extreme rarity of osteomyelitis of the temporal bone as contrasted with that of the frontal.

Symmetrical Lupus Erythematosus.—Epithelioma of Helix.

Mr. STUART-LOW exhibited a case of extensive Symmetrical Lupus Erythematosus. The patient, a man aged 45, had had the skin condition ever since he could remember, but it had extended more rapidly during the last few years, especially on the scalp. A portion of the tissue was pronounced by Dr. Wyatt Wingrave to be epithelioma grafted on to lupus erythematosus.

Dr. H. J. BANKS-DAVIS referred to a case of Epithelioma of the Helix which he removed in 1914 without operating on the glands, and in which the patient still remained free of recurrence.

Double Facial Paralysis due to Bilateral Tuberculous Mastoiditis.

Mr. W. M. MOLLISON showed a child, aged 13 months, who had been the subject of the above condition. Otorrhœa began at the age of 6 months, and had been considerable ever since. The mastoid swelling and change in the face were very recent. A profuse foul discharge came from both meati. At the operation the mastoid process was found to be soft and necrotic, and a series of sequestra were removed with a sharp spoon. Six days later the other mastoid was operated upon and a similar condition disclosed.

Mr. HUNTER TOD raised the question of the source of the milk for this child, as this condition was often found to be due to infected milk.

Mr. STUART-LOW remarked on the rarity of the occasions when tubercle bacilli could be found in the discharge.

Dr. PERRY G. GOLDSMITH (Canadian A.M.C.) thought the term tuberculous was often applied somewhat loosely to these cases. The rapidity of the healing in this case he regarded as against it being tuberculous.

The PRESIDENT related the cases of twins, 10 months old, who, two months before he saw them, had suffered from

double otorrhœa, and then developed enlarged cervical glands. The source of the milk supplied was declared to be quite beyond suspicion; the cow was kept by a gentleman farmer, who was said to have had his herd regularly tested with tuberculin. A portion of the granulation and discharge injected into a guinea-pig produced tuberculosis. The medical officer traced the milk to a tuberculous cow in this model dairy.

Dr. W. H. KELSON thought the rapid healing of this case formed no argument against the condition being tuberculous; he had had very quick recovery in such cases, even when the disease was extensive. But these cases were apt to break down periodically.

Necrosis of Internal Ear.—Radical Mastoid Operation.

Mr. MOLLISON also showed a man, aged 60, who had recovered from Necrosis of the Internal Ear, causing Sequestration of the Labyrinth. He had had pain in the left ear for years, and for three months had suffered from headache and vertigo. There was a large polypus in the left meatus, with foul otorrhœa. On exposing the antrum all anatomical landmarks were absent, and a kind of trench surrounded the labyrinth; the labyrinth was loose and could be brought away whole. The condition was not tuberculous.

Dr. PATERSON raised the point as to what degree of bone removal in order to deliver the sequestrum was justifiable. In some cases he had contented himself with loosening under an anæsthetic and then leaving it alone. He always feared a connexion with the carotid canal, or an attachment of the inner part of the sequestrum to the auditory nerve.

Mr. J. F. O'MALLEY asked whether syphilis could be excluded, as it was unusual for sepsis to isolate the labyrinth in this way.

Dr. DUNDAS GRANT showed two cases in which the radical mastoid operation was performed for Cholesteatoma, and in which the matrix had been preserved six months and 14 years respectively after the operation.

Several members congratulated Dr. Grant on the excellent results.

A Case of Medico-Military Interest.

Mr. O'MALLEY showed a case of Chronic Middle-ear Suppuration in a young soldier, for the purpose of raising important points of medico-military interest. This man's left ear had been constantly discharging for over two years. There was no history of disease in childhood, but he had had pain in the mastoid for eight months, worse at night. For the purposes of a pension award, was it justifiable to state that the trouble began not more than two years ago? Assuming him to have been in the Army over two years, should his condition be attributed to (*a*) military service; or as (*b*) only aggravated by it; or as (*c*) not affected by it? He also asked whether a radical mastoid operation was positively indicated.

Dr. GOLDSMITH said there was no objective evidence in regard to the man's pain, and the patient knew he would be paid if his deafness had been due to military service, or if it came on since the commencement of the war. The course of the case had not been that of acute middle-ear suppuration. His condition was aggravated, but not caused by, war service. Probably the trouble would not be removed except by operation. The pain he, the speaker, regarded as largely psychic.

Dr. DUNDAS GRANT said it was unfortunate that it had been necessary to take men into the Army without examining at all closely into the condition of their ears; many now in the Army would not have been there if such examinations had been made. The man should be given the benefit of the doubt, and his statement that he was well before he entered the Army should be accepted. As he had one good ear and calcareous changes in the other, his disability for pension purposes should be assessed at 20 to 30 per cent. If there were well-marked cholesteatomatous products he thought operation would be justifiable.

Mr. STUART-LOW said cases which had had a discharge at any time should have been cautioned not to bathe. He did not doubt that this man's condition had been chronic for years. He favoured operation.

Mr. ALEX. SHARPE, Colonel, R.A.M.C., thought this man's condition was contracted in the Service and was aggravated by it, but was not attributable to it. He would put the disability at 15 per cent.

Other cases were also shown.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

THE quarterly meeting of this Association was held at 11, Chandos-street, London, W., on Nov. 26th, under the chairmanship, owing to the absence of the President through illness, of Dr. DAVID G. THOMSON, ex-President.

The CHAIRMAN announced, with regret, the death of Dr. John B. Chapin, of New York, an honorary member, who for many years had been regarded as the Nestor of American psychiatry. He was in his 89th year, and had to his credit 50 years of service in hospitals for mental disorders. He retired in the summer of 1911. He also deplored the death of Dr. William Reid, who for more than 25 years was superintendent of the Aberdeen Royal Asylum, during which long term of office he saw the institution reconstructed at a cost of £50,000, largely owing to his own efforts. Also, the Association had to regret the death of Captain Frank Oswald Spensley, from pneumonia. He had served as senior assistant medical officer of the Darenth Industrial Colony, Dartford. Further deaths were those of Dr. T. S. Logan, of the Bucks Asylum, Stone, from influenza, Dr. A. Hume Griffith, medical superintendent of Lingfield Epileptic Colony, and Dr. T. Herbert, assistant medical officer of the York City Asylum.

Dr. R. PERCY SMITH reported on the work of the Lebanon Mental Hospital during the war under the care of its medical superintendent, Dr. Watson Smith. As the Turks recognised the institution as a religious or philanthropic one it had not been molested; they had supplied the hospital with food, despite the starvation going on around in Syria.—The Secretary was asked to write a letter of congratulation from the Association to Dr. Smith on his work under trying circumstances.

The meeting then discussed the recommendations from the Report of the English Lunacy Legislation Subcommittee. These were proposed by the chairman of the committee, Dr. H. WOLSELEY-LEWIS, seconded by the secretary of the committee, Dr. R. H. COLE, and duly approved.

The Interdependence of the Sympathetic and Central Nervous Systems.

Dr. DAVID ORR and Dr. R. G. ROWS submitted a contribution on this subject, supplemented by numerous illustrations. In the class of cord lesions which formed the subject of their previous work insuperable difficulties were encountered against accepting a "general intoxication" theory without qualification. Presumably the poison concerned did not act unaided or indiscriminately, and there were reasons for surmising that the sympathetic nervous was, in all likelihood, the intermediary in determining the localisation of the lesions. Evidence of this view was now brought forward. It was important to remember that sympathetic action was dependent upon the supply of adrenalin. The sympathetic nervous system, the adrenal bodies, and all chromaffin tissue must be considered as one in relation to the blood vascular system, and chromaffin tissues yield adrenalin or a similar chemical substance, and effects produced by this are almost all such as are produced by the sympathetic system. The sympathetic system is intimately linked up with the central nervous system; it has no true autonomy, and there are anatomical paths which provide for a constant interaction between both. Stimuli must be constantly passing from the sympathetic to the central nervous system, as there are special sense organs in the viscera and a definite sensory afferent path, and they certainly exercise physiological effects. Dr. Orr and Dr. Rows set out the plea of von Monakow for the material basis of the sentiments and emotions, and stated, in conclusion, that it was apparent that in nervous diseases, especially in those concerning the cerebrum, it was necessary to study, in the future, not only the more prominent symptoms dependent upon disturbed function of the central organ but also the collateral symptoms arising from disturbance of all the peripheral organs intimately connected with it. The problem could not be solved by a narrower programme.

Dr. BEDFORD PIERCE expressed the hope that the subject would be brought up again, with full opportunity for discussion, and spoke of a case of melancholia on which the paper seemed to throw much light.

Dr. ROWS replied.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

Influenza.

A MEETING of this section was held on Nov. 15th, when Dr. G. PEACOCKE, the President, delivered his inaugural address on Influenza. It was, he thought, generally held that the causal organism was the *B. influenzæ*, though many held that some as yet undiscovered virus was responsible for the present epidemic. When uncomplicated, influenza did not often cause death, the high mortality of the present epidemic being almost entirely due to the presence of secondary infection with pneumococci and streptococci. The death-rate was not so formidable as was imagined—about 6·5 per cent. in his hospital practice and less than 2 per cent. in his private practice.

Symptoms.—Cyanosis was frequent with pulmonary complications, appearing early and persisting usually until death occurred. Laryngitis was extremely common. Delirium was often met with, and he had seen one case of mania. The temperature chart was often a fallacious guide, as severe cases often had only a moderate degree of pyrexia. An ominous sign was a fall of temperature without a corresponding fall in the pulse and respiratory rates. A moist and slightly furred tongue was a favourable sign, but if it were dry and thickly coated the chances of recovery were small. Vomiting was often distressing and alarming Slight albuminuria in the acute stage was common, but when severe the outlook was unfavourable. The pulmonary signs were varied—bronchitis or broncho-pneumonia was frequently present. A pulse-rate of 80, with a temperature of 102° to 103° F. was not uncommon, and during convalescence the pulse often became very slow, sometimes even 40 per minute. Jaundice was sometimes present, a tendency to hæmorrhages was common, especially epistaxis. Tonsillitis was rare. Otitis media should be recognised as of frequent occurrence. He had seen no case of influenzal meningitis. Dr. Peacocke noted particularly the outstanding form of the disease, in which death occurs with dramatic suddenness.

Treatment.—He usually employed salicylate of quinine. Aspirin appeared to relieve the headache. The bowels should be kept free and sleep should be promoted; he preferred calomel as a purgative and trional or some preparation of opium for sleeplessness. Stimulants were usually required and should be given freely.

Captain JOHN SPEARES gave an account of the disease, with special reference to the post-mortem findings and vaccine treatment. He concluded (1) that the mass of evidence showed that the present pandemic was caused by a bacillus which morphologically and structurally resembled Pfeiffer's; (2) that the fatal secondary pneumonia was caused mainly by a streptococcus hæmolyticus, which was frequently associated with hæmorrhagic tendencies; (3) that there was conclusive evidence of acute nephritis and albuminuria in severe cases; (4) that probably a certain degree of immunity was conferred by prophylactic use of influenza vaccine, and that the use of the vaccine for this purpose was justifiable; (5) further experiments, duly controlled, were necessary to establish the utility of influenza vaccine for prophylaxis and early treatment.

In the course of the discussion Dr. J. H. POLLOCK said that in his investigations at the Richmond Hospital on sputum, nasal discharge, empyema fluid, lung tissue, and heart's blood obtained post mortem, pneumococci or streptococci, or both, were always recoverable.

Professor E. J. MCWEENEY considered that the prevailing organisms were streptococci, pneumococci, and *Micrococcus catarrhalis*, these organisms being the cause of secondary pneumonias.

Dr. T. G. MOORHEAD noted the occurrence of severe meningeal symptoms, particularly in children, and asked if the influenza bacillus had been found in the cerebro-spinal fluid in any cases. He had found the fluid under tension, but sterile. He noted the frequency of post-influenzal delirium and mania, and post-influenzal empyema.

Dr. W. M. CROFTON thought that the microbes producing the complications—viz., staphylococci, strepto-pneumococci, and Gram-negative cocci—might be a primary infection along with the influenza bacillus, but that more frequently the patient's own catarrh microbes became pathogenic when his resistance was lowered by the influenza bacillus.

Dr. W. D. O'KELLY said that the fact that a vaccine containing no influenza bacilli seemed to protect against the disease as well as a pure influenza vaccine, suggested that a filter-passer was at fault, which might perhaps be present in the various vaccines used.

Dr. G. E. NESBITT said that in judging the results of protective inoculation it was necessary to remember the curious variations in susceptibility.

Dr. F. KENNEDY CAHILL thought that "suggestion" might act in cases of preventive inoculation, and quoted the case of a patient who developed all the symptoms of influenza except a temperature 16 hours after an injection of 1 c.cm. of sterile water. In the present epidemic the absence of post-influenzal profound prostration was remarkable.

Dr. W. BOXWELL regarded the severe types as cases of profound septic intoxication. He was not satisfied as to the results of vaccine treatment, but thought wholesale vaccination in the middle of an epidemic was dangerous, as was also the wholesale vaccination of contacts in a household. The time for vaccination was in the interval of recurring epidemics, but as the immunity was short-lived the value of prophylaxis in influenza was largely discounted.

SOCIÉTÉ DE BIOLOGIE, PARIS.

THE following is a summary of some of the papers read at the meeting of the society held on Dec. 7th:—

RUBINSTEIN and RADOVLIEVITCH. — Sero-diagnosis of Syphilis.

Le complexe inactivant l'alexine dans la réaction de Wassermann peut être isolé par l'action de l'eau distillée sur le mélange sérum + antigène. Ce complexe agit spécifiquement dans le cas des sérums chauffés et non spécifiquement dans le cas des sérums non chauffés. La spécificité a été décelée uniquement par sa capacité de fixer l'alexine.

CH. NICOLLE and CH. LEBAILLY.—The Spirochæte of Infectious Icterus.

Le virus d'origine murine de l'Institut Pasteur de Tunis a fait en un an 70 passages par cobayes. Un cheval de onze mois a reçu dans les veines 44 inoculations de ce virus; son sérum est préventif contre le virus humain français (L. Martin et A. Pettit). Les souris inoculées avec le virus de passage, conservent ce virus sans réagir pendant cent jours au moins, ainsi que le démontre l'inoculation de leurs organes aux cobayes de contrôle. Il y a là un moyen commode de transport et de conservation du virus.

W. MESTREZAT and ROMME.—Chemical Criterion for Secondary Suture.

Les auteurs ont déterminé sur une soixantaine de plaies, le rapport: $100 \times \frac{NH^3}{NaCl}$, le numérateur exprimant l'azote titrable au formol, exprimé en ammoniaque, le numérateur, le chlorure de sodium des compresses de pansements secs *en place depuis quarante-huit heures.* Les valeurs de ce quotient ont toujours été inférieures à 10 lorsque les sutures secondaires tentées ont été suivies de *succès complets.* Des incidents variables se sont produits supérieurs à 10. Les auteurs voient dans la détermination de l'indice formol d'une plaie un moyen précis de juger de l'opportunité d'une suture secondaire.

F ALBERT.—Route of Absorption of Tetanus Toxin.

L'absorption par voie sanguine prédomine. C'est par cette voie que la toxine gagne les centres nerveux. L'absorption par voie nerveuse pure ne donne jamais qu'un tétanos local. L'injection préventive confère à l'homme un certain pouvoir antitoxique. L'injection soit tardive soit insuffisante, confère une immunité relative. Cette immunité peut se dissiper (tétanos tardif).

Sir E. A. SHARPEY SCHAFER.—Functional Regeneration of the Vagus.

Les incitations nerveuses qui montent des alvéoles pulmonaires ne sont pas les seuls agents qui règlent le rythme normal de la respiration, car quand ces courants sont supprimés il s'établit bientôt un autre élément régulateur.

COMMISSION D'ALIMENTATION.—The Nitrogen Needs of the Body

En supposant le régime mixte le minimum exigible est de un gramme d'albuminoïdes par jour et par kilogramme de poids.

THE LATE MR. W. J. STEPHENS.—The death occurred at Brighton on Dec. 18th, in his sixty-fourth year, of Mr. William John Stephens, who at one time was one of the best-known medical practitioners in the borough. Compelled by ill-health a few years ago to retire from practice, he had during the war identified himself with various kinds of war work. A King's College man, he took the diploma of L.R.C.P.Edin. in 1882, and he spent practically all his medical life at Brighton. For 18 years he held the office of police surgeon, and at the time of his death he was in partnership with Dr. C. E. Maguire and Dr. W. A. Bowring.

Reviews and Notices of Books.

Fibroids and Allied Tumours. (Myoma and Adenomyoma.) By CUTHBERT LOCKYER, M.D., B.S., F.R.C.P., F.R.C.S. With 316 illustrations, including 37 coloured plates. London: Macmillan and Co. 1918. Pp. 603. 63*s.* net.

Dr. Lockyer holds an established position as an authority on the pathology of the pelvic organs in the female. He has had ample opportunities largely owing to the goodwill and coöperation of his colleagues over many years, and he has made good use of the abundant material put in his way, as this very valuable work proves. The book is, in our opinion, an example of what a monograph should be—complete, well written, containing not only the results of the author's large experience but also the best of what others have written on the subject. In one respect, however, it is lacking, and that is in the omission of complete references. A book of this description appeals only to the advanced student or to the teacher, and the omission in many instances of references is, to the latter at any rate, a serious defect.

The book is divided into three parts: the first part deals with Myomata of the Uterus, the second with those interesting and uncommon tumours, the Adenomyomata, and the third with the various operations practised for Myomata.

The pathology of the myomata is particularly well described and illustrated; indeed, one of the most striking features of the work is the lavish use of illustrations, both plain and coloured. Many of the latter are of great beauty. As might be expected, a good deal of space is devoted to a consideration of the various secondary changes in myomata, especially the commonest of all, hyaline degeneration. The author points out that red degeneration has attracted an amount of attention altogether out of proportion to its importance, and, as he says, the colour of the degenerating tumour is in most cases quite a side issue. Dr. Lockyer has no doubt about the occurrence of a myosarcoma, and the number of pathologists who would deny this at the present time must be very small. We cannot agree with the statement that the presence of myomata is a relative cause of sterility. Surely in most women the sterility precedes its development, and is rather the probable cause of the myoma. As the author a little further on points out, it is spinsters and sterile wives who suffer from myomata most commonly, and their sterility may well play a part in the etiology of these new growths. If we accept this view, then, the fact that interstitial tumours appear to delay conception is not difficult to explain. We notice a slight error on page 153. In the description of Dr. H. R. Spencer's case myomectomy "during delivery" should read "before delivery." It is interesting to note that the author's experience does not lead him to support at all strongly the view put forward by Bland-Sutton that the excessive uterine hæmorrhage in the case of fibroid tumours is associated with septic changes in the endometrium. In the most virulent cases of septic endometritis seen in cases of puerperal fever hæmorrhage is certainly not a symptom. The author, we are glad to see, is quite clear that there is no such thing as a myoma heart, apart from the changes due to the anæmia caused by the hæmorrhage.

The section on the diagnosis of the myomata is very helpful, and an interesting case is recorded of a cystic submucous myoma mistaken for pregnancy. In view of the prominence which has been given of late years to the use of X rays and radium in the treatment of myomata of the uterus, a considerable amount of space is devoted to these methods. On the whole the author is not very enthusiastic, but, as he admits, his personal experience is not large. The evolution of the operation of hysterectomy from a procedure with a mortality of 30 to 40 per cent. to one of 2 to 3 per cent. is one of the most interesting chapters in surgery, and the author does well to give a short résumé of the history of the operation. On the vexed question of the superiority of total hysterectomy to supravaginal amputation, Dr. Lockyer states that he now removes the whole uterus as a routine, but for spinsters and elderly married nulliparæ he thinks the supravaginal operation may well be retained.

Part II. deals with that curious and perplexing group of tumours, the adenomyomata, on which Dr. Lockyer has a great deal to say. Indeed, were it not that in this country these growths have not attracted the attention they deserve, we might regard the division of the subject as somewhat unequal when we find no less than nearly 180 pages devoted to this rare group of tumours. After a very interesting review of the main theories as to their origin, the author deals with their classification, and suggests that they may be considered under the two main groups of intra- and extra-uterine myomata. A great deal of information is given about the latter very interesting group, including adenomyomata of the round ligament, broad ligament, ovarian ligament, of the recto-genital space, and adenomyomata of the alimentary tract. This section is a most valuable one, forming the best critical review of this subject so far written in this country.

The third part of the book contains a full account of the various operations practised in the treatment of myomata. A useful section is included dealing with the after complications which may occur.

This book, in spite of its cost, will be indispensable to anyone engaged in the teaching of gynæcology; it will increase the author's already high reputation as a clinical pathologist, and it is a production on which we can most heartily congratulate him. The publishers are also to be congratulated for their part, as are the artists, for the beautiful illustrations which have been well reproduced.

The Life and Letters of Joseph Black, M.D. By Sir WILLIAM RAMSAY, K.C.B., F.R.S. Together with an Introduction dealing with the Life and Work of Sir William Ramsay, by F. G. DONNAN, F.R.S. London: Constable and Co. 1918. Pp. 148. 6*s.* 6*d.*

THE real artist and the genuine scientific worker may be said to belong to that class the members of which Lucretius designated as "divinitus invenientes"—i.e., as attaining what they sought by a kind of divine inspiration. This is obvious to most minds in the case of a musician, a painter, an architect, or sculptor. The works of Bach, Leonardo, Giotto, or of those nameless craftsmen who reared Rheims and the other great cathedrals in thirteenth-century France, stand out clearly to ear or eye. But the patient work of the chemist or the physicist is mostly hidden and in many instances stands in the same relation to its application as the acorn does to the oak. For no one who did not know could conceive on looking at an oak that it had sprung from an acorn, and likewise no one seeing the present-day applications of electrical power could imagine that they are all practically due to the fact that Faraday discovered that an electric current is induced in a conductor if it be moved across the poles of a magnet so as to cut the lines of magnetic force. Mendeléeff's Periodic Law and the gaps therein, together with the work of Lord Rayleigh and Ramsay on the inert gases, are further examples of the "divinitus invenientes." It is most appropriate therefore that Ramsay, the patient and accurate worker, should write an account of his great predecessor Black, to whose tireless, careful researches chemistry and physics owe such a debt. Moreover, Ramsay and Black were both educated at the same school of learning—namely, Glasgow College.

Sir William Ramsay has given us a charming biography of Black, illustrated with many extracts from his letters, with pictures of his contemporaries, and with at least one anecdote of an incident which occurred in the Senate Hall of Glasgow College during an official banquet.

"One of the guests was struck by the pale face of his neighbour, who appeared to be asleep—no extraordinary circumstance. 'What ails Drumsheugh?' he asked the man beside him, 'he's looking gey gash.' ''Sh man,' said he, 'he's been wi' his Maker thae twa hours.'"

Black's claim to immortality rests principally upon two researches, those dealing with "fixed air"—i.e., carbon dioxide—and those dealing with latent heat; in fact, he was the discoverer of both the gas and the condition. It is a curious instance of the irony of history that the incentive of Black's research was the desire to discover a mild alkali for the cure of calculus in the bladder, and that this desire was fostered by the Government having given a quack £1000 for the prescription of a medicine for the same.

We have no need to describe Black's patient and masterly investigation, together with his "proof that the change of a complex compound to simpler compounds, and the building up of a complex compound from simpler ones, can be followed successfully by the use of the balance"; but everyone who is interested in the progress of human thought should read Sir William Ramsay's charming account thereof.

Black died in 1799 in his seventy-first year; his passing was in accordance with his whole life, perfectly quiet and unembarrassed:—

"Being at table with his usual fare, some bread, a few prunes, and a measured quantity of milk diluted with water, and having the cup in his hand when the last stroke of his pulse was to be given, he set it down on his knees which were joined together, he kept it steady with his hand, in the manner of a person perfectly at ease; and in this attitude expired without spilling a drop, and without a writhe in his countenance; as if an experiment had been required to show to his friends the facility with which he departed."

Married Love: A New Contribution to the Solution of Sex Difficulties. A Book for Married Couples. By Dr. MARIE STOPES. With a Preface by Dr. JESSIE MURRAY and Some Striking Letters. London: A. C. Fifield. 1918. 5*s*.

THIS is an extremely sensible little book; it deals in the most intimate way with normal sexual life, and by sheer frankness remains decent. Of the things which are commonly accepted as sound physiology we need only say that they are also things which thousands of people would be the happier for knowing, though they cannot be made part of any public syllabus of secondary education. Nor can parents, guardians, or older friends be commonly regarded as the proper sources of such information—some will not possess it, still more would resent the mentor's task, and more again, we believe, would be quite unable to impart it. This is to say that the book is really needed as a public adviser.

The fourth chapter and the fifth, the two which deal absolutely with the sexual act, contain the essential message of the author, which may be summed up by adopting her own words, that the act is, or should be, a triple consummation, symbolising spiritual union, giving intense pleasure, and originating new life by fusion. The fourth chapter, entitled "The Fundamental Pulse," gives the evidence upon which the author has erected simple curves indicating the normal dates of the upwelling of natural desire in women in relation to the dates of menstruation, and it is with these postulates in mind that the fifth chapter, "Mutual Adjustment," must be read. That such rhythm is present in the usual woman's sexual life is well known to medical men, and we believe that the author's curves represent the physiological facts, though, as Dr. Jessie Murray says in her prefatory note, further observation is required to support the detailed theories.

LIBRARY TABLE.

Medical Annual for 1918. Bristol: John Wright and Sons, Ltd. Pp. 716. 10*s*. net.—Notwithstanding the difficulties with which its production is beset owing to the exigencies of military service, the *Medical Annual* of 1918 fully reaches the high standard set by the editor and publisher in previous years. The treatment of war conditions occupies a fair proportion of the volume, Deputy Surgeon-General A. G. Wildey, R.N., being responsible for an account of the treatment of wounds, the results of which still remain. Of special interest is Mr. W. I. de Courcy Wheeler's account of the work of the orthopædic centres under the general supervision of Sir Robert Jones. Mr. W. H. Dolamore contributes a well-illustrated description of the treatment of gunshot injuries of the jaws and face, showing the triumph of plastic surgery over unsightly deformity and functional disability. Malingering is dealt with by Mr. A. Bassett Jones and Mr. R. Ll. J. Llewellyn. The contribution of Dr. Carey F. Coombs on diseases of the heart is directed against the very prevalent mistake of attaching too great importance to auscultatory phenomena. In his experience numbers of men have been rejected from enlistment or recommended for invaliding out of the Army on no surer ground than the presence of an unimportant and often transitory murmur. Two new features add to the utility of the volume as a book of reference—the addition of a list of contributions to the name of each contributor, and an introduction by the editor consisting of a review of the year's work. This Annual should be in the hands of every member of the profession who wishes to keep abreast of medical knowledge.

Musings of a Medico. By KENNETH ROGERS, M.D. Lond. London: Erskine Macdonald, Ltd. Pp. 70. 3*s*. 6*d*. net.—Dr. Kenneth Rogers's little book of verse is divided into three parts; general verses, verses suggested by the war, and sonnets, closing with half a dozen pieces of irregular shape. He has put his more ambitious work into the sonnets, but of course it is exactly in the sonnets that the craftsman must expect to receive the severest inspection, and we feel that Dr. Rogers succeeds best in humbler flights. "The Lament of an Old Buffer" or, "On Man, Bees, and Flowers," latter being suggested in part by M. Maeterlinck's "L'Intelligence des Fleurs," and the rhyme of "The Dragon Fly" are all metrical exercises to which considerable feeling has gone. The little book is notable for the author's love of flowers.

Casting out Fear. By FLORA BIGELOW GUEST. Second edition. London: John Lane. 1918. Pp. 94. 3*s*. 6*d*.—Beginning with the paralysing effect of fear in general on all useful human activities, the author devotes 22 short chapters to particular fears, from the fear of heredity to the fear of death. Her epilogue runs:

> Let us cast out all Fear.
> Let the sun in at our windows.
> Let the sun into our souls.

And, whether consciously or not, she has adopted the method of the psycho-analyst to achieve this desirable result. She analyses in simple and striking language the genesis of phobias, and without making any claim to specialist knowledge contrives to say many helpful things—Chapter IV., on Educating Children in Fear, is very apposite. At a time when fear is being increasingly recognised as a motive in human conduct, we commend Mrs. Guest's little book to thoughtful study.

Home Nursing. Arranged According to the Revised Syllabus of the St. John Ambulance Association. London: St. John's Gate, Clerkenwell. Pp. 272. 1*s*. 6*d*.—This little book has been compiled by a committee from a manuscript written at the request of the St. John Ambulance Association by Miss Heather-Bigg, R.R.C., matron of Charing Cross Hospital. The arrangement of the manual is similar to that of the First Aid Manual, each chapter being followed by questions, with the pages indicated on which the answers may be found; an excellent method for enabling the student to revise and check knowledge. Beginning with a summary of the qualifications of a nurse, just so much physiology as is needful is given, followed by a succinct account of the duties of a home nurse, technical terms being sparingly used, while those absolutely necessary are included in a glossary. The avowed objects of the manual are: (1) to serve as a guide to a course of study directed by a medical man or trained nurse; and (2) to form a book of reference for those who have obtained home nursing certificates and are called upon to undertake the care of a patient where trained nursing is unobtainable, or where the illness is so slight that a professional nurse is unnecessary. These objects are well met in "Home Nursing."

JOURNALS.

The American Review of Tuberculosis. Baltimore: National Association for the Study and Prevention of Tuberculosis. 35 cents.—The September number contains several interesting papers on the war-time problems of tuberculosis in the United States of America, in Canada, and in France. Dr. George E. Bushnell reviews the results of the National Tuberculosis Association's programme, adopted by the Surgeon-General, for re-examining the American Army for tuberculosis. Nearly 450 physicians were engaged on this task, and about 10,000 men were found to be tuberculous within a month or two of enlisting. By eliminating these men, who would otherwise have become chargeable to the State, these examinations may be said to have saved $50,000,000 of public money. This calculation suggests that the interests of the State and the individual are diametrically opposed. A saner and more generous view is reflected in the Surgeon-General's statement, published in the Official Bulletin, to the effect that the soldier, disabled on duty, shall not be discharged before as complete recovery as possible has been effected. Dr. Bushnell draws attention to the great difficulty of distinguishing pulmonary tuberculosis from the present serious epidemic of hæmolytic streptococcal bronchitis and broncho-pneumonia. The clinical picture is, he says, exceedingly similar to that of pulmonary tuberculosis. Hence the order that no soldier shall be discharged for pulmonary tuberculosis unless tubercle bacilli have been found in the sputum. According to Dr. Bushnell, there is a movement on foot in the United States for standardisation of treatment, special courses of instruction being provided for medical men. These courses, it is hoped, will largely prevent contradictory instructions being given to the patient as he passes from one hospital to another. Dr. Bushnell does not say how such a notorious bone of contention as tuberculin treatment is to be fitted into the scheme of standardised therapy.

THE LANCET.

LONDON: SATURDAY, DECEMBER 28, 1918.

State Organised Pharmacological Research.

OUR attention has been drawn to a movement begun by the Government of Bombay in the direction of establishing a pharmacological laboratory and research institute for the investigation of drugs, and more particularly the indigenous drugs of India. A committee has been formed, with Lieutenant-Colonel A. STREET, M.B., F.R.C.S., I.M.S., as its chairman. The committee is to inquire what pharmacological research is being done in other parts of India, so that developments in Bombay may be coördinated, so far as is possible, with similar efforts elsewhere; and the committee is further asked to obtain information as to what is being done in the direction of pharmacological research in this country. The inquiry is opportune in a big drug-producing country like India, but, more than that, it raises the suggestion which might well receive serious consideration at home—the desirability of organising and establishing a State controlled laboratory for pharmacological research in the motherland.

We are under the impression that so far this important branch of scientific work has mainly been undertaken by private enterprise and by our great leading houses of pharmacy and chemical manufacture—at considerable cost. Certain University laboratories have, it is true, also undertaken analytical work, but not on any large scale. Very valuable work has thus been done, as the columns of the Chemical Society's Journal and those of the *Pharmaceutical Journal* show, and we have recorded the more important departures as they occurred, but clearly the scope of such work would be considerably widened if a reference could be made to a State pharmacological department. The Pharmaceutical Society, we know, maintains a school of pharmacy, which is under the direction of Professor H. L. SMITH, who occupies the chair of chemistry, and Professor H. G. GREENISH, who is responsible for the department of pharmaceutics; and valuable communications from the pharmacy research laboratory of the society appear from time to time in the columns of its official journal. We may refer to one article which appears in the last number of the *Pharmaceutical Journal* as a specimen of pharmacological research from this laboratory. It comes as a sequel to a note in our own columns on the use by the natives in the Central Transvaal of croton bark as a remedy for bilious malarial fever.[1] We know also of the existence of a scientific and technical department of the Imperial Institute, which has doubtless carried out investigations of national importance. This work, however, relates chiefly to the raw materials produced in our colonies in regard to their composition and utilisation, and the object is rather to give advice respecting industrial development and tropical agriculture. When the examination of raw drug materials is undertaken by this department, it would appear from the published reports that the references have been chiefly to the commercial development of certain colonial products, to the encouragement of their cultivation, and to other matters which do not call for pharmacological investigation.

In all schemes of research organised and controlled by the State the well-equipped pharmacological laboratory should take a place, and here special facilities should be afforded for bringing to light the medicinal value of raw materials. It is for a State department of this kind to take up a branch of research calculated to advance in general the pharmacology of drugs. So far as we are aware, no such department exists or ever has existed, and our knowledge of the essentials of plants, roots, barks, and so forth, used in medicine, has been due to independent research undertaken by the private individual. The separation and recognition of definite principles—for example, those in opium, nux vomica, cinchona, ipecacuanha—occur as a valuable record of the voluntary work of the medical man, the analyst and pharmacist acting in a private capacity. Such a position of things has narrowed the scope of pharmacological investigation in the past, and what is wanted in the future is a court of reference which can be trusted to take up the important issues arising when new remedies are announced. Moreover, such an institution should help in the work of establishing a relation between physiological action and chemical constitution and remove much empiricism from medical treatment.

[1] THE LANCET, Sept. 30th, 1899, p. 873.

King Edward's Hospital Fund for London.

AT a meeting of the Governors and General Council of the King Edward's Hospital Fund for London, called for the purpose of awarding the grants for the present year to hospitals, convalescent homes, and sanatoriums, Lord REVELSTOKE, in his capacity as treasurer, had the pleasurable duty of stating that the total receipts for 1918, up to, and including, the first week in December, amounted to £174,531, all expenses having been deducted, and the contribution from the League of Mercy not being added. Sir WILLIAM COLLINS, in making the annual statement on behalf of the League, reminded the meeting that during its 20 years of existence it had contributed to the voluntary hospitals in and around London £305,280. The figures given by Lord REVELSTOKE showed that the Fund had with its bankers, or at short call, sufficient money to meet the whole of the sum which it had been decided to distribute for the year 1918, amounting in all to £200,000. This is a notable achievement.

The report of the Distribution Committee, presented by Sir WILLIAM CHURCH, stated that the sum of £190,000 was to be distributed among London Hospitals, 103 in number, the remaining £10,000

being allocated to various Consumption Sanatoriums —£7825, and Convalescent Homes—£2175. The £190,000 destined for hospitals is £9000 in excess of the sum distributed in 1917, £27,500 in excess of that distributed in 1916, and £40,500 in excess of that distributed in 1913, the year before the war, although the buying power of the total has doubtless diminished during the same time. Of the total distributed over £160,000 is being applied in the form of grants to maintenance, leaving £29,750 as capital grants. Of these capital grants £10,100 is being employed in reduction of capital liabilities incurred before the war, £15,500 has been ear-marked for schemes of improvement, and the remainder represents the sums sanctioned for schemes of extreme urgency during the war. While the war was proceeding the Distribution Committee discouraged the issue of public appeals in aid of schemes which were not of extreme urgency, but in 1917 some capital grants were sanctioned in aid of deferred schemes, and early this year the Committee was announced to be ready to consider proposals for the immediate issue of appeals for post-war schemes on certain conditions—the main one of which was that in such appeals it should be clearly stated that the contributions received in response might be used either for building or for endowment. In this way hospitals would not be committed in advance to extensions which might later be found inadvisable. As a matter of fact, if all the schemes of extension which have come before the Fund were to materialise the available accommodation of the voluntary hospitals of London would be increased by no less than 1750 beds. It is quite clear that if any increase of this sort is contemplated the whole question should be considered from the point of view of the total needs of the metropolitan population and the geographical position of the institutions. The value of the work of the Fund is especially shown in its readiness to look at the voluntary hospitals of London as one public service and not as a congeries of rival charities.

The report of the Distribution Committee announces also the receipt of proposals for the amalgamation of University College Hospital and the Royal Ear Hospital, whereby the latter, which has been closed during the war, will be reopened as a special department of the large general institution. The Distribution Committee is supporting the working out of this scheme by grants. This amalgamation, following on that of the Hospital for Diseases of the Throat, Golden-square, with the London Throat Hospital reduces the number of ear, nose, and throat hospitals applying for a grant from five to three, of which only two are now on the books of the Fund. This is another indication of the way in which the Fund desires to bring order into hospital service for the vast London population by preventing overlapping of energies; but of course the process of fusing hospitals, general or special, with each other introduces the question of selecting the honorary staffs. We trust that those responsible for the management of King Edward's Fund will bear in mind the real difficulty that often underlies the position.

Annotations.

"Ne quid nimis."

LETHARGIC ENCEPHALITIS AND POLIOMYELITIS

THE difficulty of calling by an intelligible name such diseases as lethargic encephalitis and anterior poliomyelitis when the morbid agent is unknown and the morbid lesions are so various must not obscure the fact that a stage of useful knowledge has been reached in regard to the two diseases and their relations. In his lecture on lethargic encephalitis delivered before the Medical Society of London, which appeared in our issue of Dec. 21st, Dr. Farquhar Buzzard drew some general conclusions with regard to the recent epidemic. He directed attention to the fact that in the case of the analogous disease, acute poliomyelitis, the profession as a whole has tended to take too limited a view. In this it has followed the course of the history of the disease, in which our knowledge was for a long time based upon late examination of sporadic cases. It was not until epidemics occurred that attention was directed sufficiently to the protean character of the disease, due to the very variable localisation of the morbid process. Because the most common site was in the spinal cord and the most vulnerable elements the cells of the anterior horns the disease received the name "anterior poliomyelitis," and this stereotyped our conception of it. Dr. Buzzard has rendered a service by warning against a similar limitation of view in the case of lethargic encephalitis. This disease presents many points of similarity to acute poliomyelitis, but is "undoubtedly an entirely different disease." The form in which it was first observed was characterised by lethargy, asthenia, and oculo-motor paralysis; a second group of cases present the features of acute paralysis agitans. Dr. Buzzard describes a third group in which "the force of the inflammation was spent upon the cerebral cortex," with resultant Jacksonian movements and consecutive paralysis. In different cases the distribution of the lesions may be very various, and no doubt other types of case will be described later. The number of cases recorded in the present epidemic has been comparatively small, and they have occurred over a wide area, as shown in the note on the distribution of the disease by Lieutenant-Colonel S. P. James in the same issue of THE LANCET. It is probable that many other cases have occurred which have not been recognised as such, because they did not conform in type with the variety of the disease which was first described, and that later an "abortive" form of lethargic encephalitis may be established, as has been done by Wickmann in the case of poliomyelitis. Dr. Buzzard suggests that some sporadic cases of encephalitis lethargica have previously been diagnosed as cerebral thrombosis or hæmorrhage; he points out that microscopical examination is frequently the only method of differentiating between the two, the naked eye appearances being indistinguishable. This would explain those cases of "cerebral thrombosis" in which the Wassermann reaction is negative and the vascular system apparently healthy. Unfortunately, our ignorance of the causal agent is so complete that but little help in treatment is afforded by such a differentiation, beyond confirming our belief that the cause is one associated with a profound toxæmia against which general measures can be taken.

TROPICAL DISEASES IN THE BALKANIC WAR ZONE.

IN his paper read before the Royal Microscopical Society on Dec. 18th, Dr. Aldo Castellani, Lieutenant-Colonel, Italian A.M.C., described the tropical diseases commonly met with in the Balkanic zone during the war. Of these, he said, the most important and the commonest was malaria, which had often taken on a malignant character and had given endless trouble by simulating many other diseases. Only a routine blood examination can exclude errors in diagnosis. Next to malaria the dysenteries, amœbic and bacillary, were the commonest affections. Enteritis due to flagellates had occurred, and more rarely a form with a ciliate infection. Coccidiosis was also observed. Cholera and paracholera had been rare, although a choleraic type of bacterial dysentery had been observed. and a form of diarrhœa was seen in starving Serbian soldiers during the Albanian retreat which closely resembled the famine diarrhœa of India. Camp jaundice (*Icterus castrensis*) had been common. Dr. Castellani distinguishes two varieties: (1) a very severe type (*gravis*), hæmorrhagic, with high fever lasting 10 to 12 days, and occasionally relapsing —this is true Weil's disease, and fortunately rare; (2) the common mild type (*levis*), often afebrile, but probably in many cases spirochætic in origin, like the severe form. Fevers of the enteric group, fairly frequent in the Balkans, had not during the last year assumed epidemic type. Paratyphoid A and B were in certain districts more frequently met with than true typhoid. Fevers resembling paratyphoid but due to intermediate germs had also been noted. Colonel Castellani and G. A. Lurie found in some cases the *Bacillus colombensis* as causal agent. Not infrequently mixed infections were found in all the three possible combinations—viz., T.A., T.B., and A.B.; while two cases of triple infection, T.A.B., had been confirmed by hæmocultures. The method of combined vaccination devised by Dr. Castellani had given, he thought, good results, and the Serbian Army officially adopted a tetravaccine, T.A.B. + cholera. Malta fever, rare in Macedonia itself and the interior of the zone, was more frequently met with on the coast and in the adjacent islands. Kala-azar did not occur in Balkan adults, but many cases of the infantile type were seen in certain islands of the Adriatic and Ægean seas. Relapsing fever was common, and in its treatment the best results had been obtained by the combined use of salvarsan and tartar emetic. At the moment, he said, typhus exanthematicus was very rare, in striking contrast to the terrible epidemic which raged in 1914–15. Trench fever was occasionally met with in both the types described in France. Pappataci fever was extremely common in certain parts of the Balkans, especially in the late summer and early autumn. Broncho-mycosis and broncho-spirochætosis were far from rare. Pellagra was also quite common in several districts in Macedonia. Of the tropical diseases of rarer occurrence Dr. Castellani instanced blackwater fever, filariasis, leprosy, sprue, intestinal myiasis, mycotic, spirochætic, and flagellate urethritis. Certain tropical skin diseases of frequent occurrence gave rise to much discomfort in summer, and were often wrongly diagnosed. Such were dermatitis interdigitalis epidermophytica, or "mango toe"; tinea cruris, or "dhobie itch"; prickly heat; and various types of tropical pyosis, such as Mansoni and discoides. In 1915 Dr. Castellani saw among Macedonian peasants cases of ulcus tropicum, Oriental sore, ulcus infantum, blastomycosis, sporotrichosis, and acladiosis, and also numerous cases of trichomycosis axillaris flava, nigra, et rubra, of intertrigo saccharomycetica, and various other hyphomycetic affections. He had also reported two cases of Madura foot, two of keratoma plantare sulcatum, and one (typical) of ainhum. Dr. Castellani concluded with a strong plea for the routine microscopical examinations in all patients. The wealth of diagnostic problems among the conditions which he has described makes such a plea eminently reasonable.

AUTOTHERAPY IN INFLUENZA.

Dr. Luigi Meille draws attention in a recent issue of *Il Policlinico* (Practical Section, Nov. 3rd, 1918) to a method of introducing into the organism of a patient suffering from a severe form of influenza a non-heterogeneous serum which presumably contains the antibodies or antitoxins of the antigen or toxin which produces the disease, and which, beyond its own antitoxic properties, would also act as a producer of fresh antitoxins. The technique is extremely simple. The veins at the bend of the elbow having been made prominent by the application of an elastic ligature, the needle of a sterilised syringe of 10 c.cm. capacity with the piston down is introduced into one of them and the blood allowed to push back the piston and flow into the syringe. An amount of 20 or 30 c.cm. thus obtained by repeatedly detaching the syringe from the needle is emptied into a sterilised test-tube, which is then plugged with cotton-wool and covered with guttapercha. By keeping the test-tube in a slanting position for 12 hours the serum separates and 1 to 2 c.cm. are aspirated by a syringe and injected into the subcutaneous tissue of the patient. No local reaction follows, but after from three to four hours a slight febrile reaction may occur, which soon subsides without leaving any after-effects; serum disease is never observed. Dr. Meille states that the action of the serum is quickly shown by an improvement in the course of the disease; the pulse becomes stronger, cyanosis less marked, and delirium ceases. Autoserotherapy has no specific action upon complications, except by improving the general condition of the patient and favourably influencing the course of the disease.

BENJAMIN RUSH.

THE services of Benjamin Rush to American education have been well brought out by Dr. Harry G. Good, Ph.D., of Bluffton College, Berne, Indiana. At last justice has been done to the non-medical side of his life. Not without reason did Rush's friend, J. C. Lettsom, call him the American Sydenham; but he was more than physician—he was author, philanthropist, patriot, and statesman. And above all he was a brave, strong man. As Bancroft, the historian, says: "When an infectious pestilence raging in Philadelphia rapidly swept nearly 4000 to the grave Rush despised every consideration of personal safety, and was so true, night and day, to his patients that it was said of him in Europe: 'Not Philadelphia alone, but mankind, should raise him a statue.'" He was perhaps the greatest pupil of William Cullen, whose system he championed in opposition to that of Boerhaave. Chapter III. of Professor Good's work deals with the professional side of Rush's life. Apart from his psychological studies, his contributions to practical medicine have been excelled by many of his countrymen, but it would be hard to name any other who occupies the same distinguished position as a

far-seeing reformer in social and educational affairs. A fearless abolitionist, at a time (and place) when only a strong man could hold such opinions—a humanitarian in his life-long advocacy of penal reform—an ardent temperance advocate whose writings on the subject are still current—an enlightened student of insanity and an early supporter of the humane treatment of its victims—a friend of animals and an incessant pleader for their kindly treatment—such was Benjamin Rush. And beyond all this it is as an educational reformer, rather than as a physician or a patriot, that he is best remembered to-day. It is just here that Sir William Osler finds the special value of Professor Good's book. "It contains," he says, "a critical study of Rush's activities in the establishment of public schools, in the promotion of the higher education of women, in the necessity of national universities, and in the importance of bringing scientific knowledge into the daily life of the home, the farm, the workshop, and commerce. Professor Good constantly reminds one of Locke in his good sense about the education of children; and what a happy criticism to say that punishments meted out indiscriminately to boys for ignorance and immorality confuse their moral sense! For the first time we have here set forth clearly the lifelong work of Rush as an educational reformer, and to Dr. Good as a professor of the subject this has been a labour of love. The profession on both sides of the Atlantic is indebted to him for this interesting picture of one of the most versatile and distinguished of its members. I may add that we have as an appendix a full and accurate bibliography."

MYALGIA OR TRENCH FEVER.

MYALGIA is the name given to a painful affection, apparently involving the muscles or fasciæ. The connexion with true rheumatism is not always obvious, nor is it even certain that the muscles or fasciæ are really involved; but the disorder is often the direct result of damp or cold, or of excessive muscular exertion or strain. Possibly toxins or poisons absorbed from the alimentary canal are responsible for some muscular pains. Thus far Sir Frederick Taylor, and we need hardly look further for a demonstration of the weak nature of the evidence connecting myalgia with rheumatism. A generation ago muscular rheumatism was presumed to be associated with a gouty tendency and lithæmia. The crisp Anglo-American view we should expect to find in Osler and McCrae's System is not there; myalgia is simply ignored. Dieulafoy also has nothing to say on the matter. It remained for the trenches to throw light on this as on other common ailments; for "trench shin" and disabling muscular pains clamoured for investigation. The identification of trench shin as one type of trench fever[1] was made early and is now generally accepted. In a letter to our correspondence columns this week, commenting upon Dr. R. D. Rudolf's "Trench Fever Cachexia,"[2] Mr. A. Bertram Soltau, Colonel, A.M.S., gives reasons for thinking that nearly 80 per cent. of the myalgias of active service are due to the toxins of trench fever. In March last Mr. Soltau circulated a note to all Army medical officers in Flanders calling attention to the great variety of pains associated with trench fever, most of them, however, originating in the fibrous insertion of muscles. The nocturnal exacerbation of the pain and the fact that it is generally increased by warmth negative a muscular origin and distinguish the condition from a true myalgia. Trench fever pain has therewith reached some measure of precise description. It is not unlikely that a comparative study of ordinary so-called muscular rheumatism may establish the same or a similar toxic origin.

[1] T. Houston and J. M. McCloy, THE LANCET, 1916, ii., 632; G. Chambers, THE LANCET, 1917, i., 752.
[2] THE LANCET, Dec. 14th.

ALCOHOL FOR INFLUENZA PATIENTS.

IN view of representations that have been made that there is in some districts a shortage of spirits required in treatment of patients suffering from influenza, arrangements are being made by the Ministry of Food that in the event of information reaching the Ministry indicating that an additional supply of spirits is necessary in any particular district for the treatment of such patients the Ministry will direct a special supply to that district. Steps are being taken by the Ministry to obtain representative medical opinion as to the reality and extent of the need in the various localities affected. All bottles of spirits supplied for this purpose will bear distinctive labels and will only be sold against a certificate from the doctor attending the patient.

THE PREVENTION OF SYPHILIS AMONG INFANTS.

THE generous gift of £10,000 by the Grocers' Company made it possible for the London Hospital to build wards for the treatment of venereal diseases. In-patient treatment is obviously of special urgency in the case of pregnant women infected with syphilis, and this section of the work is beginning to show results in the form of healthy offspring. It was a happy thought on the part of Dr. J. H. Sequeira to combine an "At home," given, on Dec. 18th, to some of the mothers and children who have benefited from treatment, with a medical gathering where the lessons already learned and their further application in the future would be discussed. Lord Knutsford drew attention to the large number of East-End women who miscarried as the result of syphilis, in whom proper treatment would have ensured the birth of children showing no traces of disease. There was need, he said, for other districts and hospitals to organise on a large scale to provide similar treatment. The venereal diseases department of the hospital was supplied with patients by its own obstetric and maternity departments, through the maternity almoners, from the City of London Lying-in Hospital, and by various maternity centres in the neighbourhood. Dr. Sequeira added that both married and unmarried women were dealt with, and since March, 1916, 52 pregnant women had been treated. After treatment in the special department these women were either admitted to the general lying-in ward or were attended by the out-patient charities under the supervision of the obstetric physician to the hospital. He added that, in his opinion, the women after treatment were not liable to infect others, either in the ward or outside, if the usual precautions were taken. In the East-End coöperation between the maternity and infant-welfare centres and the venereal clinic at the hospital was actually very good. He had found it safe in practice to give injections of salvarsan to pregnant women, and thought it essential to treat every such patient at

the earliest possible moment. Sir Arthur Newsholme also emphasised the need for coöperation between venereal clinics, child-welfare and maternity centres and the general practitioner. But coöperation, however necessary, will prove futile without the provision of hospital accommodation. The need of further facilities for the treatment of syphilitic pregnant women as in-patients is very great, and sufficient hospital accommodation must be provided for them both before and during confinement. In London the Thavies Inn Venereal Centre for Pregnant Women provides the only other residential treatment, and the encouraging results obtained there were described in THE LANCET of Dec. 7th by Mr. John Adams. Coöperation and increased accommodation are the two essentials in the solution of a problem which brooks no delay.

THE SCOTTISH UNIVERSITIES ELECTION.

WE have received a letter from Mr. R. W. Cockburn, agent for Professor W. R. Smith in this election, in which the statement is apparently maintained that Professor Smith was "adopted by the Medical (Parliamentary) Committee for this constituency." He was not so adopted. Upon Professor Smith, at a meeting of the Committee, mentioning that he might not be elected for the Scottish Universities, his name was added to a general list of medical candidates whose wishes to find a constituency the Committee was willing to further. The Committee's policy is to assist medical men to get into Parliament, and with that object in view an offer was made to Professor Smith, and to all other medical candidates for Parliament, to try to find speakers, political views and individual candidature having nothing to do with that offer. In a circular letter to the Editor of THE LANCET, headed "The Scottish Universities Parliamentary Association," Sir Thomas Oliver, as chairman of the Association, says, "Professor Smith has also been adopted by the Parliamentary Committee." The one and only inference must be that Professor Smith was adopted as a candidate in relation to the Scottish Universities vacancy, and that inference, if drawn, would have been incorrect.

Sir William Whitla has been returned by a very large majority as Member for Queen's University, Belfast. Sir Robert Woods, standing as an Independent, has been returned for one of the Dublin University seats.

Dr. Sydney Russell Wells has been appointed to represent the University of London on the General Council of Medical Education and Registration.

M. Albert Calmette, director of the Pasteur Institute at Lille, has succeeded M. Emile Roux as director of the parent institute in Paris.

Sir Robert Philip has been elected President of the Royal College of Physicians of Edinburgh, and Dr. A. H. Freeland Barbour, Vice-President.

THE appointments to the Industrial Fatigue Research Board have now been completed and include, in addition to the names given in THE LANCET of Nov. 23rd (p. 718), those of Mr. Kenneth Lee, Mr. R. R. Bannatyne (representing the Home Office), and Dr. C. S. Myers, F.R.S., Director of the Psychological Laboratory, Cambridge. The Board expresses its readiness to consider any suggestions submitted to the secretary at 15, Great George-street, London, S.W. 1.

THE ANNUAL REPORT FOR 1917 OF THE CHIEF MEDICAL OFFICER OF THE BOARD OF EDUCATION.

II.[1]

EVERY chapter of Sir George Newman's report brings into relief some fresh aspect of the physical condition of the children which must be of absorbing interest to all who have at heart the moral and material welfare of the people. The keynote of the whole report is insistence upon the importance of the *positive* function of school hygiene, the education and building up, the strengthening and development of the natural powers of the body of the normal child, that it may be able not only to resist disease, but to become its best. It is clear that there has hitherto existed on the part of the local education authorities a misunderstanding of the true principles involved, a failure to attain to the necessary breadth of vision. They have thought their duty done with the carrying out of what Sir George Newman terms the *negative* function of school hygiene, the arrangements for treatment of the defective child. It is the ordinary child who is the key to the nation's health, and it is the adaptation of the environment, so that Nature may have its way and the child grow in body and mind, that the local education authority must make its business. Hence the need for physical exercises, games, school meals, play-centres, and open-air lessons; for vigilance and strict control of premature employment; for the claims for more sleep at night and more rest in the day.

School Dental Work.

Not that even the negative function has been hitherto well and conscientiously performed; far from it. Despite the facts that are known with regard to the condition of the children's teeth and the resultant loss of physical efficiency in the population, and despite the fact that local education authorities for ten years have had the legal power, we learn from the report that a beginning, at present incomplete and inadequate, has been made in 151 areas, but in 167 educational areas the authority has undertaken no dental treatment at all.

The Board have suggested that an authority's school dental scheme should at least provide for—

(i.) The inspection and treatment of children of 6–8 years of age.

(ii.) The re-examination at intervals of not more than one year of children who have already received treatment and the provision of supplementary treatment where required.

(iii.) The periodical inspection and treatment of other children as may be necessary and of "specials."

At present no large authority is carrying out this complete scheme, and few are doing more than examine and treat the 6–8 age-group. The extent to which school children at these ages require dental treatment is shown by the findings of school dentists in different areas, and these for 1917 vary from 79 and 80 per cent. in London and Liverpool respectively to 97 and 99 per cent. in Southport and Wrexham.

The Board have advised that dental inspection should be carried out only by qualified dentists, and preferably those undertaking subsequent treatment; but in exceptional cases, particularly rural areas, they are prepared to accept proposals for the carrying out of dental inspection by the school doctor, provided only that he is exceptionally qualified. With regard to dental treatment, the services at present rendered "probably do not cover more than about one-tenth of what is required to deal with half the school population." The three great difficulties in the way are stated to be: first, the grave shortage of dentists; secondly, the unattractiveness of school dental work; and, thirdly, the unwillingness of authorities to incur the expenditure of a scheme. About this third difficulty there is no doubt, and our experience is that the first two difficulties are merely cloaks brought forward to hide the third. However this may be, the alleged difficulties have led a few authorities to make the proposal to the Board that they should use unqualified "dental dressers" who, with the help of school nurses, would, it is suggested, be able to deal with a large portion of the school dental work. It appears that schemes on these lines are actually in being. Now these proposals cut at the root of much that is of fundamental importance in medical practice,

[1] No. I. was published in THE LANCET of Dec. 21st, 1918, p. 855.

and it behoves the profession to scrutinise them with meticulous care. It is stated that the British Dental Association considered this question of "dental dressers" and reported in guarded terms in July, 1917, and the subject is, moreover, under the consideration of the Dentists Act Committee of the Privy Council.

We have no wish to allow any punctilios of professional etiquette or of medical tradition to stand in the way of any reform or of any arrangements which may be necessary for improving the condition of the nation's children. And professional pride must be denied and set aside and mortified if it obstructs any proposal proved on economic grounds to be absolutely necessary. But we must say that on present showing the motive of the present proposal appears not to be necessity but parsimony. At any rate, it appears to us perfectly extraordinary that Sir George Newman should solemnly set down as one of the things that could be done by unqualified dental dressers that very inspection of the teeth of the children which he has already defined as a work requiring such skill that it cannot in general be entrusted under the Board's rules to the school medical officer himself or to the experienced school doctors working under him. We trust it may be long ere our professional pride be again so mortified, and we may be forgiven if we feel naughtily thankful for the existence of a Dentists Act Committee and if we desire more power to its elbow, especially as we gather that, owing to the reference of these questions to that Committee, "further action has been suspended" for the moment.

Special Schools and Open-Air Schools.

"A substantial part of the medical treatment of a certain group of defective children—blind, deaf, feeble-minded, epileptic, and tuberculous—is a special form and character of education." We therefore have "special schools" for about 1 per cent. of the total school population. During the year 1917 there was an increase of 8 schools for the blind, 6 for the tuberculous, 4 open-air schools, and 3 others, making a total of 21 schools. The number of scholars on the registers of special schools in January, 1918, was 30,695, including 2520 blind, 3938 deaf, 14,343 mentally defective, and 5792 physically defective. It has been estimated that the number of physically defective children in England and Wales is between 35,000 and 40,000, but up to the present only 25 local education authorities have provided day schools and 7 have provided residential schools. It is the possibility of making such statements as these which spies out the poverty of our land, and to some extent explains the Prime Minister's statement to the effect that our recruiting returns were worse than those of any other belligerent nation in regard to rejections for physical unfitness.

Our local education authorities and our local health authorities, though armed with the necessary powers, have not been carrying out their duty. Even the London County Council, which in many ways has given a lead to all the other authorities in the magnitude and extent of its efforts to alleviate the condition of the children, has lamentably failed in some directions and in none more unaccountably than in developing its open-air school accommodation. "The astonishing fact still remains that London, with 650,000 children, possesses only two ordinary small open-air schools accommodating 210 children."

It is interesting to learn that a Special Aural Board of the Ministry of Pensions has been working in coöperation with officers of the Board of Education in organising the training of soldiers and sailors disabled in the war through deafness and mutism. Twenty-five centres for the teaching of lip-reading have been opened in various parts of the country and the results have as a whole been very satisfactory.

By far the biggest piece of work coming under the heading of special schools, of course, is the care of the mentally subnormal child. The report rightly points out the importance of this class in relation to the activities of the education authorities as a whole. It is fundamentally a part of the larger question of national mental capacity, and not, as is so often assumed, an issue affecting a handful of hopeless children. The war, unfortunately, has rendered it impracticable to secure for the mentally defective child the attention which it was hoped would have resulted from the passing of the Mental Deficiency Act of 1913, and of the Defective and Epileptic Children Act of 1914.

Nevertheless, the work of "ascertainment" under the former Act has been proceeded with in a number of areas, and some local education authorities have consequently been brought face to face with the necessity of considering the requirements of all children mentally subnormal in whatever degree. The "border-line case" keeps on bobbing up, acting as a bridge between the normal and the subnormal, and destroying the "water-tight compartment" method of dealing with the latter, which would be inimical to scientific progress. The present tendency, therefore, is to view the question more as a whole and more in relation to the other activities of the education authority than was formerly the case, and the benefits of the Acts are consequently not confined to the feeble-minded, but affect also the dull and backward, and even the mentally normal child.

These questions have stimulated such inquiries as the recent investigation by Mr. Cyril Burt, psychologist to the London County Council, into the "Distribution and Relations of Educational Abilities." Two broad facts emerge from this inquiry: first, the educational attainments of a "defective" correspond, on an average, to those of a "normal" just one-half his age; secondly, in the whole county of London the number of backward children above the "defective" standard is over 10 per cent. of the whole.

The development of methods of education which will meet the needs of the large class of dull and backward, as well as of the small class of the feeble-minded, is therefore a requirement which should arrest the attention of the authorities. Such methods include the provision of suitable forms of hand work and a more rational system of physical development. In the latter connexion the announcement will be hailed with satisfaction that the Board contemplate the issue of a new edition of their "Syllabus of Physical Education," in which effect will be given to more modern views.

The Future.

The future of school hygiene in this country and the well-being of the child and adolescent population are bound up with the administration of the medical arrangements under the new Education Act. To the section of the report dealing with this Act we, therefore, turn in order to glean the attitude of the Board towards the problems of the future. We are not disappointed. The keynote of the whole report here becomes more than ever insistent. The narrow "bottle of medicine" conception of the purpose of the School Medical Service still held by many persons and authorities is again severely trounced. The ideal of prevention rather than cure is held up as worthy of all acceptation. The Education Act of 1918 is concerned with the physical, as well as the mental, development of the rising generation from the age of 2 years to that of 18. Measures for the promotion of healthy physical development must be preventive as well as remedial. The Act is concerned not only with the provision of facilities for treatment, and special schools for abnormal children, but with the encouragement of measures designed to improve the health, and bring out the physical capacity for development of the whole juvenile population. "What is required is not the devotion of exclusive attention to the diseased child ..... but a broad, carefully considered, and unified system of physical care and development of all children of school age." The foundation of any scheme for attending to the health and physical care of the scholars is defined as a complete system of inspection of all the scholars and reinspection of all found defective.

The dates upon which the sections of the Act come into operation are not all yet fixed, although a number of provisions became operative on August 8th, 1918 (the date of passing of the Act). The Act imposes upon authorities a duty to make arrangements for the treatment of children educated in public elementary schools, thus making this function in future compulsory instead of voluntary, but the section is not yet in operation. It imposes a duty upon authorities to provide for medical inspection in secondary and continuation schools, and the power is given to provide facilities for treatment; this section is in operation except so far as it imposes a duty.

It is important to note that the Act prohibits the establishment of a general service of domiciliary treatment by medical practitioners, but provides that in making arrangements for treatment an authority shall consider how far they can avail themselves of the services of private medical prac-

titioners. The Act makes it the duty of an education authority to ascertain what children within their area are physically defective or epileptic within the legal definition, and also to make provision for their education between the ages of 7 and 16, but this section is not yet in operation.

Several sections of the Act which are not yet in operation deal fairly drastically with the employment of children o school age, but it is interesting to note that a section whic is already in operation empowers the local authority t prohibit or restrict any employment of a child which, as result of a report by the school medical officer, or otherwis they are satisfied is prejudicial to his health or physic development, or which renders him unfit to obtain pro benefit from his education. The clauses of the Act empow ing local authorities to establish or to aid nursery schools children between 2 and 5 are already in operation.

The final paragraph of the section of the report dea with the Act forms such an admirable epitome of Sir Ge Newman's conclusions, ideals, and aspirations that cannot do better than quote it in extenso.

> The fundamental purpose of the new Act is "the progressive de ment and comprehensive organisation of education" available persons capable of profiting thereby. It is indisputable th primary factor in such an organisation must be the physical fact system of education, however perfect, must fail if the physi mental condition of the person to be educated be not healthy res and alert. Indeed, the association between physique and educ even closer, for the education and development of the young largely a question of bodily nature and nurture. Not only the body be sound and unimpaired by defect or deformity, but its ning and development is an integral, essential, and vital part of true educa ion. The local education authorities throughout Eng and Wales are now in possession of an adequate and comprehensi strument for achieving these great national ends. The ines im good which they have accomplished in ten years, with meagre and ewhat indifferent machinery, affords good promise of their wise and seeing use of the new and enlarged opportunity, at the door of wh they now stand.

We devoutly re-echo Sir George Newman's word and we should like to share his confidence to the full, ut the supineness of the local education authorities in t past, as revealed by his own report, raises grave doubts.

URBAN VITAL STATISTICS.

(Week ended Dec. 14th, 1918.)

English and Welsh Towns.—In the 96 English and ish towns, with an aggregate civil population estimated at 16,500,0 ersons, the annual rate of mortality was 20·2, against 36·5 and 2 per 1000 in the two preceding weeks. In London, with a popu lon slightly exceeding 4,000,000 persons, the death-rate was 18·2, 7·8 per 1000 below that recorded in the previous week; among remaining towns the rates ranged from 7·4 in Bournemouth, 7·9 Walthamstow and in Oxford, and 10·0 in Cambridge, to 38·6 in ston, 34·7 in St. Helens, 42·1 in South Shields, 42·8 in Grimsby, 48·9 Barnsley, and 54·1 in Sunderland. The principal epidemic diseases ed 148 deaths, which corresponded to an annual rate of 0·5 per 100 and included 48 from diphtheria, 47 from infantile diarrhœa, 23 from ooping-cough, 14 from measles, 12 from scarlet fever, and 4 fro enteric fever. The deaths from influenza numbered 1885, against 74 in the preceding week, and included 322 in London, 164 in Birmingham, 111 in Manchester, 82 in Sunderland, 53 in Nottingham, and in Liverpool. The 1089 cases of scarlet fever and 1017 of diphthe a under treatment in the Metropolitan Asylums Hospitals and t London Fever Hospital were 10 and 11 below the respective numbs remaining at the end of the previous week; there were also 2 ces of small-pox under treatment. The causes of 50 deaths in t 96 towns were uncertified, of which 8 were registered in Birmingha, and 4 each in Southend-on-Sea, Hull Stockton-on-Tees, and Gateshad.

Irish Towns.—The 168 deaths in Dublin corresponded to an annual rate of 22·0, or 0·5 per 1000 below that recorde in the previous week, and included 24 from influenza, 2 from infants diarrhœa and 1 each from scarlet fever and whooping-cough. The 1 deaths in Belfast were equal to a rate of 24·7 per 1000, and incided 1 each from whooping-cough, diphtheria, and infantile diarrhœ

METROPOLITAN HOSPITAL SUNDAY FUND.—At the annual meeting held at the Mansion House on Dec. 20th, the Lord Mayor presiding, ne members of the council were re-elected, with the ddition of the Rev. E. Marling Roberts, the Rev. W G. Pennyman, Dr. Jowett, and Sir Charles Hanson o fill vacancies. Hospital Sunday, 1919, was fixed for une 22nd. The report stated that the total collection fr 1918 (the forty-sixth) had amounted to £92,055, an increase of over £15,000 as compared with 1917. This increase, which had exceeded the highest previous record, had enabl d the council to distribute a sum of over £85,000 amon the hospitals and medical charities of London, being £15,000 more than any previous distribution. The collections in the churches amounted to £43,077, or £5739 more than in 1917, while the donations were £13,259, showing an increase of £5106. The fund received a donation of £5000 from the American Red Cross in recognition of the work done by London hospitals for the Allied wounded.

Correspondence.

"Audi alteram partem."

TRENCH FEVER CACHEXIA.

To the Editor of THE LANCET.

SIR,—The article by Colonel R. D. Rudolf, C A.M.C., on French Fever Cachexia, in THE LANCET of Dec. 14th, draws attention to a condition which has been recognised in France for the last two years. It is interesting to have, from an observer in England, a confirmation of many of the opinions and conclusions arrived at from seeing cases in the earlier stages, and the subject is of such importance for the future that it cannot be too widely known and discussed. The literature of trench fever has been voluminous, but has mainly been directed towards a description of the types of the disease as seen in the earlier stages, or to a discussion of the etiology and the infectivity of the disease, whilst little attention has been paid to the later stages.

Everybody is now well acquainted with the common types of the disease—the short, the long, and that with a prolonged initial fever. The work of the American Red Cross Commission proved that these are all simply variations of expression of a common infection. In addition, many of us had recognised, as far back as 1916, a type which we called the "smouldering" type, in which the patient complained of debility, weakness, irregular pains, &c. This was regarded, not as a distinct type, but rather as a condition following on after an infection from which the man had apparently recovered completely, and yet the infection "smouldered" on or reappeared after a period of latency. The parallel to malarial cachexia which Colonel Rudolf draws is an apt one, and evidently the cases which he describes are similar to those which have been a source of much perplexity in France.

The parallel may be carried even further, for trench fever apparently has the power to remain latent and flare up again, more particularly after any trauma. It was no uncommon experience to notice this recrudescence in the surgical wards, as many of the wounded commenced within a few days of being injured a typical febrile attack which could not be accounted for by the condition of their wounds, and cross-examination then elicited a history of previous trench fever. Hard work, physical or mental, over a prolonged period, also appeared to have the power of re-kindling the disease. As to how long this latency is maintained, we have as yet no accurate knowledge, but cases have now been followed for nearly four years, in which recrudescences of diminishing virulence have appeared, and in which a diminution of vigour has been noted throughout.

A recognition of these facts will make for more accurate diagnosis in the Army, and will largely eliminate that popular diagnosis of "myalgia" Captain F. B. Chevasse and Captain Marr have independently worked at this point, taking groups of cases labelled "Myalgia," and trying to establish a correct diagnosis. The former considered that some 43 per cent. were in reality suffering from trench fever, and the latter put the figure at nearly 70 per cent. My own observations, made on a less exact but a wider scale, by "sampling" admissions in many areas, would indicate that at least 70 per cent. and probably nearly 80 per cent. of the "myalgias" were in reality suffering from trench fever. The majority of the cases included in these observations were examples of the cachectic period of the disease.

A correct diagnosis may not be easy in the late stages when cases are seen in English hospitals or after discharge from the Army. A careful consideration of the history will often furnish the clue. Colonel Rudolf has pointed out the value of the temperature chart, which we learned to rely on very largely. So much was this the case that in order to obtain a record from as early as possible a moment all field ambulances in France were supplied with a rubber stamp giving an impression of a six days' chart for use on the field medical card. The oscillation of the temperature, giving a diurnal swing of two or more degrees, appears to be just as important as an actual rise above the normal. Other points to look for are a quickened pulse, maintained in the eighties, tremor of hands and tongue, small patches of yellow fur on the tongue, and the presence of spots of local tenderness on palpating over the muscular insertions and indicative of a persistence of that fibrous involvement which

s characteristic of the earlier stages. I am interested to note that Colonel Rudolf finds persistence of splenic enlargement, as that had not been determined in France. The presence of a relative lymphocytosis, mainly of the large lymphocytes, may be of value in the doubtful case.

Practitioners will in the coming future be faced frequently with the diagnosis and the treatment of these cases, and when it is remembered that probably a fifth of the cases of disease, as apart from wounds, in the armies in France has been caused by trench fever, the numerical importance of the question is obvious, especially as we do not yet know for how long this liability to recurrence will be maintained.

I am, Sir, yours faithfully,

A. BERTRAM SOLTAU,
Colonel, A.M.S.

Dec. 17th, 1918.

PHTHISIS IN FACTORY AND WORKSHOP.

To the Editor of THE LANCET.

SIR,—Dr. M. F. Boulenger (THE LANCET, Dec. 14th) apparently considers "hereditary tuberculosis" as the cause of tubercle in abstainers and alcoholism as the cause of it in drunkards. In the interests of clarity it would be well if he explained what "hereditary" means in this connexion. I understand "congenital tuberculosis," "congenital syphilis," "congenital ophthalmia," "congenital small-pox," and the like. These expressions denote that the micro-organisms of disease infected the child while it was yet within the mother's body. But what does "hereditary" tuberculosis imply? Would Dr. Boulenger class a bullet that had passed through the mother and lodged in the child as a hereditary bullet? Bullets and bacilli alike are foreign bodies. As far as the evidence goes, congenital tuberculosis, unlike congenital syphilis and ophthalmia, is very rare.

In tuberculosis, as in all other developments, two factors are concerned, nature (heritage, susceptibility, predisposition) and nurture (*terrain*, environment). Both the susceptibility and the environment vary enormously in relation to individuals and races. Thus, some Englishmen, and all Polynesians, are very susceptible; most Englishmen but no Polynesians are able to survive in the slums of great cities; practically no Englishman contracts the disease in Polynesia where it is exterminating the native. The rule that "Every human race is resistant to every lethal and prevalent human disease in proportion to the length and severity of its past experience of that disease" applies to tuberculosis. Thus, Jews, who have 20 centuries of urban life behind them, are more resistant than Englishmen, who are more resistant than Scottish Highlanders, who are more resistant than American negroes, who are more resistant than African negroes, who are more resistant than Polynesians. The rule itself is explainable only on the supposition that powers of resistance (which are not foreign bodies) are inheritable, and that each lethal disease weeds out the weak against *itself*, leaving the race to the strong.

The cause of tuberculosis is the *Bacillus tuberculosis*. All conditions which favour the survival and concentration of the bacilli and their passage to susceptible persons—e.g., ill-lighted, ill-ventilated, and crowded buildings—conduce to the spread of the disease. So, also, do all conditions—excessive drinking, among others—which depress the vitality of human beings. I do not know whether statistics exist, but I venture to predict that women industrial workers—because they work in crowds—suffer more from the disease than women engaged in house duties. Dr. Boulenger insists that the "essential cause" of adult tuberculosis is alcoholism, and so explains the fact that male industrial workers suffer more than their wives whose environment he regards as worse. But do not these men sleep in their own homes? And was alcoholism the cause of the prevalence of the disease in convents, jails, and Pacific islands, and the essential cause of most of the many deaths among the men and women we have each known? Of course, excessive drinking is sometimes a contributory cause. And, of course, excessive drinking is in itself a tremendous evil. But intemperance in argument is not likely to cure intemperance in drinking. The case of vaccination should be borne in mind. Originally medical men claimed that vaccination endowed the individual with permanent immunity to small-pox. As a fact it confers only temporary immunity, which, however, is sufficient, for vaccination, repeated when necessary, abolishes small-pox. But to this day its opponents rely on disproof of the original and long-abandoned claim as a principal weapon for discrediting not merely vaccination, but all protective inoculation. Excessive claims, even when made in such a good cause as temperance, tend to meet the proverbial fate of vaulting ambition which overleaps itself.

I am, Sir, yours faithfully,

Southsea, Dec. 15th, 1918. G. ARCHDALL REID.

DISPENSARY SUPERVISION IN PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—I have noted with satisfaction the interest which my article (THE LANCET, Oct. 26th) appears to have aroused, because I believe that the favourable opinion of the Interdepartmental Committee on Tuberculosis as to the value of the treatment under close supervision is justified by more recent experience upon a large scale. Of course, like all other antituberculosis measures it has its limitations, but this is no argument against its utilisation in the large number of cases where it may be satisfactorily applied, if the requisite trouble be taken.

The first fact that has to be faced is that so long as patients are solely under the care of general practitioners, close supervision of their hygienic routine is seldom exercised in working-class practice, and, as a matter of fact, on the tuberculosis officers' or dispensary nurses' first visits in many cases there is often little visible evidence of any instructions having been given to patients as required by the Tuberculosis Regulations. Even when such instructions have been given there is apparently nothing in the Regulations requiring a panel doctor to see that they are actually followed. The tuberculosis dispensary organisation has thus a great field of activity, and in the administrative county of Lancashire we are doing our best to make full use of our opportunities. Apart from the personal efforts of the dispensary staff in giving simple hygienic instructions and in getting them carried out voluntarily, it has been possible in a large number of cases indirectly to aid the work by means of the voluntary care committees, which assist patients on the understanding that the instructions given are properly carried out. The six care committees in my area have expended in 1917 over £1000.

The knowledge, too, that certain benefits are obtainable from Approved Societies in the case of insured persons and from the Ministry of Pensions in the case of discharged sailors and soldiers conditionally upon the treatment being properly carried out is also of use in certain cases.

Perhaps I did not make it quite clear in my article that patients with active disease receive domiciliary treatment from general practitioners, and that the dispensary organisation works in close association with them. In this way patients obtain the advantages of both agencies.

With regard to the visits of the dispensary nurses, which are always paid without previous notice, it must be remembered that many of the cases were quiescent or arrested. These do not, of course, require frequent visiting, so that it has been possible for the more advanced cases to receive more frequent visiting. The number of visits paid might with advantage be increased, and at the end of the war it is hoped to augment the staff of nurses and thus pursue more intensively the dispensary supervision.

I should have done better to have used the term "satisfactory isolation" or "sufficiently complete isolation," instead of "complete isolation." In 1917 I obtained satisfactory isolation in 70 per cent. of 1615 cases of pulmonary tuberculosis. As a matter of fact, I do not think that "complete" isolation need be aimed at, since it is now generally recognised that infection must usually be massive to be the potent factor. We are all exposed to the tubercle bacillus in a greater or less degree, and although there is evidence that 97 per cent. of persons are actually infected the dose is insufficient in most cases to break down the resistance. If the instructions as to disposal of sputum, &c., are reasonably followed the risks of infection should be slight. In my opinion the greatest danger from infective cases at home arises from the large, untapped reservoir of unnotified cases, to which Dr. G. Lissant Cox referred in his recent letter. So long as large numbers of cases die either unnotified or only notified shortly before death the control of tuberculosis must necessarily be imperfect, and for this it is not fair to blame the dispensaries.

It is a great advantage if patients can receive two or three months' institutional treatment soon after they come under

treatment, while there is a residuum of advanced cases for whom permanent removal to a suitable hospital is desirable, owing to the impossibility of securing adequate nursing and isolation at home. The compulsory powers of removal possessed by a few county boroughs ought, in my opinion, to be given to all county and county borough councils.

In conclusion, I submit that even in the worst cases under dispensary supervision the home conditions are superior to those usually found where this is absent, and that the results would be even better were sufficient funds available to supplement the resources of the poorer families. It is not improbable that the work of the voluntary care committees will have to be taken over by the dispensary organisations and become a national charge.

I am, Sir, yours faithfully,
GEORGE JESSEL,
Dec. 18th, 1918. Tuberculosis Officer, Lancashire County Council.

LADY ROBERTS' FIELD GLASS FUND: RETURN OF GLASSES NOW ASKED FOR.

To the Editor of THE LANCET.

SIR,—May I, through the hospitality of your columns, ask all officers and others who have received glasses or telescopes on loan through my Fund to send them back to me now for return to their owners. All instruments lent through my Fund bear the letters N.S.L. (National Service League), followed by a letter and a number. I should be glad if officers and others returning glasses would enclose in the case a note of acknowledgment for the owner.

I wish to record my gratitude, not only to the public for the munificent loan of 30,000 glasses, but also to the press for the valued help which it has given this undertaking.

The address for glasses and correspondence is the Manager, Lady Roberts' Field Glass Fund, 64, Victoria-street, Westminster, S.W. 1.

I am, Sir, yours faithfully,
Dec. 19th, 1918. ROBERTS.

THE PRACTICE OF THE ABSENTEE.

To the Editor of THE LANCET.

SIR,—It is gratifying to see that money is still being subscribed to the Belgian Doctors' and Pharmacists' Relief Fund. This is as it should be, but it is of interest in connexion with Sir Watson Cheyne's proposal to lend money to medical men whose practices have been filched from them owing to their absence at the front. These men have been as much injured by their professional brethren as their Belgian colleagues have been by the Hun. Yet the proposition of Sir Watson Cheyne savours more of the spirit of the Jewish moneylender than anything else.

Would it be too much to expect that the British doctors should meet with as much sympathy and help as the Belgian? Many of us have been away on active service for over four years, having "willingly" given up "all" in answer to the pitiful cries of our sick, wounded, and dying fellow countrymen. Surely, then, we are not to be expected to return home and forced to beg from our professional brethren who have stayed at home. All the medical men in this theatre of operations with whom I have discussed Sir Watson Cheyne's proposals are strongly opposed to it, as it is adding insult to injury.

It is now suggested by Sir Watson Cheyne that some of the ill-gotten gains of the medical pilferers should be advanced on loan at interest to their victims.

I am, Sir, yours faithfully,
Dec. 6th, 1918. MAJOR, R.A.M.C. (T.C.)

THE LANCET, VOL II., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET which is completed with the issue of to-day is in preparation. Owing to the continued shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a *post-card* which is more convenient for filing purposes than a letter) to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

The War and After.

THE CASUALTY LIST.

THE names of the following medical officers appear among the casualties announced since our last issue:—

Died.

Surg.-Lieut.-Cdr. M. H. Langford, D.S.O., R.N., was a student at Middlesex Hospital, London, and qualified in 1909. He thereupon joined the Royal Navy and was serving on the *Inflexible* both when she took part in the action against the German squadron off the Falkland Islands and also when she struck a mine in the Dardanelles. It was in connexion with this latter incident that he was awarded the D.S.O. He died at Dar-es-Salaam of influenza.

Capt. J. V. Duffy, R.A.M.C., qualified at Glasgow in 1914, and joined up shortly afterwards.

Wounded.

Capt. R. H. Jones, R.A.M.C., attached Worcester Regiment.

OBITUARY OF THE WAR.

ROBERT ERNEST LEE, M.D. T.C.D.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain R. E. Lee, who lost his life through the sinking of R.M.S. *Leinster* on Oct. 10th at the age of 35 years, was the second surviving son of Edward Lee, J.P., Blackrock, co. Dublin. Educated at Trinity College, Dublin, he graduated in medicine in 1910, and obtained the M.D. degree in the following year. He was then house surgeon to Bootle Hospital, Liverpool, for two years, and resident medical officer of the Royal Hospital for Incurables, Donnybrook, Dublin, 1912–13. Before the outbreak of war he had been on a sea voyage as medical officer on one of the Holt Line ships. When war was declared he joined the R.A.M.C., and served in France from January, 1915, until he met his death on returning to duty after 14 days' leave.

NOEL JAMES ALLAN, M.B., CH B. LIVERP.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain N. J. Allan, who died of burns on Oct. 18th in Mesopotamia at the age of 32 years, was second son of Dr. J. H. Allan, of Liverpool. He was educated at St. Francis Xavier's College, where he was distinguished in mathematics and chemistry. After leaving school he qualified in pharmacy, but later decided to take up medicine, and entered the University of Liverpool. In the course of his medical studies he gained the Kanthack medal in pathology, the senior Lyons-Jones scholarship, and the Derby prize for clinical medicine, and he graduated with honours in 1916. He held for a short time the posts of house surgeon and house physician at the Royal Infirmary, and early in 1917 joined the R.A.M.C. and served continuously in the East until his death.

MAURICE WILLIAM HOLT MILES, M.B. LOND.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain M. W. H. Miles, who died on Nov. 25th at the age of 25 years, was son of William Miles, of Streatham. Educated at Littlestone and Merchant Taylors' School, where he obtained a scholarship for St. Thomas's Hospital, he volunteered for service at the commencement of the war and was sent to France, and afterwards to India, Egypt, and the Dardanelles. He was ordered home to qualify, took the diploma of the Conjoint Board in 1917, and became house physician at St. Thomas's Hospital before joining the R.A.M.C. His health was already considerably undermined by malaria and dysentery. Invalided out of the Army about two months ago, he again returned to St. Thomas's Hospital, whence he recently took the M.B. degree. His death was due to pneumonia following influenza.

JOHN EDWARD HODGSON, M.R.C.S. ENG., D.P.H.,

LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel J. E. Hodgson, who died on Nov. 5th at Dédéagatch while with the British Salonika Force, was eldest son of the late Caleb Hodgson, of Carlisle, and stepson of the late Colonel J. J. Durant. He was educated at Grosvenor House School, Carlisle, and Owens College, Manchester, and took the diplomas of the Conjoint Board in 1898, and the D.P.H. Lond. in 1913. After acting as resident clinical assistant at the Barnes Convalescent Hospital, Cheadle, he entered the R.A.M.C. as Lieutenant in January, 1899, and during 1899–1900 served in the South African War. He took part in the advance on Kimberley, including the actions at Belmont, Enslin, Modder River, and Magersfontein, and was awarded the Queen's medal with two clasps. After serving at Dover for atime he proceeded to India in 1901, and was appointed staff surgeon, Fort William, Calcutta, which appointment he held for three and a half years, finishing his tour of foreign service at Ranikhet. He was gazetted captain in January, 1902, major in 1910, and lieutenant-colonel in 1915. After serving over three years in the London district Colonel Hodgson was appointed sanitary specialist, Northern Command, in January, 1914, and in August, 1916, was appointed A.D.M.S., 12th Corps, Salonika, and there served, with only one short leave, until his death, which was due to pneumonia following on influenza. In December, 1917, he was mentioned in despatches. Colonel Hodgson leaves a widow and one son.

Captain (acting Major) WINFRED SMYTH MACDONNELL, C.A.M.C., who died on Nov. 15th, aged 29 years, was a native of Port Hood, Nova Scotia, and graduated in medicine at Dalhousie University, Halifax, N.S., in 1910. He served for seven months in the Royal Navy, with the R.A.M.C. in France for one year, and was appointed to the C.A.M.C. in August, 1916. He was attached to the Duchess of Connaught's Hospital, Taplow, until last September, when he was transferred to the London area and appointed D.A.D.M.S.

JAMES GASTON, M.B., B.S. R.U.I.,

MILITARY CROSS;
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. Gaston, who died of wounds received in France on Nov. 5th, was eldest son of Andrew Gaston, Carabeg, co. Antrim. Educated at Ballymena Academy and Queen's College, Belfast, he graduated at the Royal University of Ireland, and when war broke out was engaged in an extensive practice in Durham. He joined the R.A.M.C. in December, 1914, and went to France in March, 1915. After serving with a West Riding field ambulance he was attached to the 5th K.O.Y.L.I. as battalion medical officer. He was wounded in September, 1916, and after recovering from his wounds he again went to France in January, 1917, and was attached to the Suffolk Regiment. In the following April he was awarded the Military Cross for conspicuous bravery in the field. Captain Gaston was known to his chiefs as a brave and courageous officer and to his colleagues as an agreeable companion.

THE HONOURS LIST.

The following awards to medical officers are announced:—

K.C.I.E.—Lt.-Gen. T. J. O'Donnell, C.B., D.S.O., R.A.M.C., Director of Medical Services, India.

C.I.E.—Col. H. J. Barratt, R.A.M.C. (retired), Assistant Director of Medical Services, Meerut Division; Col. S. C. Philson, R.A.M.C. (retired), Assistant Director of Medical Services, Karachi Brigade.

C.B.E.—Col. W. Molesworth, C.I.E., V.H.S., I.M.S.; Col. A. W. Sheen, A.M.S.(T.F.).

O.B.E.—Maj. A. E. Walter, I.M.S.; Maj. (acting Lt.-Col.) P. J. Van Collier, S. African M.C.; Lt.-Col. G. M. De Kock, S. African M.C.; Lt.-Col. J. R. McGregor, S. African M.C.; Lt.-Col. (Hon. Col.) H. T. Mursell, S. African M.C.

MENTIONED IN DESPATCHES.

In a despatch received from the Commander-in-Chief, East African Force, dated Sept. 30th, 1918, the following references to the medical services appear:—

Great efforts were made to keep the hospital accommodation and all health and sanitary conditions up to the high standard which the Pike Commission and the visit of Major-General Scott indicated as being aimed at in other theatres. The result has been highly gratifying. The sick-rate among the troops, and particularly among Europeans, must always be heavy in a tropical climate, but it is satisfactory to know that everything possible has been done to alleviate suffering and restore health. Among the porters there was an enormous improvement both in the sick and death rates; in fact, the latter is now very little in excess of peace rates.

A school for training natives as hospital attendants and dressers was started at Dar-es-Salaam, and has proved an unqualified success, and great credit is due to the officers responsible for it. After the completion of their military service the natives thus trained should prove a distinct asset to their respective Protectorates.

The native medical corps recruited in Uganda was of special service to us.

Colonel G. W. Tate, C.M.G., D.S.O., M.B., Army Medical Service, deserves great credit for the very efficient manner in which the work of the Medical Services has been carried out, in spite of the difficulties inseparable from active service in a tropical country.

"Silver Badge" calls attention to the inadequate scale of remuneration offered by the War Office to certain medical officers of war hospitals. The operative work in these hospitals may, he says, be carried out by three classes of surgeons: (1) men with temporary commissions; (2) *à la suite* staff with territorial rank as part-timers; (3) part-timers with no commission. The first two classes are paid according to their rank, as a rule of major or lieutenant-colonel, but the third class receives 22*s*. 6*d*. per day, attending only when summoned by the officer in charge of the hospital, every day for which he is not called resulting in a credit of 22*s*. 6*d*. to the hospital. In this way "Silver Badge" claims that the surgeon loses touch with the cases upon which he has operated, while his work is crowded into two or three days a week. He considers that part-time surgeons should be paid an adequate remuneration for their work, and on a monthly basis.

Medical News.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

M.D. EXAMINATION.

Branch I., Medicine.—Louis Abel Celestin, Univ. Coll. Hosp.; and Eric Clarence Spaar, private study.

Branch IV., Midwifery and Diseases of Women.—Grace Stapleton, Lond. Sch. of Med. for Women.

M.S. EXAMINATION.

Branch I., Surgery.—Stanley Ritson, King's Coll. and King's Coll. Hosp.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful:—

FINAL M.B. AND CH.B.

N. H. Davison, Bryan Walley, and Ethel D. Willis.

Forensic Medicine.—May Ashburner, Mary S. Jones, J. N. Laing, and Efime Ratner.

THIRD M.B. AND CH.B. EXAMINATION.

General Pathology and Morbid Anatomy.—Samuel Adler, May Blakiston, J. W. Crawshaw, K. V. Drakin, F. R. Ferguson, Evelyn A. Garnett, E. M. Greaves, G. E. Hayward, Sylvia K. Hickson, J. B. Higgins, F. S. Horrocks, Irma M. C. Jehansart, F. C. Jones, W. E. Mason (with distinction), Doris B. Norman, E. R. Ormerod, Emily M. Peach, Harry Rosenthal, Gerald Sheehan (with distinction), Constance Snowdon, Annie E. Somerford, G. L. Taylor (with distinction), H. W. Taylor, Henry Tomlinson, Mary I Turner, F. A. van Coller, Raymond Williamson (with distinction), and J. B. Wright.

DIPLOMA IN DENTISTRY (*Final Examination*).

A. D. Bleakley and Bertram Wilkinson.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on Dec. 18th the following candidates, having passed the requisite examinations between Sept. 30th and Oct. 2nd, were admitted Fellows:—

John Ellison, Robert Joseph English, James Burnett Hogarth, Robert Lyle Hutton, Millen Alexander Nickle, Ibrahim Abdell Razzak, James Ness MacBean Ross, Augustus George Stewart, David Laurence Tate, William Robert Tutt, and Wilson Tyson.

THE amount which the League of Mercy has contributed this year to King Edward's Hospital Fund for London was stated by Lord Farquhar at the annual meeting of the League on Dec. 20th, to be £16,000, in addition to £3392 granted to extra-metropolitan hospitals.

INSTITUTE OF MASSAGE AND REMEDIAL GYMNASTICS.—The annual meeting of this institute was held at the Chartered Accountants' Hall, Manchester, on Dec. 17th, Sir William Milligan, chairman of the executive, being in the chair. He presented a report of the working of the institute during the past 12 months. The institute originated in 1914 and was incorporated in 1916. The negotiations with the Incorporated Society of Trained Masseuses had led to the drafting of a charter which might now be taken as the settled views of the two bodies. This charter was now complete and simply awaited revision by counsel, after which it would be submitted to the Privy Council, and, if accepted by them, would become the charter of a new society arising out of the amalgamation, representative of massage throughout the country. In the meantime the examinations and other activities of the institute had been in abeyance. The charter, when completed, would yield a strong body with a council elected by postal ballot of the whole of the members. On the proposal of Dr. A. E. Barclay, honorary secretary, it was unanimously decided to accept the provisions as laid down in the draft charter.

INFLUENZA IN SOUTH AFRICA.—A South African correspondent, writing on Oct. 29th, says: The influenza epidemic in South Africa has been responsible for about 50,000 deaths during the first month after it broke out, about 10,000 occurring among Europeans, and, as in England, healthy individuals in the prime of life have been most often attacked. Apparently introduced from Europe, it has been attributed to returning South African labour battalions, trench fever, German gas, or deliberate Hun propaganda. The preventive measures which have been taken include the use of gargles, mouth-washes and nasal douches of salt and water, &c., as well as inoculation, which in some places appears to have been of use. In most of the towns drastic precautionary measures have been adopted, including closing of schools, places of entertainment and churches, market halls and auction rooms, as well as the prohibition of public gatherings. The native is an important factor in transmitting infection, and the epidemic is in consequence subsiding more quickly in the towns than in the villages and country. Pneumonia is the usual cause of death. The Cape Peninsula has been severely attacked and the mortality has been high, and, as in other parts of the Union, the railway, postal, and tramway staffs were greatly depleted. As far as the towns are concerned, Cape Town, Kimberley, Johannesburg, and Bloemfontein have suffered most from the scourge.

THE SERVICES.

ARMY MEDICAL SERVICE.

TERRITORIAL FORCE.

Col. W. Coates, C.B. (Retired List, A.M.S., T.F.), to be Colonel.

ROYAL ARMY MEDICAL CORPS.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Major L. V. Thurston; Capts. G. F. Rudkin, R. E. Todd.

To be acting Lieutenant Colonels whilst in command of a Medical Unit: Temp. Capt. (acting Major) H. S. Davidson; Majors H. Harding, C. J. Wyatt, C. W. O'Brien.

Temp. Major F. R. S. Cosens (Lieut.-Col., Devon Regt. T.F.), to be temporary Lieutenant-Colonel.

Temp. Capt. J. Cunningham to be acting Major whilst specially employed.

The undermentioned relinquish the acting rank of Major: Capt. O. W. McSheehy; Temp. Capts. J. F. R. Gairdner, H. C. Wilson, R. B. Rutherford, J. H. Hebb.

Temp. Capts. to be acting Majors: A. A. Miller, M. W. Baker, F. B. Chavasse, J. F. McLay, O. E. Finch, F. R. Fraser, H. L. Tidy, W. F. Box, C. S. Dodson, T. Martin, H. D. Ledward, J. A. Jones, E. T. Willans.

V. H. Kazanjian to be temporary Honorary Major whilst serving with No. 22 General Hospital (Harvard Unit).

Capt. (acting Major) W. B. Allen, V.C., from R.A.M.C. (T.F.), to be Captain.

Lieutenants (temporary Captains) to be Captains: E. Jamieson, J. E. Brooks.

The undermentioned late temporary Captains retain the rank of Captain: R. A. Jones, T. E. Parker.

M. Cohen, late temporary Captain, is granted the rank of Captain.

To be temporary Captains: E. Ashby, F. S. Collard.

Temp. Hon. Lieuts. J. M. Bremner and T. C. Bost to be temporary honorary Captains.

To be temporary Lieutenants: A. A. Angelis, J. T. Rearden, W. J. Lord, H. Caird, J. Grimson, C. L. Lapper, C. J. E. Edmonds, N. J. McCaskie, R. Hamer, J. V. Rees, J. Stewart.

M. M. Stevens to be temporary honorary Lieutenant whilst serving with No. 22 General Hospital (Harvard Unit).

Officers relinquishing their commissions: Temp. Lieut.-Col. F. Romer (on grounds of ill-health, and is granted permission to retain his rank); Temp. Capts. D. A. Stewart, R. V. Steele, F. I. Dawson, W. M. G. Guinness, H. F. Powell, W. M. Penny, G. H. Rodolph (on account of ill-health, and is granted the rank of Lieutenant). W. M. Thomson, S. A. Bull (and is granted permission to retain his rank). E. W. Toulmin (on account of ill-health and is granted permission to retain his rank), S. S. King, A. C. Fleming, J. W. O'Farrell, J. F. Powell, W. L. O'Neill, J. D. Ferguson, W. L. Clements, H. C. Wilson, A. Campbell, J. S. Clark, R. B. Rutherford, F. Wilkinson, T. H. Ravenhill, J. C. Wadmore, E. W. Kirk. G. L. N. Miles and F. M. Longson (on account of ill-health, and to retain the rank of Captain), W. H. T. Jones, E. W. Goble, R. J. Duthie, J. Maguire, G. L. Irwin, W. S. Hall, F. G. Wrigley, A. M. Roome, A. R. F. Hay, G. H. G. Davie, L. C. W. Cane, G. E Thornton, H. Freeth, B. B. Sapwell, R. S. Berry; Temp. Hon. Capt. T. C. Bost; Temp. Lieuts. C. W. Branson, J. Shaw, H G. Browning, F. A. Hadden (on account of ill-health contracted on active service, and is granted permission to retain his rank), S. McClure, T. McLaren, A. Macintyre.

Canadian Army Medical Corps.

Temp. Major T. A. Lomer, D.S.O., to command a Field Ambulance, and to be acting Lieutenant-Colonel whilst so employed.

Temporary Captains to be acting Majors whilst employed at a Field Ambulance: W. J. MacKenzie, F. F. Dunham.

SPECIAL RESERVE OF OFFICERS.

Capt. R. Magill, D.S.O., relinquishes the acting rank of Lieutenant-Colonel, and reverts to the acting rank of Major.

Capt. W. M. Biden to be acting Major.

Captains relinquishing the acting rank of Major on re-posting: J. W. Gray, R. MacKinnon.

W. V. Robinson, from University of London Contingent, O.T.C., to be Lieutenant.

TERRITORIAL FORCE.

General List.—The undermentioned officers to be acting Majors whilst specially employed: Capts. W. E. Lee, D. A. R. Haddon, H. Shield.

Capts. (acting Majors) J. W. Craven, R. D. Moore, M.C., and A. W. Stott relinquish their acting rank on ceasing to be specially employed.

Capt. J. W. Scott to be acting Major whilst specially employed.

Capt. (acting Major) A. H. Horsfall, from 2nd Northern General Hospital, to be Captain.

Capt. A. H. Horsfall to be Major.

Capt. H. G. W. Dawson to be acting Major, with precedence.

2nd Southern General Hospital: Capt. C. A. Moore to be acting Major whilst specially employed and to remain seconded.

2nd Western General Hospital: Capt. H. Buck to be acting Major whilst specially employed and to remain seconded.

3rd Scottish General Hospital: Major H. Rutherfurd, M.B., is seconded for duty with a General Hospital.

2nd London Sanitary Company: Lieut. A. H. Hasnip to be Captain.

3rd Southern General Hospital: Capt. J. F. Robinson is restored to the establishment.

Sanitary Service: Capt. C. M. Fegen to be acting Major.

2nd London Sanitary Company: Capt. R. T. F. Barnett relinquishes his commission on account of ill-health contracted on active service, and retains the rank of Captain.

Attached to Units other than Medical Units.—Capt. (acting Major) J. W. Scott relinquishes his acting rank on ceasing to be specially employed.

ROYAL AIR FORCE.

Medical Branch.—W. G. L. Wambeek, late temporary Captain, R.A.M.C., is granted a temporary commission as Captain.

F. N. V. Dyer, J. Paxton, and J. Souter (late temporary Surgeons, R.N.) are granted temporary commissions as Captains.

J. B. Barnett and C. H. Young are granted temporary commissions as Lieutenants.

Notes, Short Comments, and Answers to Correspondents.

COLONIAL HEALTH REPORTS.

Hong-Kong.—The estimated population at the middle of 1917 was 535,100. The corrected birth-rate for the year was 6·9 per 1000 among the Chinese community and 20·8 per 1000 among the non-Chinese. The death-rate was 23·7 per 1000 among the Chinese community and 14·0 among the non-Chinese. The number of deaths from malaria (416) showed an increase on the previous year. The deaths of Chinese from this cause in the city of Victoria numbered 185 out of a population of 280,700. The deaths from plague numbered 35, as compared with 39 in 1916. Small-pox deaths numbered 549, all Chinese with the exception of 3 Portuguese and 1 each British, Filipino, and Japanese. There were 2248 deaths from respiratory diseases, 34 of these being among the non-Chinese community. Pulmonary tuberculosis claimed 859 Chinese and 18 non-Chinese victims, whilst other forms of tuberculosis represented an additional 616 deaths, making a total of 1493, or 14·3 per cent. of the total deaths among the community. Beri-beri was responsible for 654 deaths, as compared with 517 during 1916 and 398 in 1915. During the past few years circulars have been distributed to all large employers of coolie labour calling their attention to the fact that beri-beri is produced by the consumption of white rice as the staple article of diet without a sufficiency of other foods, and advising that beans should be supplied with the rice when fresh meat or fresh fish cannot be afforded. At the Civil Hospital 3292 in-patients and 13,065 out-patients were treated during 1917. 361 cases of malarial fever were admitted, as against 360 in 1916 and 384 in 1915, but the total cases of malaria for all hospitals showed a decrease of 34 cases as compared with the year 1916. In the Maternity Hospital there were 309 confinements. In the Victoria Hospital for Women and Children 147 patients were treated. At Kennedy Town Infectious Diseases Hospital 31 cases of small-pox were admitted. In the Tung Wa Hospital only Chinese are treated. Various other services not appertaining to a hospital are performed by the institution, such as the free burial of the poor, the repatriation of destitutes, and the organisation of charitable relief in emergencies. Chinese as well as European methods of treatment are employed in accordance with the wishes expressed by the patients or their friends. About half the number are now treated by Western methods. There are 323 beds in the buildings and 5352 patients were accommodated during 1917. The Tung Wa also maintain a branch hospital for small-pox cases (Chinese only) at Kennedy Town; it contains 58 beds and 146 cases were treated. The Alice Memorial and Affiliated Hospitals are managed and controlled by the missionaries resident in Hong-Kong, agents of the London Missionary Society, and consist of the Alice Memorial Hospital, the Nethersole Hospital, the Alice Memorial Maternity Hospital, and the Ho Miu Ling hospital. The in-patients in 1917 totalled 1670; the number of labours in the Maternity Hospital was 590. The new Kwong Wa Hospital for Chinese in the Kowloon Peninsula contains 70 beds and 2388 patients were accommodated during 1917.

THE "LIMPET" SYSTEM OF ELECTRODES.

OUR attention has been called to an invention which enables medical men to make their own electrodes in any required shape and, by means of a non-absorbent aseptic fastening, to apply and fix the electrode at any desired spot on the patient. The complete outfit consists of nine rubber belts of different sizes and two terminal attachments for placing beneath the belt after the electrode, which is cut by the operator from non-oxidisable plastic metal, has been fixed in position. The chief advantage claimed for the system is that the terminal does not break away by use and so render the whole electrode valueless. The manufacturers are the Medical Supply Association, 167–185, Gray's Inn-road, W.C.1.

DISABLED OFFICERS' HOME AND CLUB; SEASIDE BRANCH AT FRINTON.

THE Home and Club founded by Miss Phyllis Holman, and privately endowed, has now been established on permanent lines. Residence is provided for 25 discharged officers with 100 per cent. disability who require medical or nursing attention or the services of orderlies, and who are unable to take up remunerative work. Contribution of 1–2 guineas a week is made towards the running expenses, according to individual circumstances. The remaining two-thirds of the cost is covered by private endowment and by an agreement with the Pensions Ministry in regard to individual cases requiring continual treatment. Dr. F. E. Easton is honorary medical officer, and Sir George Makins, Sir David Ferrier, Professor F. W. Mott, F.R.S., Mr. J. P. Lockhart-Mummery, and Dr. R. Riddoch are acting as consultants.

Vacancies.

For further information refer to the advertisement columns.

Aberystwyth Infirmary & Cardiganshire General Hospital.—H.S. £200.
Alton, Hants, Lord Mayor Treloar Cripples' Hosp.—Asst. Res. M.O. £200.
Brighton, Royal Sussex County Hospital.—Asst. Path. £200.
Buxton, Derbyshire, Devonshire Hospital.—Asst. H.S. £120.
Glamorgan County Asylum, Bridgend.—Temp. Asst. M.O. £6 6s. per wk.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. 30 guineas.
Hospital for Sick Children, Great Ormond-street, London.—H.S. £100.
Leicester Borough Mental Hospital, Humberstone.—Locum Tenens M.O. 7 gs. per week.
London County Mental Hospitals.—Temp Asst. M.O.'s. 7 gs. per week.
Manchester and Salford Lock Hospital.—Female Clin. Asst.
Montgomeryshire Education Committee.—School Dentist. £400.
National Hospital for Diseases of the Heart.—Non-Res. M.O.
Plymouth, South Devon and East Cornwall Hospital.—M.O. £350. Also H.S. £250.
Prison Commission.—Two Female Doctors. 7 gs. per week.
Putney Hospital, Lower Common, S.W.—Res. M.O. £150.
Royal Free Hospital, Gray's Inn-road, W.C.—Female Asst. Anæs: £50.
Salisbury General Infirmary.—Asst. H.S. £150.
Southampton Free Eye Hospital.—Asst. Oph. Surg. £100.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £150 to £180.
Winchester, Royal Hampshire County Hospital.—Jun. Res. M.O. £250.

Births, Marriages, and Deaths.

BIRTHS.

HALL.—On Dec. 15th, at a nursing home, to Margaret, wife of Major G. Hall, C.M.G., R.A.M.C.(T.), 9, Ellison Place, Newcastle-on-Tyne—a daughter.

UNDERWOOD.—On Dec. 10th, at Welford, Rugby, the wife of Dr. F. L. Underwood, of a son.

DEATHS

HAMILTON.—On Dec. 20th, after long illness, Thomas Hamilton, M.B., F.R.C.S.E.

JOHNS.—On Dec. 16th, at Leeds-road, Harrogate, Dr. Frederick Arthur Johns, M.B. Lond., aged 45 years.

LANGFORD.—On Dec. 15th, at the 84th Military Hospital, Dar-es-Salaam, from influenza, Surgeon Lieutenant-Commander Martyn Henry Langford, D.S.O., R.N., H.M.S. *Challenger*, aged 34.

ROWLAND.—Killed in action in France, on Nov. 1st, Second Lieutenant John W. B. Rowland, Royal Field Artillery, D 175 Army Brigade, British Expeditionary Force. France, only son of Dr. E. D. Rowland, I.S.O., Colonial Medical Service, British Guiana, Georgetown, Demerara, aged 19 years.

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APR 16 2007
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